

Present Population of the Globe.—*Ergänzungsheft* No. 33 of the *Mittheilungen* is devoted to an essay by Dr. Behm, the editor of the now standard *Geographisches Jahrbuch*, and Dr. Wagner, under whose care the statistical tables of the *Almanach de Gotha* are prepared, on the changes which have taken place in territory and population throughout the globe during 1869, 1870, and 1871. The untiring labours of these gentlemen in collecting accurate statistics of these subjects from all parts of the world, and the exceeding care which has been taken in comparing and selecting them, have made Gotha the head-quarters of information in this branch of science. The summation of the many special tables for each region gives the total population of the globe at present as thirteen hundred and seventy-seven millions of souls, which must be accepted as the nearest approach yet made to the true number.

Physiology.

Physiology of the Sphincter Vesicae.—Dr. J. Kupressow, in an inaugural dissertation upon this subject in *Pflüger's Archiv*, states that his experiments have been conducted in a manner essentially similar to those of Heidenhain and Colberg, a tube being fastened into the ureter of rabbits, and water poured through it into the bladder till the pressure of the fluid overcame the resistance of the sphincter. He found that in the living rabbit the pressure required to produce a flow of water from the urethra varied from that of a column of water 36 centimetres in height to one of 58 centimetres. Sex did not appear to make any remarkable difference. After death the height of the column required to cause a flow was only from 8 to 16 centimetres. Division of the spinal cord opposite the fifth lumbar vertebra reduced the height of the column of fluid rather slowly to the latter amount, but division at the sixth reduced it immediately. Section between the first and fourth lumbar vertebra was without influence upon the height of the column. It appears clear then that the centre of innervation of the sphincter lies in the spinal cord opposite the fifth and sixth lumbar vertebrae. The question arises, what is to be included in the term Sphincter vesicae? is it to be limited to the circular fibres of the neck of the bladder, the so-called *Musculus sphincter vesicae internus* of Henle, or to the similarly running fibres which are found in the urethra, and especially in the *pars membranacea*? Kupressow's experiments have led him to the conclusion that both sets of fibres aid in effecting the closure of the bladder, though their relative importance varies with the sex of the animal; in males the circular muscular fibres of the urethra play a much more important part than in the female, for whilst in the former after slitting up the urethra the height of the expelling water column is reduced to one-half of its original amount, with females the same operation only reduces it one-fourth.

Action of Tartar Emetic in producing Vomiting.—There are two views regarding the nature of the action of this substance in producing vomiting. By some it is attributed to the action of this salt on a special nervous centre, whence proceed the impulses co-ordinating the muscles by which vomiting is effected. Others maintain that it results from the irritation of the peripheric extremities of the nerves of the stomach. Strong evidence in favour of this is afforded by the fact stated by Grimm, and recently substantiated by Kleimann and Simonowitsch (*Pflüger's Archiv*, p. 281), that a solution of tartar emetic acts more rapidly and energetically when introduced into the stomach than when injected into the veins. The following is one of their experiments. About two-thirds of a grain of tartarised antimony was injected into the stomach of a middle-sized dog; vomiting occurred in fifteen minutes. Two hours later half a grain more was given, and vomiting again occurred in two hours. On the following day half a grain was injected into the jugular vein, which caused no vomiting. Three days later a grain and a half was injected into the vein at 11 A.M.; vomiting occurred, but not until the evening. Analysis showed moreover that, after injection into the veins, tartarised antimony made its appearance in the first matters that were ejected from the stomach. The authors do not find any real opposition to their views in the fact that efforts at vomiting will still occur after the stomach has been excised from the body altogether, since there may still be nerve terminations in the oesophagus and intestines which occasion efforts at vomiting when irritated by tartar emetic.

Effects of Compressed Air.—At the Séance of the Académie des Sciences held 1st July, M. Bert communicated the results of his investigations regarding the influence of pressure upon animals. He has arrived at the conclusion that pressure is injurious, not *per se*, but because it leads to an increase or accumulation of the quantity of oxygen in the blood, consequent upon the respiration of the compressed air. He recommends therefore as likely to prove of use an artificial modification in the composition of the air supplied to divers.

Zoology.

