

LYNX IN THE BERLIN ZOOLOGICAL GARDEN.

The Egyptian lynx (*Lynx chaus*) in the Berlin Zoological Garden, from which the accompanying illustration was drawn, is about the size of a wildcat. The color of its rich fur is pale gray, with a shimmer of brown, but without any decided ground color; the cause of this peculiarity being the marking of the separate hairs, which are yellow at the root, have a black ring in the middle and have white, gray or black tips. His head is like that of a large cat, and his ears, which are grayish yellow on the outside and reddish on the inside, bear the characteristic mark of the lynx, little brush-shaped tufts of hair; the jaw and teeth are very strong.

The *Lynx chaus* inhabits most parts of Africa and Southern and Western Asia, but is found chiefly in the countries bordering the Caspian Sea, Persia, Syria, Nubia, and Egypt; in the last of which it is often hunted. Modern explorers and tourists in Egypt seldom miss a hunt for this game. The lynx is one of the animals which, thousands of years ago, were embalmed and buried in sacred places by the Egyptians. Brehm writes of the swamp lynx: "He is no rarity in Egypt, but is not often seen. In those countries there are no large forests in which a beast of prey can conceal himself, and therefore it is necessary for him to find other hiding places. The hyena usually has its den in the clefts of the wilderness, but often lives for a long time in a reed bed, the jackal and fox hide in reed grass or grain, and the lynx also lives quietly in similar places. His favorite haunts are the Nile-watered grain fields, but he also inhabits the great plains, which are more or less thickly covered with tall, sharp reed grass (*Poa cynosuroides*). Like all wild cats, the lynx creates great havoc among the birds; he also catches rats, mice, and young hares, but his principal food consists of the members of the feathered world, which he kills without regard to the beauty of their plumage, or other good qualities. He creeps noiselessly upon his prey, and often springs into the air to catch it. He steals doves and fowls from farmyards and, consequently, is feared and hated by the fellahs. Young lynxes have been tamed.—*Illustrirte Zeitung*.



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There are four independent foundations, each standing at one angle of a square, about 330 feet on a side; the two piers nearest the Seine were known as numbers 1 and 4, those adjoining the Champ de Mars as 2 and 3. On the site of the two foundations 2 and 3, the bed of gravel was met with 23 ft. below the surface; the thickness at this point is about 18 ft. The conditions for obtaining a good foundation were therefore extremely favorable, and the piers were built upon a bed of cement concrete 7 ft. in thickness. The two piers nearest the Seine required different treatment. The bed of sand and gravel was only met with about 40 ft. below the surface, that is to say, about 16 ft. lower than the mean water level of the Seine, and it was overlaid by soft and permeable deposits. Excavations were pushed, by means of caissons and compressed air, to a depth of about 52 ft. below the surface, and it was found that, under the gravel, variable deposits of fine sand, formed of limestone and sandstone, had accumulated, having been left there by the water after the clay had been washed out in hollows by the stream. Owing to this there existed a good and incompressible bed about 10 ft. thick under the western pier on the Grenelle side, and nearly 20 ft. thick under the north pier on the Paris side. Apart,

the effect of lightning by means of cast iron pipes, 19 inches in diameter, and passing through the water-bearing strata below the level of the Seine for a distance of 60 feet. At one end these pipes are turned vertically, and are connected with the ironwork of the tower. There are eight pipes in all, two for each column.

The total weight of wrought and cast iron that has been used in this unique structure is 7,300 tons, not including the weight of the caissons employed in the foundations nor the machinery installed for working the elevators.

No doubt during the period that the exhibition is kept open the ample facilities thus provided for the public will not be found excessive, but it is scarcely reasonable to suppose that after all the buildings on the Champ de Mars have been swept away, and the vast column alone remains to suggest the glories of the departed centennial celebration, great numbers of visitors will go so far out of Paris as the Champ de Mars to enjoy a sensation which by that time will have ceased to be novel. It is to be hoped that, by the time the exhibition closes, the enterprising syndicate which has acquired the Eiffel Tower will find themselves repaid to a large extent. Otherwise there is reason

to fear that their speculation may not turn out profitable, and that their twenty years' concession will scarcely suffice to make their speculation a satisfactory one.

But of course the tower has other uses than that of money making, some uses which are now apparent, and others which the existence of the structure will suggest as time goes on.

