

## 3. DESCRIPTION OF A NEW SPECIES OF LEMUR.

BY A. D. BARTLETT.

(Plate XLI.)

In size this animal nearly equals the Ruffed Lemur (*Lemur macaco*), which animal it also much resembles in form and habits.

The living specimen now exhibited was purchased for the Society from a dealer in Liverpool, in the month of October 1861, and has been in the Menagerie since that time. It was stated, by the person who brought it to this country, that the natives of Madagascar, from whom it was obtained, said it was of a very rare kind, and that it had been kept as a pet upwards of two years in that country.

I have compared this animal with the descriptions and specimens that I have been able to find in the British Museum and several other museums on the Continent, and I feel satisfied that this animal is specifically distinct from any that I have met with. I therefore propose to call it the White-whiskered Lemur (*Lemur leucomystax*)—a name that will, I think, enable any one to recognize the species, it being remarkable for its long and perfectly white whiskers, in which its ears are almost entirely concealed; the face is greyish black, darkest on the nose and back part of the head; the feet are brown, inclining to black on the toes. The prevailing colour of the body, limbs, and tail is reddish brown on a grey ground, darkest on the middle of the back; on the lower part of the back, at the base of the tail, is a white patch; the tail is lighter in colour than the body, the underside and tip nearly white; the belly is greyish white; the eyes are yellow-brown. On examination, I find the animal is a female; and I imagine, from her voice, which is a kind of hoarse croaking bark rapidly and frequently repeated, that the male would probably produce a louder and more powerful note.

I am led to infer this from having repeatedly heard the voice of both male and female of *L. macaco*. The voice of the male of this species is certainly very astonishingly powerful, and can be heard a great distance; while the voice of the female, although loud and discordant, is comparatively weak. Nevertheless it is a very unpleasant series of loud, grunting, grating barks, sufficient to alarm a nervous traveller should he be in the forest at dark and unacquainted with the size and nature of the animal producing these loud and dismal sounds.

## 4. ON THE MAMMALS OF THE ISLAND OF FORMOSA (CHINA).

BY R. SWINHOE, ESQ., F.R.S., H.M. VICE-CONSUL AT FORMOSA.

(Plates XLII., XLIII., XLIV., XLV.)

The island of Formosa lies almost due north and south, off the coast of China, in length about 120 miles, and varying in breadth from 20 to 80 miles, its nearest point to the adjacent mainland being

not less than 80 miles. It is nearly equally divided by the tropical line, and in entire area is about equal to Ireland. One-third of the island, comprising the greater part of the western side, consists of level land; the rest, of undulated and mountainous country, the peaks of some of the ridges attaining a height of 12,000 feet, and being covered with perennial snow. This island was till lately a sealed book to us, the few naturalists who had hitherto visited it having had no opportunities of penetrating into the interior. To my researches last year good fortune cleared the way; and on the opening of a port in Formosa by treaty, I had the pleasure of being appointed the pioneering consul to it. I had on two previous occasions visited the island,—the first time rather venturously, in a native lorch, in March 1856, when I spent a fortnight in Hongsan in the north-west; and a second time on a voyage of discovery in H.M.S. ‘Inflexible,’ which lasted a month, during which time we completely circumnavigated the island, touching and making a short stay at all the most interesting places. In both these expeditions my efforts had been rewarded with the discovery of some novelties; I was therefore the more determined, on my being located on the island this last time, to carry on my explorations with redoubled vigour. I did not quite complete a year of office in Formosa before sickness compelled me to return to England. From July to November 1861 I sojourned in the south-west, in or near the city of Taiwanfoo; and from December to May I spent in the north-west district of Tamsuy. During these brief seasons, I must confess, I laboured very hard in the cause of natural history; and though my researches do not enable me to give anything like a complete list of the mammals of the island, yet I think I have done my best to take off the cream in the shape of novelties. But in my series many widely distributed families are not represented,—the *Mustelidæ* and *Muridæ*, for instance. Doubtless some species of the Weasel group must occur, though I met with or heard of none. Moreover, there must surely be some examples of the Rat group; but, beyond the cosmopolitan *Mus decumanus*, I found none. My series of *Vespertilionidæ*, too, must be deficient from the difficulty in procuring specimens; but this I will leave Mr. Tomes to deplore. There must also be a Fox in the island. The marine mammals I had no opportunity of collecting; but the distance from the coast of China is not sufficiently great to warrant one to expect distinctness of species. I heard of a large Whale, some 60 feet long, that was stranded on a sand-spit below Taiwanfoo, and demolished by the natives. I did not see the animal, but I imagine it was of the same species that is not uncommon, during May, in the Straits of Namo, close to the mainland, and which I take to be a *Balenoptera*—perhaps the *B. arctica*, noted also from Japan. In my present article I have been enabled to bring before the Society eighteen mammals from the island of Formosa. All of these, with the exception of the Hogdeer and the Hare, are mountain animals, and consequently of a mountain type,—those that are identical with species found in China being generally darker and of more lively tints, and those that differ more resembling forms from the Himalayan Mountains than their represen-

