AN ROINN OIDEACHAIS
(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS
(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1931.

PASS.

PHYSICS.

WEDNESDAY, 17th JUNE.—AFTERNOON, 1.30 TO 3.30 P.M.

Not more than *six* questions may be attempted.

All questions are of equal value.

1. Describe with sketches three simple experiments which illustrate the linear propagation of light.

2. What do you understand by the refractive index of a medium? Describe the determination of the refractive index from air to glass.

3. A beam of light is passed through a hollow prism containing liquid and focussed on a screen. State what you would expect to see (*a*) when the liquid is carbon bi sulphide ($\mu = 1 \cdot 63$), (*b*) when the liquid is water ($\mu = 1 \cdot 33$). What differences would you observe in the two cases? Illustrate your answer by sketches.

4. Describe any method by which a body could be given an acceleration of exactly 4 feet per sec., per sec.

5. State the principle of the conservation of energy.

An inclined plane is 5 feet long and 3 feet high. A body slides on it under such conditions that it will move with uniform velocity up the plane, under the action of a force of 15 lbs. acting in that direction, and move with uniform velocity down the plane when the force is reduced to 9 lbs. Discuss these movements in the light of the above principle.

6. One gramme weight is equal to 981 dynes. Explain this statement.

Describe how to determine experimentally the relation between the mass moved and the acceleration when the force is kept constant.

7. Describe how you would locate the magnetic meridian at any point, using a horse-shoe magnet, a knitting needle and a silk fibre.

8. Describe experiments to show how the resistance of a conductor depends on its length.

9. What is the meaning of "230 volts 100 watts," marked on some electric light bulbs. If two such bulbs are connected to a 220 volt supply (*a*) in series, (*b*) in parallel, what differences would you observe? Explain your answer by calculating the current in each case.

10. Describe a secondary cell. What arrangement of secondary cells as regards number and size would you recommend for producing (*a*) a small current at a high voltage, (*b*) a large current at a low voltage. In each case assume the cells to be connected in series, and state the approximate value of the voltage you wish to produce.