

BLACKSMITH'S MEASURING WHEEL.

Mr. Thomas R. Way, of Springfield, Ohio, is the inventor of the device herewith illustrated, for measuring the circumference of wheels and the length of the iron from which tyres therefor are to be made. The peculiarity of the apparatus consists in an extra pointer pivoted to the hand which indicates the wheel measure, for the purpose of deducting from the latter the amount to be allowed for expansion of the metal.

The wheel shown revolves freely on its axle, to which, however, the hand, A, is rigidly affixed. The pointer, B, is secured to the hand, A, by a screw, as shown in Fig. 2, so that its end may be set at any desired distance from that of its support. The device is applied and carried around the wheel to be measured, as represented in Fig. 1, where the hand, A, indicates the length of circumference passed over. The pointer, B, is then fastened with its end at a distance to one side of the hand equal to the amount of expansion of the iron. The apparatus is afterward carried over the tyre, which is cut at the point indicated by B.

The invention may also be employed by cooper for measuring hoops, in which case the extra pointer may be used to indicate the allowance for lap.

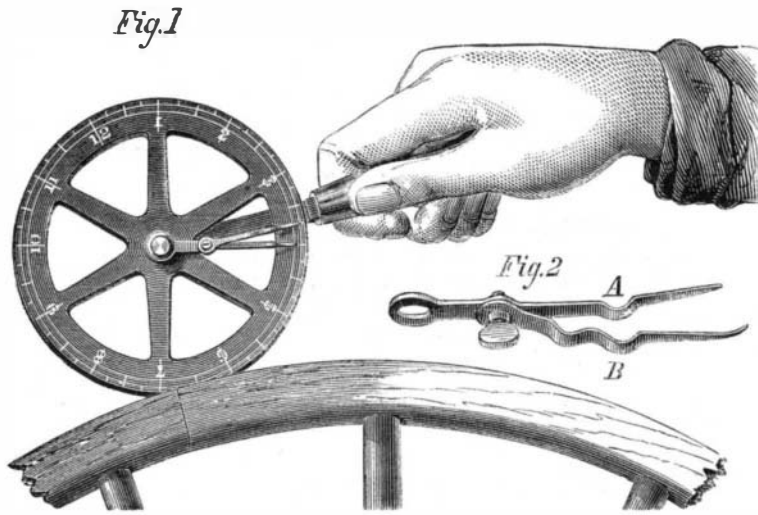
The Novel Steamer.

The saloon steamship designed by Mr. Bessemer, to make sea sickness impossible, is well under way at Hull, England. The framing is nearly complete, and a good part of the outer plating has been put on. The steamer is 350 feet long, 40 feet broad inside of her paddle boxes, and of 2,774 tons burthen. She will be driven by two sets of paddlewheel engines, acting upon a double set of paddlewheels, situated 100 feet apart, the aggregate power of the engines being no less than 4,600 horse power. The two ends of the ship are alike, and each will be furnished with a rudder. Her most characteristic feature is her saloon, which will be 70 feet long and 30 feet wide, and suspended upon massive pivots at the center and at the extremities. Thus supported, it will be brought under the control of powerful hydraulic gear, worked by the principal boilers of the ship. This gear will be so arranged that it is expected a man will be able to impart to the saloon a rolling motion in relation to the ship precisely the reverse of that which the ship herself receives. The engines, it is anticipated, will drive the vessel at a speed exceeding 20 miles an hour.

THE BLACK NECKED SWAN.

The swan, in one or another of its numerous varieties, is aboriginal in all parts of the globe. A large number are to be found in our beautiful Central Park. The proud and

placid white swan is probably the best known of all the species, and is certainly, when on the water, one of the most beautiful of birds. Virgil cited the black swan as a *rara avis*, and as the black variety is indigenous to Australia only, the Mantuan poet's acquaintance with it must have been ra-



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thermythical. The black necked swan (*cygnus nigricollis*), of which we present an illustration, is a native of South America, and it rivals the European white bird in the color of its body and wings, while its neck and head are of a splendid black color. In the red color of its bill it also resembles the white swan. A pair of these birds were taken to England and placed in the zoological garden of the late Earl Derby, at Knowsley, near Liverpool; and when the collection was dispersed, at Earl Derby's death, the Zoological Society, of London, became the possessors. Specimens of the variety are also to be found in the gardens at Amsterdam and Cologne.

As shown in our engraving, the young birds are singularly undeveloped, their necks being especially at variance with those of the grown birds. But time adds to them not only their singularly graceful form and beautiful plumage, but also the prodigious strength for which the whole species is remarkable, instances being on record wherein men's limbs have been broken by the blows of the wings of infuriated swans, whose pugnacity at breeding time is notorious. The females lay from five to eight eggs, the period of incubation being six weeks.