tative species on the plains of China. It is, however, probable that, if we were better acquainted with the fauna of the hilly regions of the interior of China, we should find quite intermediate forms. On the whole, I am rather surprised that the isolation of the island has not tended to diversify animal forms more than it appears to have done. On the mountains of the interior, were they properly explored, we should doubtless discover more novelties; but the regions of the plains appear to agree, in flora as well as in fauna, almost entirely with the plains of the Chinese mainland. The Monkey is an animal frequenting the coast, and, in all probability, when we ascertain the rock-species found on some of the small groups of Chinese islands, we shall find them identical. The Sun-Bear is wondrously close to the Indian species, and, if the same, is sure to occur in some of the inner ranges of China. The Leopard is undoubtedly peculiar, and, I think, confined to the island. The Wild Cat and the Civet are certainly the Chinese species, the former having an extended range throughout tropical and semitropical Asia. The *Paguma* is a Chinese form, showing an insular variation, incipient, so to speak, and scarcely strong enough in its distinctness to warrant specific separation. The *Helictis* and the Mole have felt the varying force of isolation and adaptation to peculiar circumstances,—the mountain-influences sequestering the former from its Chinese ally, and making it affine to a cognate mountain species in the Himalayas.

The Squirrels are so similar to the Himalayan species, that I cannot believe the result produced by climatal causes, and have little doubt that future research will bring to light their occurrence in the intermediate hilly and wooded ranges of China. Of the larger species a close ally occurs in China, the *Sciurus cinnamomeiventris*; but, it strikes me, this latter animal is from the plain-country, and that the mountains will be yet found to yield the true Himalayan type, which occurs in Formosa, viz. the *S. erythræus*. The two Flying Squirrels we should expect to find distinct, as they vary in almost every island. The Pig I cannot speak about with certainty; but if a true *Porcula*, the fact would be greatly interesting, as more immediately connecting Formosa with the Himalayan chain. No *Porcula* is known to occur in China; but there is no reason why it should not have existed in former times, and been destroyed by its larger congener the Wild Boar (*Sus scrofa*) from the north. The Mountain-Deer are interesting as being the only species that offer most variation from their cognate China forms; but this may arise through ignorance on our part with regard to the Wild Deer of China. There is certainly a strong resemblance between the *Cervus taiwanus* and the smaller *C. sika* of Japan, and between the Deer Goat of Formosa and the *Capricornis crista* of Japan; and indeed these two appear to offer the only resemblance between the fauna of these two countries. I should, however, judging by analogy, be rather inclined to derive both these Formosan *Cervidae* from allied species that did exist in past times, and perhaps do even now exist in the unexplored parts of the opposite mainland. Geologists are, I understand, strong in the belief that Formosa was originally connected with Japan on the north and the

Philippines on the south ; but if any evidence can be deduced from the fauna of a country, I think a comparison of the present list with the 'Fauna Japonica,' as well as a glance at my series of Birds, Reptiles, &c., will sufficiently prove that a stronger connexion exists with the mainland of China than with the islands of Japan. In viewing the recently formed and still forming plains of Formosa on the western side, one would expect to find Chinese types among the birds brought by migration, and among the mammals by introduction of the Chinese colonists. But where we should chiefly look for affinity, viz. to the living productions of the ancient mountain-ranges of the interior, we are struck with their thorough similarity to congeneric Chinese forms, rather than to those of the neighbouring islands of the Philippines on the south, or the Japanese islands on the north. It is true that the resemblance or identity of these productions is more with the Himalayan forms ; but no zoologist or botanist that has collected in the mountains about Foochow can have failed to be struck with the similarity of the plants, as well as the birds, of the interior mountain-ranges of China with those of the Himalayas. I do not speak so confidently of mammals, because these are generally so rare in China that their acquisition is difficult ; but I can see no reason why the same law should not hold good for them as for other productions of nature.

Before entering upon my list, I must tender my best thanks to Dr. Gray for his kindly advice and assistance, in looking over my series of skins, and in aiding me to make the remarks of which this paper is the result.

1. *MACACUS CYCLOPIS* (Plate XLII.), n. sp. *Rhesus Monkey*. Chinese, *How-tsze* or *Kaou*.

I have presented a pair of Formosan Monkeys to the Society's Gardens, where they may be seen alongside of the true *M. rhesus* from India and a closely allied red species from Assam. From the true Rhesus the Formosan species is easily distinguished by its round head and flat face, its naked forehead, dark-whiskered cheeks, and strong ruff-like beard. The tail in true Rhesus is about 9 inches long, thin, and tapering ; in the Formosan it is stout and bushy, and over a foot. The fur of the Formosan is thicker, more woolly, slaty-coloured, and much darker. Its ears are smaller and more feathered. The deep red tint on the rump is wanting ; its legs are blacker ; and there is a distinct black line along the top of the tail. The female of this species is smaller and rather lighter-coloured.

The Assamese Rhesus is much redder than either. Its head is long, and face projecting, but not so much as in the Indian animal. Like it, its tail is short and tapering ; but in the bare eyebrows and dark whiskers it approaches the Formosan.

Our Formosan species is certainly distinct from the above two, and from anything I can meet with in the British Museum ; I therefore give it the above provisional name.