The Sumatran Rhinoceros in London.—We learn with regret that one of the two-horned rhinoceroses in the possession of the Zoological Society of London died about a fortnight ago. One was

captured at Chittagong, and the other, which is dead, in Malacca, both being thought at one time to belong to the Sumatran species described by Bell in the *Philos. Transactions* of 1793 under the name of *Rhinoceros sumatrensis*. When the two animals were compared side by side, no doubt could be entertained of their specific distinctness, and, consequently, Mr. Sclater, the secretary of the society, named the grey-coloured Chittagong specimen *Rhinoceros lasiotis* (the animal having a fringe of long hairs round the ears), retaining Bell's denomination for the black Malacca animal. Dr. Gray, after an examination of the published accounts of these animals, came to a different conclusion, viz. that the Chittagong specimen was the true *Rhinoceros sumatrensis*, and the other was most probably the animal to which the horn should be assigned, named by him, many years ago, *Rhinoceros crossii*. A third and different view is taken by Mr. Blyth, who points out that neither of the two examples can be referred with certainty to the Sumatran type; that the Chittagong animal is probably Gray's *Rhinoceros crossii*, and the Malacca animal a new species. It is not very likely that with the scanty materials in London the question will or can be satisfactorily settled at present, still it is not unimportant to have it finally solved. Abstractly from the point of view that we should ascertain as soon as possible everything respecting the big land creatures of the present period, a correct knowledge of them would prove of the greatest assistance in understanding the remains of their extinct congeners. Only a short time since the existence of a greater number of species than that generally adopted by zoologists was maintained by Dr. Gray, on apparently dubious osteological evidence, though this idea was entertained by very few zoologists, and ridiculed by others. Now it seems that of the type of two-horned Asiatic rhinoceroses, two months ago believed to be represented by a single species, three different kinds exist, and possibly four, if the Bornean rhinoceros, known by hearsay only, should prove to be distinct.

Picus leucocotus in Great Britain.—In the years 1861 and 1868 large flocks of a spotted woodpecker appeared in various parts of the Shetland Islands. They appear to have come from a considerable distance, and alighting in a locality ill adapted to their natural habits, they were compelled to seek their food along the shore; one specimen, on dissection, was found to have earthworms in its stomach. At first the birds were taken for the greater spotted woodpecker (*Picus major*) which had wandered from some other part of Great Britain; and in the account of this species the fact has already been recorded by Messrs. Sharpe and Dresser (*Birds of Europe*, vol. i.). Mr. Gould, however, who has obtained an example, is of the opinion that it is *Picus leucocotus*, a species whose home is Scandinavia and the North of Europe generally. If Mr. Gould's view be correct, and we have no doubt it is, these birds have immigrated, probably from Norway; and the white-backed woodpecker must now be added to the British Fauna.

Vanessa antiopea in Great Britain.—Nearly two hundred reports have been received from all parts of the country of the appearance of the rare and beautiful butterfly commonly known by the name of the "Camberwell Beauty." Entomologists are not agreed whether the specimens are genuine natives, or imported, or immigrants from the continent; some observers believe they have observed the recurrence of this species every seventh year. It has also been remarked that nearly all the specimens taken in Great Britain differ, to a perceptible extent, in colouring from the continental type, the border being creamy-white instead of buff-coloured. No conclusion regarding their origin, however, can be drawn from this circumstance, inasmuch as it is the general opinion of continental collectors that the buff or yellow border of the wing is the sexual characteristic of the male, while in the females this part is of a white colour. Nothing would be easier than for some person to introduce large numbers of this butterfly, as the caterpillar is gregarious, feeding on the willow; still the facts of the insect in the perfect state having been found in many districts, from the Channel Islands to Aberdeen, and that not a single instance of its having been discovered in the larval state is recorded, favour the opinion that this is a case of spontaneous immigration.

Maderian Spiders.—Mr. F. Pollock has published some observations on Maderian spiders in the *Ann. and Mag. Nat. Hist.* for the present month. Although the islands of Madeira, Porto Santo, and Deserta Grande, lie within a range of about fifty miles, each has its own peculiar spider of the genus *Lycosa*; and it is a remarkable fact that these spiders vary in size inversely with the magnitude of the island in which they are found—Madeira, the largest island, having the smallest species, and Deserta Grande, the smallest island, being inhabited by the largest (*Lycosa ingens*). The latter species is able to prey on lizards three inches long, which it devours, head, bones, claws, and all, the only remnant of the feast being a small ball, about $\frac{1}{4}$ of an inch in diameter, which is cast aside at the bottom of the cage.

Tortoises, Terrapins, and Turtles, drawn from Life. By James de Carle Sowerby and Edward Lear.—This work contains sixty coloured lithographic plates, representing thirty-six species, drawn from living examples. They have been prepared under the superintendence of Mr. Th. Bell, to illustrate his *Monograph of the Testudinata*, a work the