Deer (between *Cervus mesopotamicus* ♂, and *Cervus dama* ♀), a Hybrid Muntjac (between *Cervulus lacrymans* ♂, and *Cervulus muntjac* ♀), born in the Gardens.

GEOGRAPHICAL NOTES

THE U.S. steamer *Corwin*, which has been searching for the missing, and we fear lost, *Jeannette*, has succeeded in reaching Wrangel Land, which has been annexed to the United States. We learn that it is probable that an international effort will be made next year to find traces of the *Jeannette;* our own Government has been moved in the matter, and may very possibly fit out a vessel for the purpose.

THE French Geographical Society has received intelligence of the assassination of a young explorer, M. Henri Dufour, by a tribe of the Ovambos, now at war with the Portuguese. M. Dufour left Omoruru in company with some merchants in December last for the purpose of exploring the basin of the River Cumene, in Eastern Africa. On arriving at this river his companions deemed it expedient to abandon the enterprise, on which M. Dufour courageously resolved to continue his course alone. No tidings of him having reached Omoruru, an inquiry was instituted, which led to the discovery of his untimely end. M. Dufour's papers and effects have been found, but his body has not yet been recovered.

THE current number of the Geographical Society's *Proceedings* is chiefly remarkable for a very long instalment of the report of papers read at the Geographical Section of the British Association, including Sir J. Hooker's address, Sir R. Temple's paper on Asia, and Sir F. J. Evans' on maritime discovery. The paper of this month's number is one by Dr. Bell, of the Geological Survey of Canada, on the commercial importance of Hudson's Bay, with remarks on recent surveys and explorations, which is accompanied by a large and carefully drawn map of the region. The most important of the geographical notes are those respecting Mr. J. M. Schuver's journey in Africa and the proposition of the British Association that the Geographical Society should undertake a scientific expedition to Kilinnandjaro and Mount Kenia, with a subsidy of one hundred pounds. Another note records the presence of the first British traveller at Hami, but seemingly his name and plans are alike a mystery.

WITH reference to the recent census of India the *Pioneer* learns that the census returns show a grand total of population for all India of 252,000,000. Figures amounting to 218,000,000 can be compared with previous censuses, and show an increase of 6·2 per cent. But in some provinces apparent large increases may be due to the inaccuracy of previous enumerations. Provincial totals are—Bengal, 68,800,000; Assam, 4,800,000; Madras, 30,800,000; Bombay, 13,900,000; ditto Native States, 6,900,000; Sind, 2,400,000; North-West Provinces, 32,600,000; ditto Native States, 700,000; Oudh, 11,400,000; British Punjab, 18,700,000; Native ditto, 3,800,000; Central Provinces, 11,500,000; Berar, 2,600,000; British Burmah, 3,700,000; Mysore, 4,100,000; Rajpootana, 11,000,000; Central India, 9,200,000; Hyderabad, 9,100,000. The total makes males 123,000,000, females 118,000,000. The provincial increases per cent. as compared with previous censuses, are as follows:—Bengal, 10; Assam, 19; Sind, 10; North-West, 6; Oudh, 1; Punjab, 7; Central Provinces, 25; Berar, 20; Burmah, 35. The decreases are—Madras, 2·4 per cent.; Bombay, ·3; Mysore, 17.

A SOMEWHAT curious boat has been built and launched at Granton, N.B., for use by the Rev. T. J. Comber, of the Baptist expedition on the Congo. With a view to its being at once portable and durable, this boat has been made of canvas, coated with a mixture of lampblack and tar, and is stretched into shape by malacca canes, while the interior consists of three movable umbrella-shaped structures, which can be tightened at will; it has a partly-covered deck, and weighs only 60 lbs.; further, it can be easily taken to pieces, so as to be carried by two persons, and by a little arrangement will form a tent.

Petermann's Mittheilungen for October is filled up with two articles—one by Mr. W. H. Dall, on the hydrology of Behring Sea and neighbouring waters, and Hofrath A. Regel's account of his expedition to Turfan in 1879.

MESSRS. BLACKWOOD have issued a tenth edition of Page's "Introductory Text-Book of Physical Geography," revised and enlarged by Prof. Lapworth, of the Mason College, Birmingham.

CAPT. POPELIN, of the Belgian station at Karema, Lake Tanganyika, whose death was lately announced, appears to have died when on his way from Ujiji to the Mampara district, in Southern Uguha.

ON SOME APPLICATIONS OF ELECTRIC ENERGY TO HORTICULTURE AND AGRICULTURE[1]

ON the 1st of March, 1880, I communicated to the Royal Society a paper "On the Influence of Electric Light upon Vegetation, &c.," in which I arrived at the conclusion that electric light was capable of producing upon plants effects comparable to those of solar radiation; that chlorophyll was produced by it, and that bloom and fruit, rich in aroma and colour, could be developed by its aid. My experiments also went to prove that plants do not as a rule require a period of rest during the twenty-four hours of the day, but make increased and vigorous progress if subjected (in winter time) to solar light during the day and to electric light during the night.

During the whole of last winter I continued my experiments on an enlarged scale, and it is my present purpose to give a short account of these experiments, and of some further applications of electric energy to farming operations (including the pumping of water, the sawing of timber, and chaff and root-cutting) at various distances, not exceeding half a mile from the source of power, giving useful employment during the daytime to the power-producing machinery, and thus reducing indirectly the cost of the light during the night-time.

The arrangement consists of a high-pressure steam-engine of 6 horse-power nominal, supplied by Messrs. Tangye Brothers, which gives motion to two dynamo-machines (Siemens D), connected separately to two electric lamps, each capable of emitting a light of about 5000 candle-power. One of these lamps was placed inside a glass house of 2318 cubic feet capacity, and the other was suspended at a height of 12 to 14 feet over some sunk greenhouses. The waste steam of the engine was condensed in a heater, whence the greenhouses take their circulating supply of hot water, thus saving the fuel that would otherwise be required to heat the stoves.

The experiments were commenced on October 23, 1880, and were continued till May 7, 1881. The general plan of operation consisted in lighting the electric lights, at first at 6 o'clock, and during the short days at 5 o'clock every evening except Sunday, continuing their action until dawn.

The outside light was protected by a clear glass lantern, whilst the light inside the house was left naked in the earlier experiments, one of my objects being to ascertain the relative effect of the light under these two conditions. The inside light was placed at one side over the entrance into the house, in front of a metallic reflector, to save the rays that would otherwise be lost to the plants within the house.

The house was planted in the first place with peas, French beans, wheat, barley, and oats, as well as with cauliflowers, strawberries, raspberries, peaches, tomatoes, vines, and a variety of flowering plants, including roses, rhododendrons, and azaleas. All these plants being of a comparatively hardy character, the temperature in this house was maintained as nearly as possible a 60° Fahr.

The early effects observed were anything but satisfactory While under the influence of the light suspended in the open air over the sunk houses the beneficial effects due to the electric light, observed during the previous winter, repeated themselves, the plants in the house with the naked electric light soon manifested a withered appearance. Was this result the effect of the naked light, or was it the effect of the chemical products—nitrogenous compounds and carbonic acid—which are produced in the electric arc?

Proceeding on the first-named assumption, and with a view of softening the ray of the electric arc, small jets of steam were introduced into the house through tubes, drawing in atmospheric air with the steam, and producing the effect of clouds interposing themselves in an irregular fashion between the light and the plants. This treatment was decidedly beneficial to the plants, although care had to be taken not to increase the amount of moisture thus intro-

[1] Paper read at the British Association by C. William Siemens, D.C.L. LL.D., F.R.S., M. Inst. C.E.