This, as far as I could learn, was the only species of Monkey in the island of Formosa. It affects rocks and declivities that over-

hang the sea, and in the solitary caverns makes its abode. On the treeless mountain in the S.W., called Apes' Hill, it was at one time especially abundant, but has since almost entirely disappeared. About the mountains of the north and east it is still numerous, being frequently seen playing and chattering among the steep rocks, miles from any tree or wood. It seems to be quite a rock-loving animal, seeking the shelter of caves during the greater part of the day, and assembling in parties in the twilight, and feeding on berries, the tender shoots of plants, grasshoppers, Crustacea, and Mollusca. In the summer it comes in numbers during the night, and commits depredations among the fields of sugar-cane, as well as among fruit-trees, showing a partiality for the small, round, clustering berries of the Longan (*Nephelium longanum*). In the caverns among these hills they herd; and in June the females may frequently be seen in retired parts of the hills, with their solitary young ones at their breasts. These animals betray much uneasiness at human approach, disappearing in no time, and skulking in their holes till the intruder has passed. They seem, too, to possess abundance of self-complacence and resource; for I have frequently seen a Monkey seated on a rock by himself, chattering and crying merely for his own amusement and gratification. Whatever Mr. Waterton may say of the tree-loving propensity of Monkeys in general, it is very certain that this species shows a marked preference for bare rocks, covered only with grass and bush; for if he preferred the forest, he might very easily satisfy his desire by retiring a few miles further inland, where he would find it in abundance. But, on the contrary, in the forest he is only an occasional intruder, resorting thither when food fails him on the grassy hills by the sea, where he loves to make his home.

Rock-Monkeys are also found, I am told, in the island of *Lintin*, near Hongkong, as well as on a few other islands on the Chinese coast; but, as I have never seen any of them, I am unable to say whether they are of the same species as the Formosan. The Chinese have a fanciful idea that the tail of the Monkey is a caricature of the Tartar pendant into which they twist their long back hair, and they invariably chop it off any Monkey that comes into their possession. Hence the difficulty of procuring Monkeys in China with perfect tails.

## 2. *URSUS TIBETANUS?* *Sun-Bear of Formosa.* Chinese, *Jin-heung*.

This appears to be a rare animal in the island, found only in the highest mountains of the interior. It is much valued by the Chinese for the medicinal property of its flesh and bones, as also for the dainty dish afforded by its paws. I offered large sums for an entire animal, without success. At last, through the civility of a high mandarin, I was enabled to procure the mutilated skin that I have brought home. This skin appears to carry the white crescent-mark on the back; but on being carefully examined by Dr. Gray, that gentleman saw at once that the animal had been skinned from the back, and that in nature the white mark ornamented the breast.

Judging from this skin, I should say the Formosan Bear measured about four feet from muzzle to tail, and stood about three feet high. It is clothed with rather short, somewhat rigid, black hair, and carries a white mark, like an inverted horse-shoe, on its breast, between its fore legs.

I have compared the skin with the Sun-Bears in the Museum. Its nearest ally is the *Heliarctos tibetanus*, which has, however, longer and shaggier hair, especially about the cheeks and legs. This, as Mr. Gerrard observed, might be attributable to seasonal dress. The white horse-shoe on the Tibetan Bear is very similar to that on ours, but has blunter ends.

The other two Horse-shoe Sun-Bears with which I compared it were the *Heliarctos euryaspilus*, from Borneo, and the *H. malayanus*, from Malacca. The former of these has short blackish-brown fur, and has only an imperfect-shaped brownish white horse-shoe on the breast. The latter is a small species, with much shorter, softer, and browner fur.

The Formosan Bear is certainly far more nearly allied to the Tibetan than to the other two. I think that, in all probability, when an opportunity arrives for examining its anatomy, it will be found a distinct species. At present I can only call attention to the fact of its resemblance to the Tibetan species, rather than to its representatives in nearer countries.

The common mode of capturing the Bear among the savages in Formosa is, I am told, to tree him, after the same manner that Friday did the animal mentioned in 'Robinson Crusoe,' and then to dispatch him with matchlocks. Bears are often tamed by the Chinese, and taught to dance and play tricks, as in India and Europe.

I observe in the 'Fauna Japonica' that a crescent-breasted Bear also occurs in Japan, which Temminck refers, without hesitation, to the *Heliarctos tibetanus* of the Himalayas\*.

### 3. LEOPARDUS BRACHYURUS (Pl. XLIII.), n. sp. *Formosan Leopard*. Chinese, *Pah*.

This is another animal from the distant wilds of the interior, whose skins the savages bring to the borders to barter with the Chinese. I have seen two or three skins, all of which agree in the one peculiar feature, the shortness of the tail. It belongs, in general appearance and style of colouring, to the Long-tailed Leopard group, of which I have examined four specimens in the British Museum, marked *L. macrocelis*, one being from Sumatra, the other three from India. I have also examined a closely allied species from Tibet, *L. macrocelides*, Hodgs. In the paleness of its yellow fur, and in the disposition of its markings, the Formosan is again here more nearly allied to the Tibetan; but the shortness of the tail in one species (only about one-half the length of that of the other) is quite a sufficient character to distinguish it. I have unfortunately only a flat skin in

[\* The Japanese Bear, since the arrival of living specimens in Europe, has been acknowledged to be distinct, and has been described as *Ursus japonicus*. See *antea*, p. 261.—P. L. S.]

my possession, and therefore cannot give particulars as to measurement. In size it is rather smaller than *L. macrocelides*, but agrees with it almost entirely in markings. Its tail, however, is only  $1\frac{3}{4}$  feet long, more bushy, and is indistinctly banded with black.

