

THE JAPANESE GOAT ANTELOPE.

Some interesting additions have recently been made to the series of ruminants in the Zoological Gardens, London. There is a specimen of the Japanese antelope, of which we give an illustration. This animal is new to the society's collection, nor has it previously been exhibited in any of the continental gardens, so far as we know.

The Japanese goat antelope (*Capricornus crispus*) is, as its name imports, a native of the Japanese empire, where it is said to be very rare, being only found in the higher mountains of the interior of the islands of Nippon and Sikok. It was first described by Siebold in his well known work "The Fauna Japonica," from two examples in the Leyden Museum. Siebold tells us that its Japanese native name is "nik," but he gives us scarcely any other details respecting this animal. The engraving represents a young male, with his horns growing.

A New Fish.

Professor Baird has forwarded, through Dr. Tarleton H. Bean, now at Gloucester, to Mr. E. G. Blackford, Commissioner of Fisheries, an entirely new fish, which, aside from representing a novel genus, may have a decided commercial value. The first one seen was caught by Capt. W. H. Kirby, of Gloucester. It represents the new genus *Lopholatilus*, one having the general appearance of *Latilus*, but with the addition of anuchal crest and labial appendages. It has received the name of leopard fish, on account of its spots. The fish were caught 50 miles south by east of Noman's Land, in 75 fathoms of water, while trying for cod and with cod bait. The fish seemed very abundant. A few weeks ago the presence of these fish was totally unheard of. Dr. Bean writes: "The type is in the National Museum, but now we have eight to bear it company." Examining the fish at Mr. Blackford's, it was found to have some very peculiar traits. What was strange was to see an adipose fin like that on the salmon, only that this fin, instead of being near the tail, was on top of the head. The dorsal extended from about two thirds of the fish to the caudal. Below, under the belly, the fin was continuous. The head had no semblance to a cod. The teeth were fairly well developed and sharp. In color it was yellow, with spots. Those who have eaten the leopard fish declare it to be excellent. The fish was about 28 inches long, and would weigh, perhaps, about the same as a cod of the same size.

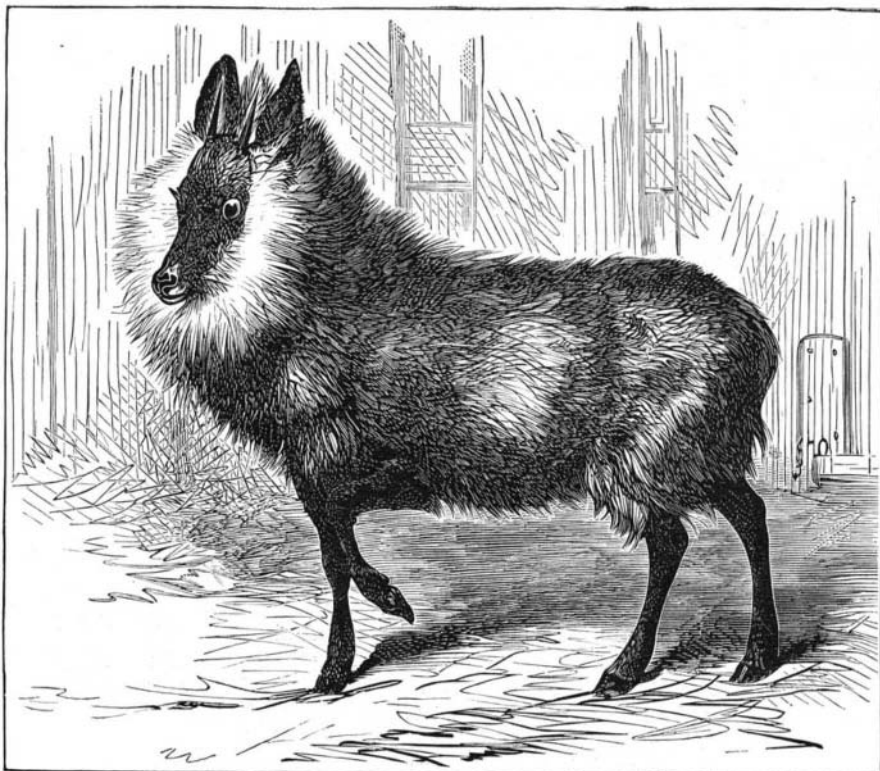
GIANT TREE.

