

THE FOX KUSU AT THE BERLIN AQUARIUM.

The whole group of animals of the order of Marsupialia derive their names, as is well known, from a pouch situated in the lower part of the abdomen, a broad fold of skin, which is of the greatest importance for the existence and subsistence of the young of these animals.

The pouched animals are born naked, blind, deaf, and with stumpy legs, and are so helpless that it is impossible, even with the greatest care, to bring up the little creatures artificially.

It was a puzzle for a long time how the young were placed in the pouch, but it has been found that the mother takes the little ones up with her mouth, as a cat does her kittens, and places them in the protecting covering. In this pouch are the nipples, which the little imperfect animal would not be able to find if the mother did not immediately press them to it.

The little animal remains in this pouch for several months developing, and finally reaches out its head to look around the world.

Many weeks pass before it ventures to forsake its warm, well furnished little house. Finally it takes the great step, and moves about for the first time in the open air, but at the

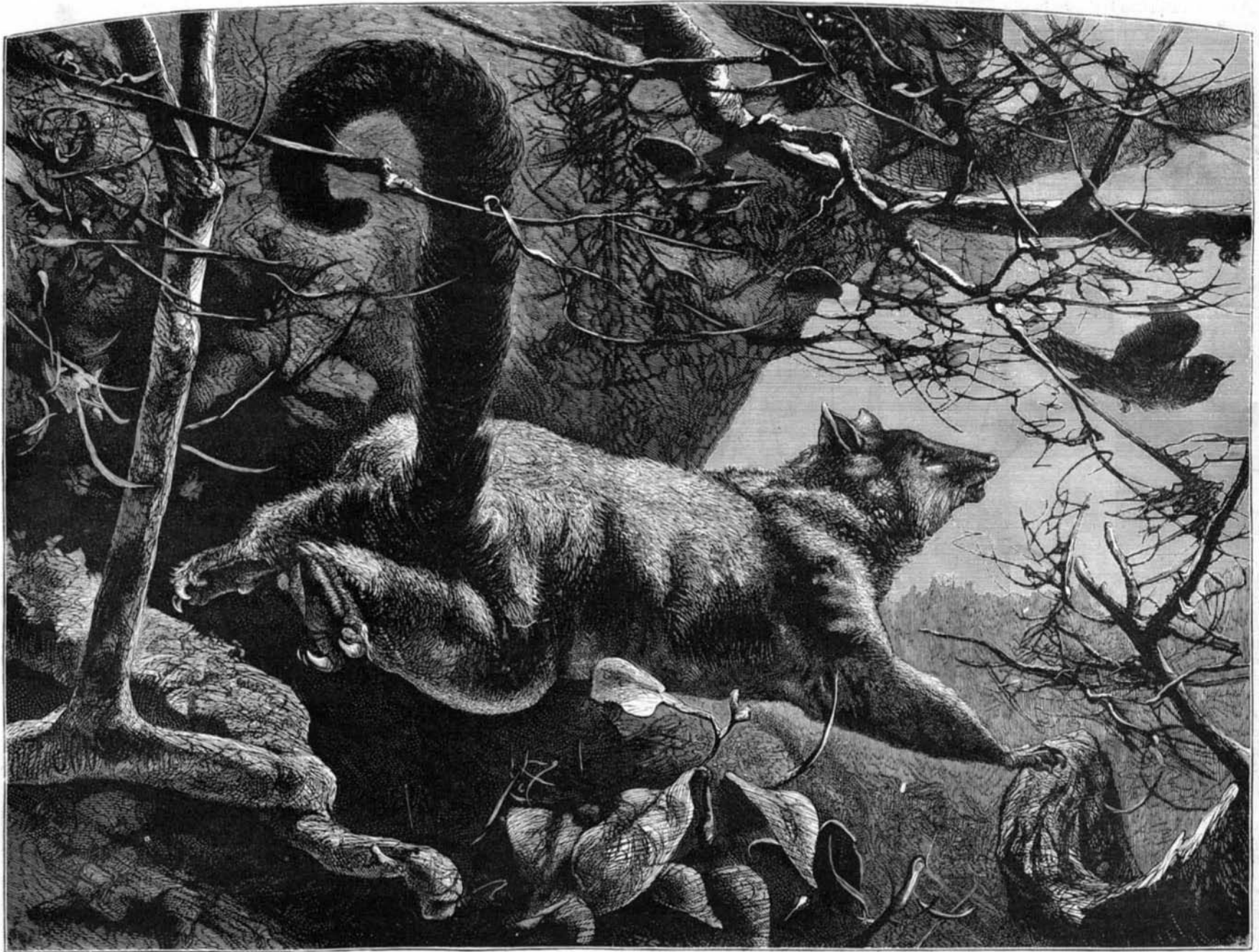
The kusu of the Berlin Aquarium was soon tamed, is always peaceable and gentle; but it is difficult to decide whether its amiability does not proceed from stupidity.

Habits of Field Crickets.