Like most of its allies, this animal is nocturnal in its habits. It commits great havoc among the Deer, for which it lies in ambush. It fears the approach of the armed savage, and never attacks man until provoked.

4. *FELIS VIVERRINA*, Hodg. *Wild Cat of Formosa*. Chinese, *Swan Neaou*.

I have examined specimens of this Cat from the Himalayas, India, and Malacca. They all vary in size, length of tail, colour and size of spots, and tint of fur. To this species ours undoubtedly belongs; but its colours are much livelier, and the spots more distinct. It is much sought after by the Chinese for its soft, pretty skin, to make cuffs and collars for their coats, 4s. 6d. being the usual price given for a single skin. The animal is therefore comparatively rare, and not easy to procure. I dare say, however, in the wilder parts of the wooded interior it may not be uncommon.

It is stated, with what truth I cannot say, that some ninety years ago the Chinese colonists of Formosa, being very anxious to exterminate the savages from the mountains, imported a pair of Tigers from China, and let them loose in the woods. The savages at first took them for a large variety of Cat, and tried to make friends with them; but some of their number having fallen victims to the ferocity of the Tigers, the animals were soon pursued and dispatched with their javelins. A joke was raised against the parties concerned, for their absurd idea; and the hill where this introduction took place was christened and still bears the name of the *Great-Cat Hill*.

5. *VIVERRA PALLIDA*. Chinese, *Pe-bah*.

I have compared our *Viverra* from Formosa with two from China. Ours only differ in being much darker, and having more distinct spots.

This is not an uncommon species in Hongkong and the adjacent islands. In Formosa it is the commonest of all the carnivorous group. Skulking during day in the dark ravines that intersect the hilly country in the north-west, in the twilight it threads its way with great speed through the long grass, and searches the fields for small mammals and birds. It is much dreaded by the Chinese for the havoc it commits in the hen-roost; and as its skin is somewhat valued for lining to great-coats, its haunts and creeps are sought after, and traps laid for it. Of these the slip-knot noose for the head and feet is the most commonly practised, and the most killing. As the cool season approaches, hawkers may daily be met with, even in the villages, offering for sale the stretched skins of these animals. The poorer classes, who are unable to purchase the dearer furs, make use of these cheaper, yet pretty, skins. I extract a note from my journal on a freshly killed female of this species:—"Purchased 27th Feb.

ruary. This specimen, a female, has, just below the anus, an apparatus like a large swollen vagina, which I at first took for that organ; but on further examination, the true vagina occurred a little above, also much swollen. The vagina-like apparatus, which is the musk-bag, is not deep, and possesses strong contracting-muscles. It was empty, but emitted a strong musky odour, which tainted the skin and the flesh of the entire animal. The beast measured  $32\frac{1}{2}$  inches, of which the tail measured 13 inches. The eyes were well sunk in the inner corner of the sockets, and glared with hollow light, as do cats' eyes, as well as those of many other animals of crepuscular habits. The stomach, on dissection, I found empty, and the ovary small. The Chinese eat the flesh of this animal; but a portion that I had cooked was so affected with the Civet odour, that I could not palate it."

6. PAGUMA LARVATA, J. E. Gray. Var. *taivana*. Chinese, *Yu-meen-maou* (Gemm-faced Cat).

There are two specimens in the British Museum of *P. larvata*, brought from China by Mr. Reeves. With these I have carefully compared our single specimen, an adult male. I note the following differences:—The ears in ours are smaller and rounder. Its tail is two inches shorter, and has only two inches of black tip, instead of half the tail being black; it is also much larger. Its general tints, again, are much darker. But as the colouring, the distribution of black and white on the face and neck, and the black feet agree entirely, I cannot but regard this as a strong insular variety of the Chinese form. The body of this animal I have brought home; so that the skeleton, as well as the skin, will shortly be open to scientific investigators at the British Museum. Dr. Günther has kindly assisted me in dissecting the body, which I had preserved in spirits. I subjoin our notes upon it.

"Testes outside abdominal cavity; kidneys on the same level; spleen very elongate and narrow. Stomach externally horseshoe-shaped; the cardiac portion dilated, as broad as the fundus; the pyloric branch narrowed; membrane of stomach and pyloric portion thickened; stomach containing a few bones of birds, one wing of an hemipterous insect, and a large quantity of thick green berries with minute seeds (*Ficus*, sp.). Small intestines  $7\frac{1}{4}$  times as long as the trunk. Mesenterium with a very thin and broad layer of glandular substance accompanying the *ductus choledochus*. At the distance of two lengths of the trunk there is a large round patch of glands on the side of the wall of the intestines; at  $2\frac{1}{2}$  lengths there occurs a second patch; five others follow at rather long distances, the last being in the immediate neighbourhood of the caecal appendage; this last is about four times the size of the others, and is of an oblong form. Cæcum well developed, one inch long, including the processus vermiformis. Rectum about the length of the trunk."

