

3. Give symbol and atomic weight of sulphur. What compounds are produced in the burning of a Lucifer match? Discuss the analogies of the Chlorine group.

4. What is "latent" heat? What is a freezing mixture? Explain the theory of its action.

5. Explain the construction of the Davy lamp.

6. Give the chief characteristics of a metal. How are metals classified?

NATURAL PHILOSOPHY.

1. Find the condition of Equilibrium on a smooth Inclined Plane. (1) when the power acts parallel to the plane, (2) when the power acts horizontally.

2. State the three Laws of Motion and give examples of each. A body is projected upward with a velocity v . Show that it will return to the point of projection after

$$\frac{2v}{g}$$

—seconds.

3. Define Specific Gravity, Density, Liquid, Gas. A cylinder floats in a fluid A, with one-third of its axis immersed, and in another B, with three-fourths of its axis immersed. How deep will it float in a fluid which is a mixture of equal volumes of A and B?

4. State and prove Mariotte's Law.

5. State the Laws of the Reflection of Light by plane-polished surfaces, and explain fully an accurate method of proving them by experiment.

6. Explain fully the meaning of the formula:

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

FRENCH.

Translate into English:

Le maître de Philosophie. La physique est celle qui explique les principes des choses naturelles, et les propriétés des corps; qui discute de la nature des éléments, des métaux, des minéraux, des pierres, des plantes, et des animaux, et nous enseigne les causes de tous les météores, l'arc-en-ciel, les feux volants, les comètes, les éclairs, le tonnerre, la foudre, la pluie, la neige, la grêle, les vents et les tourbillons.

Monsieur Jourdain.—Il y a trop de tintamarre là dedans, trop de brouillamini.

Le Maître de Philosophie.—Que voulez-vous donc que je vous apprenne?

Monsieur Jourdain.—Apprenez-moi l'orthographe.

Le maître de Philosophie.—Très-volentiers.

Monsieur Jourdain.—Après, vous m'apprendrez l'almanach, pour savoir quand il y a de la lune, et quand il n'y en a point.

Le maître de Philosophie.—Soit. Pour bien suivre votre pensée, et traiter cette matière en philosophe, il faut commencer, selon l'ordre des choses, par une exacte connaissance de la nature des lettres, et de la différente manière de les prononcer toutes. Et là-dessus j'ai à vous dire que les lettres sont divisées en voyelles, ainsi dites voyelles, parce qu'elles expriment les voix; et en consonnes, ainsi appelées consonnes, parce qu'elles sonnent avec les voyelles, et ne font que marquer les diverses articulations des voix. Il y a cinq voyelles, ou voix: A, E, I, O, U.

Clonte.—Monsieur, la plupart des gens, sur cette question, n'hésitent pas beaucoup. On tranche le mot aisément. Ce nom ne fait aucun scrupule à prendre, et l'usage aujourd'hui semble en autoriser le vol. Pour moi, je vous l'avoue, j'ai les sentiments sur cette matière un peu plus délicats. Je trouve que toute imposture est indigne d'un honnête homme, et qu'il y a de la lâcheté à déguiser ce que le ciel nous a fait naître, à se parer aux yeux du monde d'un titre dérobé, à se vouloir donner pour ce qu'on n'est pas. Je suis né de parents, sans doute, qui ont tenu des charges honorables; je me suis acquis, dans les armes, l'honneur de six ans de service, et je me trouve assez de bien pour tenir dans le monde un rang assez passable; mais, avec tout cela, je ne veux point me donner un nom, où d'autres, en ma place, croiraient pouvoir prétendre; et je vous dirai franchement que je ne suis point gentilhomme.

1. Write the singular of *éléments, métaux, nimaux, feux, voix, yeux*, and also give the plural of *bal, ciel, clou, détail, bijou, général*.

2. Parse, *que je vous apprenne, il n'y en a point, soit, je suis né*.

3. Give the primitive tenses of the following verbs: *discourt, voulez, savoir, suivre, dire, font, naître, croiraient, pouvoir*.

4. Name a few adjectives which take a different meaning, according as they are placed *before* or *after* the noun.

5. Explain the various idiomatic uses of *on*. When is *l'on* used? Give the derivation of the word.

Translate into French:

My sister is more obliging than yours. The emigrants have set out from France. The manufacturers have decided to raise the prices. I shall send you some books. The event happened suddenly. You and I shall go together. Charity is the first of Christian virtues. These blue cotton stockings are useless. Behind the house there was a large garden. The more I examine this question, the more difficult I find it. Queen Victoria has reigned fifty-one years. Give him ten dollars more. How is your sister today? Even the wisest men are liable to make mistakes. Whose book is this? He had been using a pen of his brother's. You have come early this morning.

LATIN COMPOSITION.

(A lexicon may be used, but no other book.)

Translate into Latin:

1. He came to Patcoli on the 26th of April, but the battle was fought on the 3rd of May.

2. I hope to receive my friend's letter before he sets out for Rome.

3. You must (*oportet*) consider what you should do, whether you will be at Rome, or with me in some safe place.

4. Socrates was accustomed to say that nothing should be sought from the gods further than that they would be pleased to give us what is good (*bona*).

5. It is of great importance to you to be able to write Latin correctly.

6. Had Cæsar been more cautious (*prudentior*), he might have escaped danger; for he was warned on the very day on which the conspirators slew him.

GREEK COMPOSITION.

(A lexicon may be used, but no other book.)

Translate into Greek:

1. If I had lone this, how angry you would be!

2. On the following day Sentles again departed, having utterly consumed the villages, not having left a single house, that he might strike terror into the others, as to what they should suffer should they disobey.

3. I gave the book to the man whom I saw yesterday.

4. Man surpasses the other animals in wisdom, but many of them surpass him in strength and speed.

5. He came to redeem the captives, but found them already slain.

6. They prevented the King from injuring the city.

ROMAN HISTORY.

1. Give the history of the Agrarian Laws.

2. Describe the last battle of the Second Punic War, with its date.

3. Give an outline of the Jugurthine War.

4. Describe the situation of the following places and state why each was famous:—*Saguntum, Canæ, Sybaris, Pharsalia, Philippæ, Zama*.

5. Mention and briefly describe the chief political events in the career of Cicero.

GREEK HISTORY.

1. Trace the connection of the Colonies in Asia Minor with Greek Literature.

2. Sketch the social and political institutions of Sparta.

3. "Of the four great monarchies which Cyrus had found in all their glory when he descended with his shepherds from the Persian mountains there yet remained one which had not been destroyed by his arms."

Write a full explanatory note on this passage.

4. Describe one of the following battles, pointing out at the same time its historical significance: *Charonæ, Cunaxa, Egospotami*.

5. Trace the political career of Demosthenes, or, describe the origin of the Confederacy of Delos, with a discussion of its effects on Grecian history.