The colossal pao d'arco, or bow wood (*Tecoma speciosa*), and macaranduba (*Mimusops elata*), abound in the virgin forests north of Rio; the timber of both is exceedingly hard and extensively used in carpentry and cabinetmaking. From the latter is extracted, by incision, a whitish, sweet, savory fluid, commonly used while in a liquid state as milk, in tea and coffee; after some hours it coagulates, forming a white elastic mass resembling India-rubber. The bark is very rich in tannin, and is much used in dyeing. The total height of these trees, stem and crown, may be estimated at from 180 to 200 feet; the vast dome of their foliage rises above other forest trees, as does that of a cathedral above other buildings in a city. Logs 100 feet long, squared, from these trees, are not uncommon at the sawmills near Bellem. The growth of the buttress-shaped projections around the lower part of the stems, not only of the trees just mentioned, but of all of the larger trees, is a remarkable feature of the forest; the buttresses, generally thin walls of wood, form spacious stall-like compartments, often capable of holding a half dozen persons, and serve as props to the enormous stems.

Economical Use of Coal.

The success of most manufacturing processes depends to a great extent on the economical use of the fuel employed. It is painful to contemplate the enormous waste of fuel which often occurs, and it is not surprising to find that many minds have been busy in endeavoring to arrange a form of furnace which shall generate and utilize a maximum of heat from a minimum of fuel. Recent inventions, says the *Brewers' Guardian*, seem to indicate that we shall, before long, have practical methods contrived for the conversion of coal into gas before it is used for heating purposes; by taking a given weight of

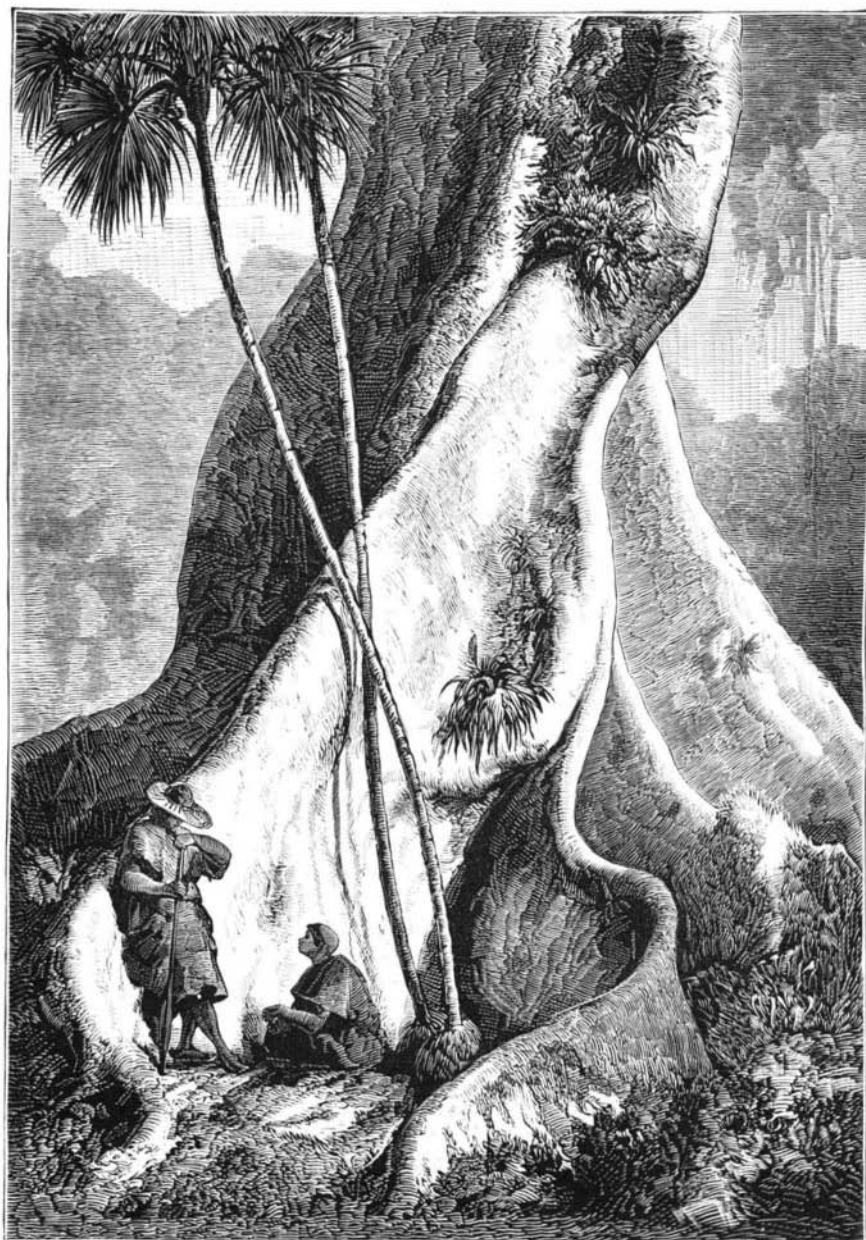
coal and distilling it, and thus separating the solid and gaseous constituents, we undoubtedly effect an economy; the difficulty hitherto has been, and now is, to effect this separation in a practical manner. The very general use of the modern gas engines is evident that coal gas is becoming recognized as an economical fuel; but the man who first invents a practical method of burning coal, so that it is first converted into its solid and gaseous constituents, which are subsequently in