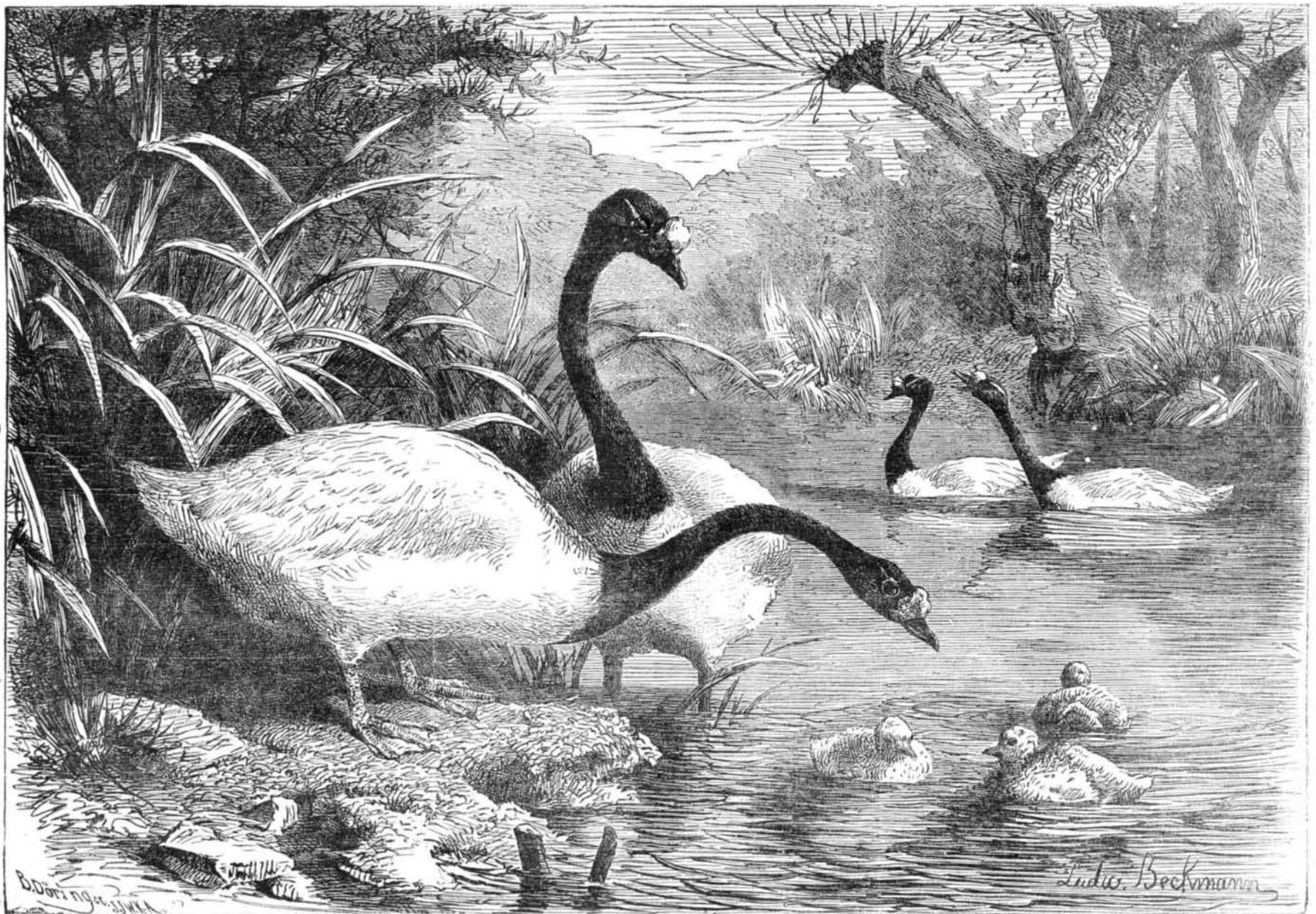
The Year's Business at the Patent Office.

A statement prepared by the Commissioner of Patents for the coming report of the Secretary of the Interior shows that, during the year ending September 30, 1873, there were

filed in the Patent Office 20,354 applications for patents, including reissues and designs; 283 applications for the extension of patents, and 519 applications for the registering of trade marks. Twelve thousand nine hundred and seventeen patents, including reissues and designs, were issued; 235 extended, and 955 allowed, but not issued by reason of non-payment of the final fee; 3,274 caveats were filed, and 476 trade marks registered. The fees received during the same period from all sources amounted to \$701,626.72, and the total expenditure to \$699,449.69, making the receipts \$2,177 in excess of the expenditures. The appropriation asked for the fiscal year ending June 30, 1875, is \$693,500. The expenditures included \$40,000 for the publication of the *Official Gazette*, \$40,000 for printing current drawings, and \$60,000 for the reproduction of old drawings. These items were unusual, and account for the absorption of most of the customary excess of receipts over expenditures. The cost of printing current drawings has heretofore been defrayed out of the government printing-office appropriations. In regard to the reproduction of old drawings, the Commissioner considers the amount expended for that purpose a good investment, not only with reference to the intelligent advancement of the manufacturing interests of the country, but financially, as they are now being sold at two or three times their actual cost. The Commissioner again invites earnest attention to the great want of additional room for the proper transaction of the business of the Office, stating that is utterly impossible to properly classify the work of the Office, in order to insure its being economically and well done, in the present crowded state of the files, records, and exhibits.

Effect of Artificial Addition of Phosphates to the Food of Lambs.

V. Hofmeister states that two lots, each consisting of three eight weeks old wether lambs, were fed from May to December on hay and potatoes, with a little salt, this diet being selected as characteristically poor in phosphates. One lot received precipitated tricalcic phosphate with its food, the other lot none. During the last 77 days most phosphate was given, the phosphatic diet then containing one fourth more phosphate than was supplied by the vegetable food. The lambs gained about 18 lbs. per head in the six months. Those receiving phosphate showed a distinctly better appetite and drank more water than the others, but their greater increase in weight was insignificant. When slaughtered the only difference between the two lots was a slightly larger weight of stomach, intestines, and lungs, in the case of the lambs receiving phosphate. Five bones of two lambs in each lot were carefully examined. The fresh bones of the



SOUTH AMERICAN BLACK NECKED SWANS.