One morning after a rainy night, as I was passing along the highway, I noticed one of our common field crickets working at a kernel of corn that had dropped from some farmer's wagon while on the way to market. The rain had softened the grain; and after watching the insect some time, I found it was eating the germ of the softened kernel; I watched patiently until the cricket seemed to have satisfied its hunger, and found the germ had all been eaten away. Early in the fall I found them in cornfields eating the crowns of kernels or ears that had blown to the ground, something I had always before attributed to mice.

The same insect has annoyed farmers considerably in another manner. Much of the harvesting is done with self-binding harvesting machines, using cord for binding. Judge of the surprise and chagrin of the farmer when on drawing in his stacks of grain, to find instead of compact bound sheaves only a mass of unbound grain, the bands of cord

than the acid itself. The apparatus required consists only of a wooden cask, which is to be filled with the weak ammoniacal liquor from a small gas works, or with liquid manure. A definite quantity of the reagent is added, and the mixture is allowed to stand for half a day, when the ammonia will be found completely fixed. The sesquicarbonate and hydrosulphite of ammonia contained in liquid manures, when they come into contact with sulphate of alumina, are brought to the state of soluble sulphate of ammonia, while the hydrate of alumina precipitates, and carries down with it all the impurities of the liquid. During the operation carbonic acid and sulphureted hydrogen are, of course, disengaged in considerable quantity, mixed with other gases, which render it advisable that the vessel should be well sealed, and provided with an oxide of iron purifying shelf, whenever the process is carried on near inhabited buildings. After standing for some hours the supernatant fluid containing the ammonia may be decanted without disturbing the precipitate, as the density of the latter continually increases. When it is intended to prepare hydrochlorate of ammonia there is used as a reagent a double chloride of calcium and iron. This salt is very simply obtained by treating powdered alum in a flask containing hydrochloric acid. At the end of



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least noise it returns in haste to its mother's pouch, from which it again looks forth when the imaginary danger is past.

The fox kusu (*Phalangista vulpina*) is a climbing pouched animal, and resembles the squirrel. The length of the body is 60 centimeters, of the tail 40 centimeters. The color of the upper side is brownish gray, with markings of pale red; the under side is yellow, the back and tail black. The tail is used for grasping and holding firmly to objects, and appears to be an indispensable organ.

It climbs and leaps like the squirrel, but the squirrel far surpasses it in intelligence. Like most of the representatives of this order, the fox kusu shows a certain want of mental capacity; this is evident in its motions and in its capture by day. If it is pursued it soon gives up the flight and hangs with its tail to a branch, from which it may be easily taken. It has been ascertained that the continual gaze of the hunter wears the animal, and in a measure blinds and bewilders it, so that it finally falls down helpless.

The fox kusu inhabits Australia and Tasmania, lives in the forests, and leads a nocturnal life. Its nourishment consists mainly of vegetables, but it likes eggs and young birds.

It is much hunted by the natives for its flesh, which is repulsive to others. The skin is of some value, and is sometimes seen in the market.

having been cut in many places by the crickets. Also I noticed numbers of our common black blister beetle (*Epicauta pennsylvanica*) denuding the ears of corn of the silk before the kernel had been fecundated, thereby either partially or wholly destroying the ear. I have also found *Diabrotica fossata*, Lec., which usually feeds upon the pollen of the flowers of the compositæ, varying its bill of fare by eating the pollen of corn. Its near relative, *D. longicornis*, Say, which I fear is to be the future pest of the cornfield, I found feeding upon both silk and kernel; one individual had excavated nearly the whole interior of a kernel, and was still at work, being so far advanced into the interior as to leave only the tip of its abdomen visible. I had supposed the insect relied upon the flowers of thistle and some of the compositæ for its food, but now think were all of these taken away it would find abundant sustenance in the cornfield itself.—F. M. Webster, in *Amer. Naturalist*.

Sulphate of Ammonia Manufacture on a Small Scale.

By a process invented by M. Hennebutte, liquor containing ammonia, however weak and small in quantity, is said to be rendered profitable as a source of ammonia sulphate. In this process common alum cake is used, which is an impure sulphate of alumina, obtained by treating clay with oil of vitriol. This substance is more conveniently handled

24 hours the iron will be dissolved, and the liquid will be a very acid chloride of iron. This liquid is then poured into a flask containing pieces of lime; and 24 hours later the double chloride formed will be ready to mix with the liquid manure, or gas liquor. The sesquicarbonate of ammonia is decomposed, soluble hydrochlorate of ammonia is formed, and carbonate of lime precipitates. The hydrosulphate of ammonia is converted into sulphide of iron, which likewise precipitates, leaving the hydrochlorate of ammonia in solution. After a few hours' rest this may also be easily decanted. Either of these solutions of ammonia salts may be concentrated by evaporation in trays heated by the spent gases from a furnace.

Iron in Iowa.

The promising discoveries of coal in Iowa have been followed by not less promising discoveries of iron ore. A large deposit, covering more than four hundred acres, and having a depth of two hundred feet or more, is reported in the Lansing Ridge, Allamakee county, about eighty miles north of Dubuque. *The Trade Journal*, of the last-named place, says that the ore is a hematite, like the ore of Salisbury and Kent, in Connecticut. The quality of the ore is pronounced excellent by practical iron workers. The same region is already noted for its lead mines.