

Freude hat mir Gott gegeben!
Sehet! wie ein goldner Stern,
Aus der Hülse blank und eben
Schält sich der metallne Kern.

Von dem Helm zum Kranz
Spielt's wie Sonnenglanz;
Auch des Wappens nette Schilder
Loben den erfahrenen Bilder.

Herein, herein,
Gesellen alle, schliesst den Reihen,
Dass wir die Glocke taufend weihen,
Concordia soll ihr Name sein.
Zur Eintracht, zu herzinnigem Vereine
Versammle sie die liebende Gemeine.

Und dies sei fortan ihr Beruf,
Wozu der Meister sie erschuf!
Hoch über'm niedern Erdenleben
Soll sie im blauen Himmelzelt,
Die Nachbarin des Donners, schweben
Und grenzen an die Sternenswelt,
Soll eine Stimme sein von Oben,
Wie der Gestirne helle Schaar,

Die ihren Schöpfer wandelnd loben
Und führen das bekränzte Jahr.

Nur ewigen und ernsten Dingen
Sei ihr metallner Mund geweiht,
Und stündlich mit den schnellen Schwingen
Berühr' im Fluge sie die Zeit.
Dem Schicksal leihe sie die Zunge;
Selbst herzlos, ohne Mitgefühl,
Begleite sie mit ihrem Schwunge
Des Lebens wechselvolles Spiel.
Und wie der Klang im Ohr vergehet,
Der mächtig tönend ihr entschallt,
So lehre sie, dass nichts bestehet,
Dass alles Irdische verhallt.

Jetzo mit der Kraft des Stranges
Wiegt die Glock' mir aus der Gruft,
Dass sie in das Reich des Klanges
Steige, in die Himmelsluft!
Zieheth, ziehet, hebt!
Sie bewegt sich, schwebt!
Freud dieeser Stadt bedeute,
Friede sei ihr erst Geläute.

CLASSES D AND E.—ELEMENTARY SCIENCE.

Wednesday, March 24th.—Afternoon, 2.30 to 5.30.

[NOTE.—Candidates are not to attempt more than sixteen questions. Female candidates, if proficient in needlework, may substitute for this paper the paper on Laws of Health and Domestic Economy, but passing in Science will not exempt them from passing in Needlework also.]

A.—PHYSICS.

1. What is meant by the terms "force" and "energy"? Classify the different kinds of force, or the varieties of energy.
2. Fly-wheels are frequently used with engines and other machinery: explain their use.
3. Sketch a diagram showing the mode of construction of a common water-fountain.
4. A well axle with a long handle will enable a man to lift a very heavy weight at the end of a rope: how is this?
5. Draw a section through a common pump, and explain why the water flows up after the plunger.
6. How is an echo produced? How far away is a gun when the report is heard three seconds after the flash is seen?
7. Air when heated expands. How would you experimentally prove the fact? State some of the natural phenomena to which it gives rise.
8. Describe various experiments to prove that heat is motion of some kind, and not a material substance.
9. If a beam of sunlight be allowed to fall upon a triangular prism of glass, the light is broken up, and a rainbow-coloured patch is seen on the wall. Show by a diagram the course of the rays through such a prism, and show how the colours are arranged.
10. If a common burning lens be held at a certain place in a room between the window and a white wall, an inverted picture of the window is seen: show by a diagram how this occurs.
11. Describe some of the experiments that may be made with two magnetized sewing needles.
12. Describe how to make some simple electric experiments without any special apparatus: or, give an account of any form of telegraph with which you are acquainted.

B.—CHEMISTRY.

13. What do you understand by the term "chemical affinity"? Give examples of the action of the principle.
14. Divide the following into two lists—one containing the elements, and the other the compounds—and name the elements contained in any one of the compounds:—Table salt, chlorine, sand, sugar, carbon, water, chalk, oxygen, flour, sulphur, glass, hydrogen, sodium, wood, iron, gold.
15. What are the differences in the properties and composition of hard and soft water?
16. If I breathe into lime-water, it turns white: explain this. How is lime-water made?
17. How can water be proved to consist of oxygen and hydrogen? What are the most distinctive properties of each of these gases.
18. A piece of wood is burnt in a jar of air: what chemical changes occur?

C.—BIOLOGY.

19. What purposes does breathing serve?
20. How do bones, muscles, and nerves stand related to each other?
21. What are the most striking differences between animals and plants?
22. What are the uses of the leaves of plants?
23. What are the chief differences between endogens and exogens?
24. What is the cause of the beating of the pulse?