"Liver divided into four lobes, each of which has one or two small notches. Gall-bladder oblong-ovate, firmly attached to the lower side of the middle lobe. Tongue covered with a thick layer of in-



verted bristles; base of tongue having two large *papillæ*, with three smaller ones further in the rear. No clavicle."

I will now extract my note on the fresh animal. "A specimen killed 14th April. Iris mottled chestnut, the pupil in death appearing perpendicularly ovate, and hence probably in life contracted to the linear form, as in the true Cats. Paws very large and plantigrade. Musk-bag between the testicles, shallow and empty. Penis and testes strongly developed; the exposable portion of the former  $1\frac{1}{2}$  in. long,  $\frac{1}{2}$  inch wide, 1 inch of its length towards the apex being covered with short, inverted, horny *papillæ*; from the apex there projects a thin, pointed piece, shaped like a finger,  $\frac{4}{10}$ th in. long, which is also covered with *papillæ* at its basal portion. The aperture of the *penis* occurs at the junction of the finger-shaped protuberance with its apex."

This is by no means a common animal in Formosa, the male adult subject of this paper being the only one I have ever seen. It was brought to me dead, and I can therefore give no notes as to its habits.

#### 7. *HELICTIS SUBAURANTIACA*, n. sp. (Pl. XLIV.)

I have compared this with *H. moschata* from the Himalayas, and with the Chinese specimens brought by Mr. Reeves. The Chinese animal is light reddish brown on the upper parts, with a white mark down the nose, extending backwards a little behind the ears. Its under parts are whitish, and its tail is small and sparsely covered with white hairs, especially near the tip. The Himalayan species is much paler, has the tail larger and whiter, and the white extending in a line some way along the back. In these two last particulars, as well as in general appearance, ours approaches more nearly the Himalayan type.

In the Formosan a line of white starts from the occiput and runs down to about the middle of the back, narrowing as it goes. A large spot of orange-white adorns the forehead. A line of deep purplish brown, approaching to black, runs from eye to eye above the muzzle, continues over each eye, and joins again behind the whitish forehead-spot, and then extends over the neck on each side of the white line till it gets lost in the paler colour of the back. Another line of the same runs under each eye, and forms a dark spot on each cheek. Under parts whitish orange, the inside of the ears, under part of fore legs, and line down the belly being strongly washed with orange-ochre. The purplish brown of the back runs into the tail, but soon yields to a white, which is chiefly conspicuous at its bushy end. In size the Formosan animal is rather larger than the Chinese, but about the same as the Himalayan.

One was brought to me alive, bound so tightly with cords that it did not survive many days. It fed readily on the bodies of birds, rolling itself up and sleeping throughout the day, but becoming restless and active in the evening. It uttered a peevish cry when disturbed. The Chinese called it the *Kay-che-bah*, or Fruit Civet. When alive, the facial line turns upwards towards the nose, which is

somewhat pointed and flesh-coloured. The eye is small and brown, and much sunken in the inner corner of the lids. This again gives no appearance of nocturnal habits; yet in confinement I observed the animal asleep the greater part of the day; further, from what I learned from the natives I should say it was for the most part crepuscular. It lives much on fruit and berries, as well as on birds and small mammals. It climbs trees with agility, and is frequently taken curled up in the corner of some large branch. Its fur is pretty, but long and coarse, and therefore not much valued.

8. *TALPA INSULARIS*, n. sp. Chinese, *Puh-kan-teen* ("not see the sky, or blind").

I have not yet had the opportunity of comparing the dentition of this animal with that of its congeners, but I have no hesitation in pronouncing it a good species, simply from the fact of its being a *blind* Mole. The North China species I sent home Dr. Gray distinguished as separable from *T. leucura*, Blyth, of India, to which it is a close ally. That Chinese Mole I examined, and found it to have an eye peering through open lids. The Formosan species has an eye, but without lids; the skin is closed over it. I extract my note on the animal soon after death. "The length of this Mole is  $5\frac{1}{10}$  inches; tail  $\frac{1}{2}$  inch, with a few long whitish hairs, chiefly at the end; length of hand  $\frac{8}{10}$  inch; breadth of hand  $\frac{1}{10}$  inch; the inner of the three tubercles on the palm of the hand is lengthened, and shaped like a false toe, but has no nail. It is a small species, with very short tail, and slightly turned-up snout. Eye size of No. 10 shot, seen through a thin skin, which covers it, and gives it a leaden look. I had this Mole alive, and placed it on the table. It shuffled about pretty fast from one end to the other, moving all the while its head from side to side, but appeared quite blind, running against any obstacle placed in its way, until it touched it with its sensitive nose: when it perceived its mistake, it uttered a sharp chatter and made off in another direction. I placed it in a rat-trap; but it soon pushed the wires aside with its strong fore paws, and forced its broad shoulders through. It has, as it were, a second upper lip, which forms over and protects the teeth, performing thus an office which the deep-cleft upper lip fails to do. Fur grey-black; chin, and breast, and under parts pale, washed on the first two with tawny. Some tawny-brown also occurs between the legs. This species does not appear to throw up hillocks like the European Moles do, but runs galleries close to the surface, casting up the earth over them in long, low, and loose lines, like those formed by the White Ants or Termites, only on a larger scale.

