

GEOMETRY.

1. Equal chords in a circle are equally distant from the centre; and conversely those which are equally distant from the centre, are equal to one another.
2. If two chords in a circle cut one another, the rectangle contained by the segments of one of them is equal to the rectangle contained by the segments of the other.
3. Describe an isosceles triangle having each of the angles at the base double of the third angle.
4. The sides about the equal angles of triangles, which are equiangular to one another, are proportional, and those which are opposite to the equal angles, are homologous sides.
5. If four straight lines be proportionals, the rectangle contained by the extremes is equal to the rectangle contained by the means.
6. Equiangular parallelograms have to one another the ratio which is compounded of the ratios of their sides.

N. B.—Female candidates for Class I. will receive credit for any work correctly done in the last three of the above questions.

ALGEBRA—EXHIBIT THE WORK

1. From  $x^2 + y^2 + z^2 = 9$ , find  $x$ .
  2. From the value of  $x$  in the preceding equation, deduce several important inferences which will hold for any quadratic equation.
  3. Solve 
$$\frac{x-1}{x+1} = \frac{5}{6} = \frac{3}{7(x-1)}$$
  4. Solve 
$$\frac{x + \text{square root of } (12x^2 - x)}{x - \text{square root of } (12x^2 - x)} = \frac{a+1}{a-1}$$
  5. From  $x - y = 2$ ,  $x^2 - y^2 = 152$ , find  $x$  and  $y$ .
  6. A certain rectangle contains 800 square feet; a second rectangle is 8 feet shorter and 10 feet broader, and also contains 800 square feet; find the length and breadth of the first rectangle.
  7. Multiply  $x^2 + x + 1$  by  $x^2 - x + 1$ .
  8. The sum of three terms in geometrical progression is 63, and the difference of the first and third terms is 45; find the terms.
- N. B.—Female candidates will receive credit for any work correctly done.

NATURAL PHILOSOPHY.

1. A ship moves forward 30 feet while a ball is falling from the mast to the deck, a distance of 80 feet; how far did the ball move?
2. A horizontal force of 12 lb. is resolved into two components, one of which is a vertical force of 25 lb.; what is the magnitude and direction of the other component?
3. State clearly the conditions of equilibrium of three forces acting upon a body.
4. Describe each of the so-called mechanical powers, and state the conditions of equilibrium for each.
5. Weights of 2, 4, 8 and 8 lbs. are hung at equal distances along a rod 40 inches long. At what point must the rod be suspended so as to remain horizontal?
6. Where would be the centre of gravity of weights 7, 9, 11 and 13 lbs. placed consecutively at the corners of a square whose side is 4 inches?
7. A body is projected vertically upwards with a velocity of 36 ft. per second; how far will it ascend in 10 seconds? How long before it will return to the ground?

THE STRUCTURE OF THE ENGLISH LANGUAGE.

Mr John Fiske in his criticism of Longfellow's translation of Dante, in pointing out the difficulties in the way of rendering accurately the spirit of a poem in a language foreign to the one in which it is written, calls attention to the unusual hindrances in the case of our English language.

"The English language," he says, "has a double structure" which unfits it in a peculiar manner to become the vehicle of the thought expressed in another European language, such as French or Italian.

In the first development of a language, according to Mr. Fiske, words have a peculiar physical meaning, being used mainly at first to express the physical wants under apprehension of a people, while later, as their ideas and requirements become more refined, their words lose somewhat of this physical meaning, and from their use in expressing higher ideas come to have a metaphysical or more abstract signification which fits them for purposes of philosophic or scientific expression.

In the cases of French and Italian, which are homogeneous in their structure, the one class of words has to do duty for the expression of all emotion, that of the intellect as well as that of the senses.

To give an instance of the physical significance of a word, he calls attention to the word *transgress* which in its first use in the Latin language so doubt called up to the mind of the speaker the "physical image" of a man stepping over a boundary," but to us into whose language this word has become incorporated the physical meaning is entirely lost and we use the word in a metaphysical sense to imply some breach of moral obligation.

But the English language presents no such homogeneity of structure as the other European languages.

"Albeit there are numerous exceptions," says Mr. Fiske, "it may still be safely said, in a general way, that we possess and habitually use two kinds of language,—one that is physical, for our ordinary purposes, and one that is metaphysical, for purposes of abstract reasoning."

The physical part of English is, of course, the original or Saxon portion, which, being the only language of our own ancestors before the Roman Conquest, naturally is used by us still to express our apprehension of material things.

"It is mostly Saxon words that we learn in childhood," says Mr. Fiske, and which we therefore associate with our homeliest and deepest emotions."

The derivative portion of our language constitutes very largely the vocabulary of metaphysical and abstract discourse: for the reason, as Mr. Fiske points out, that it is acquired somewhat later in life and employed more for the expression of ideas.

