the principal commercial products for which it affords an outlet.

4. Sketch that part of Europe from the Straits of Dover to the Gulf of Genoa, indicating the rivers, bays, capes and cities of importance along the coast.

5. Over what railroads, across what intersecting lines of railway, and through what cities and large towns would you pass on a trip from Berlin to Amherstburg?

6. What and where are Ste. Maurice, Scugog, Rimouski, Chignecto, Pelee, Shediac, Burrard, Roanoke, Galveston and the Cyclades?

7. Locate Cape St. Lucas, Havana, Staten Island, Yapura River, Jutland, Valparaiso, the Cambrian Hills, Cape Agulhas, Scilly Islands, Table Bay, Warsaw, Baikal, Tonquin, Ormuz, Loo Choo, and Zambezi.

NATURAL PHILOSOPHY.

1. What conditions are necessary so that three forces acting on a body may maintain equilibrium?

Shew how the following forces may be arranged so as to produce equilibrium:—(i.) 4 lbs., 5 lbs. and 7 lbs. (ii.) $(\sqrt{7}+\sqrt{5})$ lbs., $(\sqrt{7}-\sqrt{5})$ lbs., and $2\sqrt{7}$ lbs. (iii.) 1 lb., 4 lbs. and $\sqrt{17}$ lbs.

2. Examine the truth of the following statement:—"If three forces acting on a body are parallel to the sides of a triangle they will keep it at rest."

A rod AC (supposed without weight) hinged at C has a weight of 200 lbs. hung at A, and is kept in position by a horizontal tie-rod AB. The angle BAC is 30°; find the tension of the tie-rod and the thrust along AC.

3. If two sides of an equilateral triangle, taken in order 8 ft. long, represent in direction and magnitude two forces acting at a point, find two equal forces, acting at an angle of 120° to each other, which will, with these forces, produce equilibrium.

4. In a system of four pulleys, each hanging by a separate string, the weight of each pulley being 1lb., find the relation between the power and the weight.

If a force of $2\frac{1}{2}$ lbs. just supports a weight of 45 lbs. in such a system, and the weight of the pulleys be equal, find the weight of each pulley.

5. If a substance be weighed in a balance having unequal arms, and in one scale appear to weigh m lbs., and in the other 4 n lbs., what is the true weight of the substance, and what is the ratio between the lengths of the arms of the balance?

6. Find the ratio of the power to the weight in the case of the inclined plane when the power acts [i.] parallel to the plane, [ii.] parallel to the base.

Shew that the power is most effective when acting parallel to the plane.

7. Define Specific Gravity, and shew how to find the specific gravity of a body lighter than water.

A piece of wood weighs 4 lbs. in air and a piece of lead weighs 5 lbs. in water. The lead and the wood together weigh 4 lbs. in water; determine the specific gravity of the wood.

8. Describe, using diagram, the structure of the Lifting Pump. What determines the height to which water may be raised by means of it?

Describe the thermometer. At what temperature will the reading of the Fahrenheit thermometer be three times as great as that of the Centigrade. Give your answer in degrees Fahrenheit.

9. A cubical block of wood whose edge is 18 inches and whose sp. gr. is .75 is placed in water and pressed by a force into such a position that its upper surface, which is horizontal, is just 1 foot below the surface of the water; find the pressure on the whole outside of the cube, and the downward force acting upon it.

EUCLID.

1. Define Right Angle, Rectilineal Figure, Scalene Triangle, Postulate, Parallel Straight Lines, Gnomon.