#### VESPERTILIONIDÆ.

The three or four species of this difficult family that I procured I must leave to the superior skill and learning of Mr. R. Tomes to distinguish. I wish merely to point out some facts regarding their natural economy which came under my observation. A species of *Aerivoula*, allied to *K. picta* and *K. formosa*, was brought to me by a

native. The body of the Bat was of an orange-brown, but the wings were painted with orange-yellow and black. It was caught, suspended head downwards, on a cluster of the round fruit of the Longan tree (*Nephelium longanum*). Now this tree is an evergreen; and all the year through some portion of its foliage is undergoing decay, the particular leaves being, in such a stage, partially orange and black. This Bat can, therefore, at all seasons suspend from its branches and elude its enemies by its resemblance to the leaf of the tree. It was in August when this specimen was brought to me. It had at that season found the fruit ripe and reddish yellow, and had tried to escape observation in the semblance of its own tints to those of the fruit. I suggested to Mr. Tomes that this group of Bats would appear to be frugivorous; and he replied that he had suspected, from the dentition of specimens he had dissected, that they were partially so.

The other fact is with regard to the group of Rat-tailed Bats (*Molossus*). One that I kept alive had a curious habit of pushing its eye almost out of the socket when disturbed, as if to get a better view of the cause of its annoyance. When tranquil again, the eye would sink right in and almost disappear. The skin of the tail in this genus slides up and down the tail-bone, by this means folding and unfolding the interfemoral membrane.

9. *SCIURUS ERYTHRÆUS*. Chinese, *Pong-bay-choo* (Puff-tailed Rat).

The larger Squirrel of Formosa is positively identical with the animal from Bootan, in the Himalayas, and markedly distinct from the *S. cinnamomeiventris* from China. This, at first sight, appears a curious fact; but I have little doubt in my mind that *S. erythræus* is also found in the hilly parts about Foochow, where many plants and birds have been procured identical with Himalayan forms. The cinnamon-bellied species is from the neighbourhood of Canton. Many years ago, a live specimen of *S. erythræus* was brought to me at Amoy, the person to whom it belonged not knowing whence it came; but, in all probability, it had been taken in some not distant locality. The young of this species is lighter on the head and shoulders than the adult, but darker in the hinder portions. Its under parts are a dingy pinkish brown; and its young-rat-like tail is black on the basal third, and light yellowish brown on the remaining portion.

10. *SCIURUS MACLELLANDI*. Chinese, *Buh-kwa-choo* (Citron-Rat).

In this small Squirrel we have another Himalayan type, not yet observed in China. I have compared my numerous examples with those in the British Museum, and I am inclined to think it identical; for its peculiarities are not constant. It is much darker in general colour; and in the majority of specimens the black longitudinal stripes are more or less indistinct, and the single yellow stripe along each side of the back in some is scarcely apparent; but I have some almost

identical with the Himalayan. The peculiar black-and-white-feathered tips to the ears are strongly marked in all.

11. *PTEROMYS GRANDIS*, n. sp. (Plate XLV.) Chinese, *Fei-shoo* (Flying Rat).

This magnificent species appears to be the largest of the group, its nearest allies being *P. melanotis* of Borneo, and *P. albiventris* of Nepal. From both these it is at once distinguishable by its long, black, bushy tail, its bright red chestnut upper parts, and its rufescent under parts. Many of the hairs of the upper parts are tipped with black. In the very young, the black obtains more generally, especially about the head, paws, and tail, the latter in the sucking-stage resembling that of a rat; while the entire under parts, with the exception of the throat and a soft silky line down the belly, are almost entirely denuded of hair. The length of an adult animal is about 2 feet in the body, and 2 feet in the tail; total, 4 feet. Teeth brown sienna.

The first specimens of this animal, a fine old female and a young suckling, were brought to me on the 16th March, and my hunter told me the following story of their capture. The camphor-distillers were cutting down a fine old camphor-tree, when they observed a large nest in its branches. As the tree fell, the nest shook out; and out sprung two large Flying Squirrels, and made off to an adjoining tree. The nest was composed of sticks and grass, and about two feet in diameter, with a large hole on one side. It was found to contain one live young one, which my hunter secured. The cries of the young one brought the old female near; and the woodmen, who always have loaded matchlocks at hand, for fear of attacks from the savages, fired at her, and with five wounds brought her to the ground. The male, seeing the fate of his mate, kept a long way aloof, and would not admit of near approach. The hunters pursued, but it was useless; the animal sprung and sailed from bough to bough, and finally disappeared in the forest. The body of the female was eaten by the Chinese with much relish; but as the common classes of the Chinese are not over-dainty in their palate, this would hardly be a criterion for the delicacy of the flesh. The suckling was produced to me out of the sleeve of the man as he told his tale. It squeaked exactly like a guinea-pig, so much so that, until I saw it, I was persuaded it could be no other than that animal. I had hopes at first of being able to rear it, for it sucked milk readily from a spoon. When handled, it uttered a suppressed moaning noise. It soon pined, and in a few days died, before its eyes were opened. It differs from the adult in having a good deal of black on the upper parts; the paws are black, instead of brown and red; and its rat-like tail is of a deep black; its breast and the central line down its belly is covered with short, silky hair, of a buff colour. Its under legs are very scantily covered with short hair. The wrists round the hind feet are hairy; and close to those of the fore feet there is a wart-like protuberance, with a few long hairs springing from it. The under membrane is quite naked and greyish. The muzzle and nose present

