

Practical Department.

DRAWING.

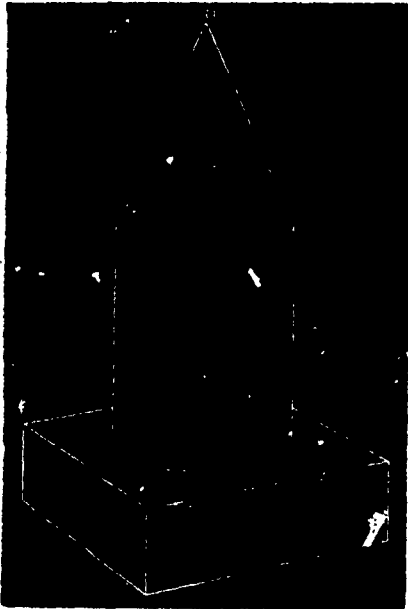
BY WILLIAM BURNS, DRAWING MASTER, HIGH SCHOOL, BRAMPTON.

(The Editor of this Department will be glad to answer questions for information addressed to him in care of the SCHOOL JOURNAL.)

IX.

The last and most important branch of our subject is the representation of the various solid forms as they appear to the eye in different positions. This involves the use of hand, eye and judgment on the part of the pupils, and is consequently taught most simply from the objects themselves. These can very readily be procured in the shape of solid wooden blocks of the various forms required, and they can also serve for "models" as well as for illustrating the lines in the mere freehand drawing. Let your first caution to your pupils be,—that only the visible lines are to be drawn in the completed copy.

1. Cube. Having procured a cubical block place it before the class, and require a statement of the 'visible' lines. One of the



simplest plans of drawing a cube is to first draw a Square; and, taking within it a point draw another square from that as a corner, equal and similarly situated to the first. If the upper face of the cube is to be visible draw second square to read below the first, if the under face of the cube is to be seen draw second square to reach above the first, if the left face is visible, let second be to the right and vice versa. Then joining the nearest corners of the squares a cube will be produced.

It will be best to practise the drawing of the cube from the pupils remembrance of the model in various positions, such as below the eye, above the eye, to the left or right of the spectator, always remembering that the three lines meeting at the unseen point must not be strengthened in.

2. A Parallelopipedon is a solid in which all the sides are rectangles—this can be drawn on exactly the same plan as the cube, bearing in mind the fact that the sides are unequal.

3. When the length is much greater than the breadth the parallelopipedon becomes a prism—although the name is more usually applied to a figure with a triangular or pentagonal end. The prism may be drawn with the axis vertical or horizontal; if this axis is at right angles to the plane of the base a right prism is obtained; if not at right angles, an oblique prism is the result.

4. When the centre of one end of a prism is taken, and this point joined to the angular points of the base, a pyramid is obtained, and can be varied in position as well as the prism.

We will next describe briefly the solids bounded by curved lines.

One of the simplest modes of describing these is by the principle of development. If a parallelogram be supposed to revolve round one of its long sides, it is evident that the resulting solid will be a cylinder; if a right angled triangle revolve on its perpendicular as axis, a cone is produced; and if a semicircle revolve on its diameter, a sphere is obtained. This can be made evident by the teacher who will take the trouble to illustrate it with pieces of paper cut into these various shapes.

5. Let the pupils notice first that the bounding lines of the curved sides of the cylinder and cone are straight lines, and that the rounded effect is in fact produced by the shade falling on this cylindrical surface. Show this by means of the shadow of the object, or placing it upon the board or paper and then outlining it. Further, the ends will appear as straight lines when at the level of the eye, as a circle varies from the straight line to the true circle in appearance, according to whether it is held in the same plane as the line of sight, or at right angles to this plane, all intermediate positions giving it the form of an ellipse, but an ellipse whose transverse axis is always the same, and equal to the diameter of the original circle, or to its size on the scale used. Let the cylinder be also drawn in various positions, as vertical, horizontal, right and oblique, as well as above or below the light of sight.

6. If the centre of the upper end be found and this joined with the ends of a diameter through the centre of the circle, that is to say, with the transverse axis of the ellipse forming the base, a cone is drawn.

7. A sphere in any position becomes to the eye a circle in outline, it can make no difference whatever whether it is above or below, to the left or right of the line of sight. The spherical appearance being (as above) produced by the shading. In these drawings it is of course obvious that we have not made any attempt to produce an ellipse perspectively correct, but merely an approximation sufficiently exact for pupils with a knowledge of free-hand only.

8. Having drawn these figures separately let them be combined into one figure by placing the cube upon a plinth—such as a book—and surmounting this with a cylinder, and this again with a prism or cube. Such exercises, varied frequently, will ensure a full knowledge of these forms, and illustrate also to the class the positions to be omitted in their completed drawings.

Educational Notes and News.

It is said that Woodstock High School wants to be raised to the standard of a Collegiate Institute.

Mr. W. S. Milner, B.A., of the Lindsay High School, has been appointed an examiner in classics in Toronto University.

Mr. Philo McLaughlin, of Granton, has been engaged by the trustees of the Byron school for next year. Mr. Patrick, the present teacher, leaves to study medicine.

On Thursday Mr. H. Kay Coleman, principal of the Peterborough public schools, handed in his resignation to the secretary of the Board of Education. Mr. Coleman tendered his resignation on receiving an offer of \$1,000 a year from the Board of Education at Port Arthur, which position, if the Board accept his resignation, he will accept. Mr. Coleman's resignation was quite unlooked for, and his many friends will regret to see him leave Peterboro'.—*Victoria Warder*.

The teachers of Acton Public School for 1886 are all engaged as follows:—First department, Mr. Thomas T. Moore, salary \$350 and free residence; second department, Miss Hattie G. Jelly, salary \$300; third department, Miss Annie Mahaffy, salary \$225; fourth department, Miss Lena Dorland, salary \$225. Miss Reid, of Erin, will take charge of Lorne School, at the New Year, salary \$350. The trustees of Lorne School received 110 applications for the position.—*Free Press*.