4. Digestion: Explain what is meant by this term and outline the process. Clearly define the nature of the process of manufacture of a digestive fluid.

5. Show how the heart's action is suited to the exigencies of an animal's existence.

* 6. Compare digestion in a ruminant and a carnivorous animal.

7. Reduce the structure and functions of the brain to a general plan which shall be simple and comprehensive.

* 8. Show how the structure of a race-horse or greyhound meets the conditions required for speed and endurance.

9. Enumerate the functions of the posterior portion of the spinal cord of mammals and consider one of them in detail.

10. Examine briefly the entire nervous mechanism concerned in vision.

* N.B.—For students of comparative medicine only.

CHEMISTRY.

Examination for Sutherland Medal.

Examiner.....G. P. Girdwood, M.D.

1. Give a full account of Fraunhofer's lines, the manner in which they are accounted for, and the application made of them in analysis.

2. What would be the lifting power of a balloon containing 6700 litres of air heated to 300° C?

3. Describe the different kinds of electric currents; how are they obtained, and the difference of effect of each?

4. Give a short account of the chemistry of the Oxides of Chlorine and Nitrogen.

5. Compare the chemical behaviour of the different classes of Acids, Organic and Inorganic.

6. Represent by equations the action of strong Sulphuric Acid on (*a*) Carbon, (*b*) Benzol, (*c*) Potassium Ferrocyanide, (*d*) Potassium Chlorate, (*e*) a mixture of Potassium Bichromate and Ethyl Alcohol.

7. ·525 of a gramme of a dibasic organic acid gave on combustion 0·66 gramme of CO_2 and 0·225 H_2O, its silver salt yielded 50·32 per cent. of silver; give its formula and name.

8. Explain and illustrate isomerism among the hydrocarbons.

9. How would you detect small quantities of (*a*) acetone, (*b*) phenol, (*c* urea, (*d*) aniline.

10. Give an example of (*a*) a compound urea, (*b*) a mixed ether, (*c*) an isocyanide, (*d*) an acid anhydride, (*e*) a ketone, and shew how each may be made.