round the North Pole also, but less perfectly, and consequently the North Polar barometric depression, though decided, is much less than the South Polar. The reason of this difference I believe to be, that the North Polar cyclone is broken up by local air-currents due to the unequal heating of land and sea—a cause which scarcely exists in the South Polar regions, where almost all is sea or snow-covered land. JOSEPH JOHN MURPHY

"Towering" of Birds

IN connection with Mr. Romanes' valuable letter on this subject, the following note may be interesting. Rooks, I am informed, are sometimes killed by means of a paper cone containing birdlime, which is placed in a locality where these birds congregate. The rook inserts his bill and head into the cone; after a little time he rises vertically into the air and then falls dead. My informant—a traveller and sportsman of much experience—considered the upward motion to be due to the obstruction of sight, but the fact, I doubt not, will bear the same explanation as the towering in the case of a wounded grouse.

ARTHUR SUTHERLAND

IF it is of any importance to the question I may state that I have seen the following birds "tower:"—common snipe, field-fare, wood-pigeon, pheasant, partridge, common Australian duck (*Anas superciliosa*), large Australian white cockatoo, Australian Nankeen night heron, and Australian piping crow. I have shot many thousands of Australian duck, and towering has occurred among them pretty frequently. In one case, the notes of which I have, the duck began to rise almost immediately, and rose to a great height. I was indoctrinated in the cerebral injury hypothesis, but I soon found that this was untenable, for I made a habit of plucking and examining the heads of all towering birds which I could recover, and there were some among them with no wound whatever on the head. One such instance would have been sufficient to dispose of the hypothesis; but I was unable to substitute another for it. The explanation given by Mr. Romanes meets the conditions as far as they have come under my observations. A. N.

THE SOCIETY OF TELEGRAPH ENGINEERS

THE Annual General Meeting of this Society was held at The Institution of Civil Engineers, 25, Great George Street, Westminster, on the evening of Wednesday, the 13th instant.

The Report submitted by the President and Council showed that during the past year the number of Foreign Members, Members, and Associates had gone on increasing until the total of all classes now exceeded 800. Many valuable papers, it was stated, have been sent in, or promised, for discussion during the current session, almost every available evening being already taken up. The result of the ballot for the President, Vice-Presidents, and Council for the ensuing year, was announced, Prof. Abel, F.R.S., being elected President.

A *Conversazione* was held at Willis's Rooms on the evening of Monday the 19th inst., when about 600 were present. Amongst these were to be found almost all the prominent members of the telegraphic profession, as well as most of the representatives of the leading cable companies and men whose names are known in connection with electrical or telegraphic engineering. A magnificent display of apparatus had been got together, including everything in the shape of a novelty which had been introduced in connection with this branch of science during the past year. Many interesting experiments were shown, and for the more especial gratification of the non-scientific portion of the assembly, Mr. Apps and Mr. Browning of the Strand exhibited respectively their attractive vacuum tubes and microscopical objects.

Prominent amongst the features of the evening were the experiments designed and personally exhibited by Mr. Robert Sabine. These may be divided into three classes—(1) Showing the circulation of mercury under the influence of oxidation and deoxidation; (2) Measuring time to the infinitesimal portion of a second; (3) Showing the potential at various points and the speed of waves of electricity through submarine cables. Full descriptions of these experiments—now publicly shown for the first time—have been contributed by Mr. Sabine to the recent numbers of the *Philosophical Magazine*. It was on the first-named that Sir Charles Wheatstone was engaged at the time of his death in Paris, and, based upon the results which he obtained, he had constructed a form of mercury "relay" constituting one of the most delicate portions of receiving telegraphic apparatus that could possibly be devised. The duration of impact, when an anvil is smartly struck with a hammer, was measured by means of the arrangement in connection with the second series of experiments. A condenser is charged from a potential of one volt, and then discharged through a Thomson's reflecting galvanometer, the deflection on the scale being noted. The condenser is again charged; a hammer in connection with one side of it is then brought on to the anvil which is in connection with the other side; during the moment of impact partial discharge takes place, the amount of current escaping being known when that which remains is next measured through the galvanometer. All the factors being thus known, the question of the time during which the hammer and anvil were in contact becomes a matter of simple mathematical calculation. The third series, owing to the difficulty of obtaining a sufficient length of Muirhead's artificial cable, was scarcely so successful as the other two, but yet sufficient was done to show the principle involved.

Prof. Dewar's electrometer, by means of which the electromotive force of the most minute fraction of any galvanic cell may be measured, and which is based upon the oxidation and deoxidation of mercury, was also shown.

Amongst the apparatus Sir William Thomson's new form of marine compass proved to be a centre of attraction. The adjusting "spider"—the most recent addition—was absent, but yet enough was exhibited to show that the mariner might to a great extent now render himself independent of solar observations. Eight small magnetic needles are employed, and the friction of the various parts is reduced to a minimum. Two soft iron balls are placed, one on each side of the compass, and adjusting rods are employed in addition to them. The liquid gyrostat, already described in NATURE, was also amongst Sir William Thompson's collection.

Hanging around the walls of the room were carefully executed diagrams, showing what are perhaps the most valuable observations of earth-currents that have ever been made. They were exhibited and are now presented to the Society by Mr. H. Saunders, of the Eastern Telegraph Company. Availing himself of a broken cable between Suez and Aden, Mr. Saunders succeeded in obtaining simultaneous observations at both stations, and saw that they are graphically represented; the coincidence between the two is striking to a degree. It is to be hoped that so interesting a record as this may be brought prominently forward in the form of a paper, and so elicit a discussion upon a subject which, although occupying the attention of many, still remains one of the most obscure problems in connection with electrical science. Closely allied to these were the specimens of the movements of the declination and horizontal magnetic force and of the earth-currents as observed at Greenwich and sent up specially for the evening by the Astronomer-Royal. They comprised the observations for a calm and a disturbed day, and served to show very clearly the correspondence which exists between magnetic and galvanic disturbances.

A form of grapnel designed by Mr. Andrew Jamieson, assistant to Mr. Saunders, did not fail to attract considerable attention. The toes, instead of being rigid, are hinged on to a spring which yields under a pressure of two tons, and thus serves to release the toes from any rocks or foreign matter with which it may be brought into contact, whilst a hold is still retained of the cable.