bare flesh, and the nails are flesh-brown. Length of body  $6\frac{3}{4}$  inches; tail  $6\frac{2}{6}$ .

I subsequently received a live adult, which I kept for some time in a cage, feeding it on bread and fruits. It was exceedingly fierce, darting at the hand that was thrust towards it, crouching in a corner and glaring savagely at the intruder. It uttered sharp and angry cries. In the dark its pupils, which were round, and not linear, emitted a hollow, greenish light, proving the animal to be nocturnal in its habits.

## 12. SCIUROPTERUS KALEËNSIS, n. sp.

This is one of the smaller group of *Sciuropteri*, with flat diverging tails. I have, unfortunately, only a pair of immature specimens, which I purchased from a savage who was fondling them in his bosom, and tried to keep alive without success. Young as my specimens are, they are much larger than the diminutive representative of this species in Japan. This species is most nearly connected, in the style and mottled appearance of its fur, with the *Sciuropterus albo-niger* of Nepal, but differs in colour. The Javan species (*S. horsfieldii*) differs from it in having a woollier fur, without any mottling. In ours the tail is about two-thirds of the length of the body; I should say, therefore, that the mature animal would be about 16 inches long. Entire upper parts reddish buff, mottled with deep brown; under parts pale buff, rosy on the flanks and under the legs. Teeth white.

Three species of Flying Squirrels are mentioned in the 'Fauna Japonica,' two as occurring in Japan—*Pteromys leucogenys* and *P. momoga*. The latter, it is said, is intermediate in form between the genus *Pteromys* and *Sciuropterus*, and we should therefore take it to be more nearly allied to our species *S. kaleënsis*; but on reading ing Temminck's description, I find that the fur is mentioned as woolly. In ours it is silky, more as represented in his *P. setosus*, a very different species, however, from the Indian Archipelago.

Of the habits of our species I know nothing.

## 13. LEPUS SINENSIS. Chinese, *Swan-taw* (Hill-Rabbit).

The Hare found in the champaign as well as hilly country of both South-west and North-west Formosa is identical in species with that distributed throughout China, from Canton to Peking. I find in the Chinese as also in the Formosan animals, that the tints vary somewhat, and that in some the black on the cheeks and behind the ears is almost entirely wanting. The Formosan specimens are somewhat more brightly coloured, and the rufous on the hind neck is livelier; whereas the North China Hares are greyer, especially in winter, and more distinctly marked with black. I have two small Leverets from South Formosa: these are of a strong olive hue, densely sprinkled with black hairs. These Hares, both in China and Formosa, retire to the hills in summer to breed, and return again to the plains in winter. They seek shelter in the holes of rocks or grave-mounds, and in these rear their young. They are said to burrow; but this I am

rather inclined to doubt, as the kind of holes I have always found them in never showed signs of fresh-turned earth. I have met with them in no place so abundantly as on the plains near Peking in winter, where they sought shelter among the long grass and dried remains of the cotton-plants. When the great cold, as the Chinese term it, sets in, these poor brutes get terribly pinched, and may almost be trodden upon. They are then considered good eating, and much sought after. The matchlock daily thins their numbers; others are killed by heavy-loaded sticks, and some are struck in a more scientific manner by Hawks trained to the pursuit. The Peking and Tientsin markets, the winter through, teem with their carcasses, which are sold for a comparative trifle. At last nature steps to their rescue, and saves their race from annihilation by relaxing the rigour of the climate, and enabling them to return to the security of the hills. The species occurs in most parts of Formosa, but is nowhere abundant. The common mode of taking them there is with the noose.

The Hare found about the hills of Talien-wan is a much longer-eared animal, and most probably a distinct species; it is perhaps the *Lepus variabilis*, Pall.; whereas that of Japan (the *Lepus brachyotis*, Temm.) is different again, and remarkable for its short ears.

#### 14. PORCULA TAIVANA, sp. nov.

I have it on the authority of the natives, that this little Mountain-Pig carries the stripes and spots of immaturity in its adult state, as in *Porcula sylvana*, Hodgs., of Nepal. Unfortunately I was not able to procure a full-grown animal.