We may conclude this notice with a few miscellaneous particulars of this interesting work. The total weight of iron employed in the structure itself is 7,300 tons. The weight of rivets is 450 tons, and their total number 2,500,000. Of this quantity 800,000 were riveted up by hand on the tower itself, during the work of fixing together the finished pieces which had been completed at M. Eiffel's establishment at Levallois-Perret, and which were delivered on the Champ de Mars ready for erection. The number

THE EIFFEL TOWER.

We give herewith an engraving of this great work, for which we are indebted to *L'Illustration*, and from *Engineering* we gather the following particulars:

The Eiffel Tower is the natural development of the class of work upon which its constructor has been occupied for so many years; it was the direct outcome of a series of investigations undertaken by M. Eiffel in 1885, with a view of ascertaining the extreme limits to which the metallic piers of viaducts could be pushed with safety, this special line of investigation having reference to a proposed bridge with piers 400 ft. in height and 140 ft. of base. The idea of the great tower followed, preliminary plans were prepared, and calculations made by two of M. Eiffel's principal engineers, MM. Nougier and Koechlin, and by M. Sauvestre, architect. Naturally the leading principle followed was that adopted by M. Eiffel in all his lofty structures, namely, to give to the angles of the tower such a curve that it should be capable of resisting the transverse effects of wind pressures without necessitating the connection of the members forming these angles, by diagonal bracing. The Eiffel Tower, therefore, consists essentially of a pyramid composed of four great curved columns, independent of each other, and connected together only by belts of girders at the different stories, until the columns unite toward the top of the tower, where they are connected by ordinary bracing. Iron, and not steel, was used in the construction throughout.

therefore, from the difficulties in sinking for the foundations, the conditions were very satisfactory. The mode of sinking adopted was that of compressed air, with iron caissons 49 ft. 2 in. long by 19 ft. 8 in. wide; four such caissons were required for each pier, and they were sunk to a depth of 40 ft. below the surface, or 16 ft. lower than the Seine mean water level.

The tower terminates at a height of 896 feet above the ground, with a platform about 53 feet square. The width of the column at this level is 33 feet, the gallery being carried by brackets which are sufficiently wide to afford a considerable area of platform. It is almost unnecessary to state that this space is securely protected by a railing and glass to prevent any voluntary or involuntary catastrophe. Above the platform rises the campanile, which is of the design shown; in the lower part of this is established a spacious and very completely fitted laboratory, closed to the public and intended for the prosecution of scientific research and observation. Four latticed arched girders rise diagonally from each corner of the lower part of the campanile and unite at a height of about 54 feet above the platform. By means of a spiral staircase yet another gallery is reached, about 19 feet in diameter, and surrounding the lantern which crowns the edifice and brings the height of the structure to 984 feet. Above this rises the great lightning conductor. Within the lantern, which is 22 feet high, will be placed a very powerful electric light, placed within a lantern of the first order, and projecting white, blue, and red beams. Reflectors will throw these beams over Paris, and will help to illuminate the Champ de Mars.

Provision is made for protecting the structure from

of pieces of iron of different forms is 12,000, and each of these required a special drawing; there were thus no less than 12,000 working drawings sent into the workshop, to say nothing of the innumerable sketches and plans prepared before the final details were decided upon. The total thrust upon the foundations is 565 tons, not including the effect of wind, and 875 tons under a maximum wind pressure. The tower is painted of a rich chocolate color, the tone of which is lightened from the base toward the summit. The painting, which was of itself a considerable work, is very effective, especially when lighted by the sun. But little decoration has been attempted; it would have been wasted labor and expense. The level of the first story is marked by a bold frieze, on the panels of which, around all four faces of the tower, are inscribed in gigantic letters of gold the names of the famous Frenchmen of the century who have most contributed to the advancement of science.

"It is as if it were under their patronage that this monument is erected, and the constructor has desired to consecrate to them the place of honor, and upon it to write their names in letters of gold, as an evidence of public recognition, and as of homage paid to their efforts, without which such an enterprise could never have been attempted."

Above this frieze the four-sided arcade, covering the exterior gallery, is elaborately decorated, and considerable exception has been taken to this feature as mar- rying the bold and graceful outline of the tower. A similar arcade encircles the tower at the level of the second story, and the same objection may be raised with regard to it, but with less force, because the great height