Now the physical portion of our language being already sufficient for us, it follows quite naturally that the derivative words drop all but their metaphysical meaning in our language, and it thus becomes apparent that the emotional vehicle of English and Italian for instance is composed of words which convey no common signification in the two languages.

This difference of construction, Mr. Fiske tells us, makes it almost impossible to give a literal translation of Dante's poem such as Mr. Longfellow almost succeeded in doing. Mr. Fiske contends that any literal translator must fail in large measure if he employs English words of Romanic origin instead of the vigorous Saxon in which we are accustomed to express our emotions and deep feelings. As an instance of the force with which the Saxon appeals to us as contrasted with the merely derivative words which we use in common with the French he gives us the following lines from Shakespeare:

"Blow, blow, thou winter wind!  
Thou art not so unkind  
As man's ingratitude;  
Thy tooth is not so keen, etc., etc."

This appeals to us in the most forcible manner because conveyed through the medium of words that are indigenous to our language.

The passage, however, when given to us in the following French which Mr. Fiske quotes for us is not so effective:

"Souffle, souffle, vent d'hiver!  
Tu n'es pas si cruel  
Que l'ingratitude de l'homme  
Ta dent n'est pas si pénétrante," etc., etc.

"At this we are inclined almost to laugh" says Mr. Fiske, because it excites in us an unrecurrent of consciousness which if put into words might run something like this:

"Inflate, inflate, wind hibernal!  
Thou art not so cruel  
As man's ingratitude  
Thy dentition is not so penetrating," etc., etc.

"No such effect would be produced upon a Frenchman, however; the translation would strike him as excellent, which it really is."

It is from these considerations that Mr. Fiske finds fault with Longfellow's translation of Dante, in which he considers Mr. Longfellow has paid too much regard to the literal rendering of the words

into their equivalents rather than to the choosing of the best words for conveying to the English mind the spirit of the poem in the same forcible way as the Italian words did to the minds of Dante's countrymen. It follows from the foregoing that the preference should be more frequently given to Saxon words rather than to those of Romanic origin, which Mr. Longfellow has too often employed. Nevertheless, Mr. Fiske pronounces Mr. Longfellow's translation the best we are likely to have for some time to come, as there can be no doubt, as he says that "apart from Mr. Longfellow's other titles to undying fame, he has certainly secured it in connection with this translation, and throughout the English portion of the world his name will always be associated with that of the great Florentine."

But the very facts which operate against Italian and French translations become converted into a benefit in the case of German, which "is so nearly allied to Anglo-Saxon as to call up in our minds concrete images of the greatest definiteness and liveliness." And this enables us to comprehend in a very appreciable manner the poetry of the Germans.

But it follows that these homogeneous languages form the difficulty of dropping the physical significance of words from a less perfect medium for the expression of philosophical ideas than our English language, to the double structure of which Mr. Fiske attributes its superiority over every other tongue, ancient or modern, for philosophical and scientific purposes."

The Germans, for instance, he tells us, do not "conceive" an idea, they use a word that has a physical meaning akin to our word "begriffe" (begriffen). Our word "conceive" had once the very same material meaning as "begriffen," but not being indigenous in our language it has utterly lost it.

"Whoever has dealt in English and German metaphysics," continued Mr. Fiske, "will not fail to recognize the prodigious superiority of English in force and perspicuity."

By means of our derivative words "which are nearly or quite free from those shadows of original concrete meaning which, in German, too often obscure the acquired abstract signification we are able to carry on philosophical enquiries" with very great advantage.

"The differences between our language and other European tongues cannot be ignored," says Mr. Fiske. "They lie deep in the very structure of human speech, and are narrowly implicated with equally profound shades in the composition of human thought."

"Too often the mere differences between English and Italian, for instance, prevent Dante's expression from coming out in Mr. Longfellow's version quite pure and unimpaired.

For instance, Mr. Longfellow translates the Italian *dolore* and *dolente* into *dole* and *dolent* as in the following:

"Through me the way is to the city doleful,  
Through me the way is to eternal Sorrow."

Which Mr. Fiske considers to be much more forcibly rendered by Mr. Parsons, who has translated the passage as follows:

"Through me you reach the city of despair,  
Through me eternal wretchedness ye find."

And the greater force is obtained by the use of the words *despair* and *wretchedness* which convey much more widely the thought of Dante than the unaccustomed words that Mr. Longfellow has employed.

"The causes which make *dolente* a solemn word to the Italian ear," says Mr. Fiske, "and *dolent* a queer word to the English ear, arise causes which have been slowly operating ever since the Italian and the Teuton parted company on their way from Central Asia.

They have brought about a state of things which no cunning of the translator can essentially alter, but to the emergencies of which he must graciously conform his proceedings."

St. John, Oct. 26th.