THE JAPANESE GOAT ANTELOPE.

the same furnace burnt so as to develop the greatest amount of heat, will realize for himself an enormous pecuniary recompense, and will do a great service to mankind at large.

The digging of the canal from Cronstadt to St. Petersburg is progressing so rapidly that Admiral Possiett, who directs the work, has assured the Russian government that vessels of light draught will be able to reach the capital by next summer. Its depth will be 20 feet.



ROOT OF A GIANT TREE.

NATURAL HISTORY NOTES.

The Annual Rings of Trees.—Does a single zone of wood invariably indicate the entire annual growth of a tree? This is a question that has not as yet been satisfactorily answered. Generally speaking the number of concentric rings present in a cross section of a trunk will afford a tolerably correct idea of the age of that particular part of the trunk from which the section is taken. To obtain as nearly as possible the age of a tree the section must, of course, be taken from the base of the trunk. It is not easy, however, to prove whether two or more rings are sometimes formed in the trunk of a tree in one year, because it would be necessary to know beforehand the exact age of the tree, and cut the tree down to determine the point. Several writers have given it as their opinion that two rings are occasionally formed in one year, caused by an interruption and resumption of growth. Some of them agree that when there are two rings formed in one season they are not so sharply defined as when there is only one in each season. Last season Mr. L. Kny made some observations and experiments in England with a view of obtaining some more satisfactory and positive results than previous writers had placed on record. At the end of June he completely stripped a number of young trees of their leaves, thinking he would be able to determine the point from their autumn shoot; but being in a nursery quarter they made too little growth for the purpose. But nature herself gave him the best opportunity. The caterpillars of *Lymantria dispar* stripped a large number of trees of their foliage about the same time, and many of them made strong autumn shoots, so that Mr. Kny was able to determine that, in some instances at least, a second distinct ring is formed in one summer; and these rings are as sharply defined and as distinct from each other as the autumn growth one year's ring and the spring growth of a succeeding year's ring. On the other hand, he observed a noteworthy difference in the degree of distinctness in different species of trees, and in the same tree at different heights, and even in the same internode. Moreover, there was a difference in the degree of distinctness of the two rings on the upper and under sides of the horizontal branches of the lime (*Tilia parvifolia*). Respecting the degree of distinctness at different heights, it was ascertained in the branches examined that there was a gradual decrease in distinctness from the younger to the older internodes, until all traces of a second ring seem to disappear. But there is this limitation to it: the two rings are not most distinctly separated in the uppermost internode, but in the second or third from the top. These investigations, as far as they go, seem to show that summer interruptions of growth are too brief to affect the whole system of a large tree, consequently the number of concentric rings of wood in the trunk of a tree represent very closely the actual age of the tree.

The Consciousness of Pain in Inferior Animals.—Professor T. Rymer Jones, in writing of crustaceans, takes occasion to make the following remarks in regard to the susceptibility to pain of these and other animals. Is it really true in philosophy, says he, as it has become a standing axiom in poetry, that—

"The poor beetle, that we tread upon,
In corporal sufferance feels a pang as great
As when a giant dies?"

This is a question upon which modern discoveries in science entitle us to offer an opinion, and the result of the investigation would seem to afford more enlarged views relative to the beneficence displayed in the construction of animals than the assertion of the poet would lead us to anticipate.

Pain, "Nature's kind harbinger of mischief," is only inflicted for wise and important purposes—either to give warning of the existence of disease, or as a powerful stimulus prompting to escape from danger. Acute perceptions of pain could scarcely, therefore, be supposed to exist in animals deprived of all power of remedying the one or of avoiding the other. In man the power of feeling pain is indubitably placed exclusively in the brain; and if communication be cut off between this organ and any part of the body, pain is no longer felt, whatever mutilations may be inflicted. The *medulla spinalis*, which corresponds to the ventral chain of ganglia in articulated animals, can perceive ex-