I procured three sucking-pigs, and tried very hard to rear them, but succeeded in keeping them alive only a few weeks. I had them skinned as they died, and at the same time took care to preserve their bodies in spirits for the sake of the skeleton. One or more of these are now in the British Museum. I kept a pair of these little fellows some days in the house. They used to suck milk out of a bottle, and soon grew very tame, following me about like little dogs, grunting and squeaking in true swine fashion. The cow's milk, however, did not seem to afford them sufficient nutriment; for though they drank largely, they daily grew thinner, and soon succumbed. In this pair the canine teeth and lower incisors had appeared. Their noses and lips, as well as their toes, were flesh-coloured, merely tinged with black. Their irides were light yellowish brown. Their under parts and feet were white. The hair on the head, chin, shoulders, and thighs was light yellowish brown, that on the crown being abundantly tipped with black. The rest of the upper parts were striped longitudinally with black and light yellowish brown, the stripes on the sides becoming somewhat disconnected, and the yellowish appearing in large patches and spots.

Wild Pigs are found all over the hills on the north-west portion of the island; and so much depredation do they commit in the fields of sweet potato and other edible roots, that the colonists have gone to the trouble and expense of raising what they call *Te-loah*, or Pig-barricades, about the hills, to oppose the descent of these animals.

These consist of long stone walls, three or four feet high, with ditches on either side, running from ravine to ravine, midway up the higher hills, where these animals frequent. In places where the barricades are broken to admit of the passage of the ascending footpath, close gates are constructed, which are carefully shut every evening. The group of hills whence these pigs descend in greatest number reaches to the height of 3000 feet. I took the trouble to ascend this range in order to extend my acquaintance with those interesting animals; but though I found their beaten tracks all over the summits, fresh dung scattered about in all directions, the ground but lately rooted up in numerous places, and several lair-like spots under the rocks, I was not able to get a view of a single pig. I was told by the natives that they herd together in large numbers, and dwell in security during the day in caverns in the rocks, and in the twilight follow one another in single file down to their selected feeding-grounds; that they are uncommonly wary, and very difficult to shoot; that the boars especially are very dangerous, when wounded; and that the only chance they have of procuring them is by occasionally picking up a suckling that has strayed away from its mother.

I am inclined to think this Pig is a *Porcula*, and not the *Sus leucomystax*, Temm., of Japan, which is said to be the original stock of the Chinese Domestic Pig.

15. *CERVULUS REEVESII*. Chinese, *Kiang*.

I procured and brought away two females and a young one of this Munt-jac, as well as a skull. My specimens are identical with those from China. This species affects the lower ranges of hills which are covered with long coarse grass and tangled thicket. It is there usually found in small herds, basking in the sun, or lying in hidden lairs. They are very seldom approached near, except by stealth. The least noise startles them, and they dash away with bounds through the yielding grass, occasionally showing their rounded backs above the herbage. They have, however, their regular creeps and passes through the covert, near which the natives lie when stalking them, while others drive them. The little startled creatures hurry from danger along these beaten tracks, and are then picked off with the matchlock. In captivity they soon become very docile, even when taken in the adult state. The flesh of this animal is very tender and palatable. In China the species occurs in all the hilly country, from Canton to Ningpo; but I do not think its range extends much higher north.

16. *CAPRICORNIS SWINHOII*, Gray, P. Z. S. 1862, p. 263, Pl. XXXV.

This tawny species of Deer Goat, which Dr. Gray has done me the honour to name after me, differs in the shape of the skull, as well as in colour, from *C. crista*, Temm., of Japan. It is of a much smaller stature than *C. bubalina*, Hodgs., of the Himalayas, but has its nearest ally in *C. sumatrensis* of the Eastern Archipelago. I brought home with me the skins and skulls of an adult pair, which are now deposited in the British Museum. In the northern range of higher mountains

they are said to occur in abundance; and small herds of them find their way to the lower ranges, 2000 feet and upwards in height. On nearly all the hills I ascended I found the prints of their feet, as well as dung; but they are so excessively shy that it is very difficult to get a glimpse of them. At a distance you may occasionally see them in small parties on some tangled grassy crag, whence they no sooner observe you than away they bound with short goat-like leaps, till a projecting rock snatches them from your vision. Their wildness is probably caused by the persecution they receive at the hands of the natives, who relish their flesh, which, however, I found tough and coarse. A supposed medicinal property in their blood, which is said to be efficacious in bad cases of *bronchitis*, tends, no doubt, to enhance the value of their capture.

A live adult male was brought to me, with one leg wounded by a ball. The animal was very ferocious, stamping its foot at me and snorting through his nostrils. It drank a great deal, but ate only sparingly of the green food I supplied it with. I might have succeeded in taming it; but it was in the hot season, and the wounded leg began to fester, and the poor animal seemed in such pain that I was obliged to have it killed. Its iris was yellowish chestnut; its pupil black, with a horizontal yellowish-brown line running right through it. I do not know the particular cause of this peculiar appearance in the eyes of animals; but I have observed it pretty generally in all Goats. The high mandarin of the town begged the blood of this animal of me, and esteemed the gift a great favour. He had it spread, in the air, in small cakes, dried, and powdered, and then stowed it carefully away in his medicine-chest.

The native name for this animal is *Swan Yun*, or *Shan Yang*, which may be taken to mean either *Wild* or *Hill-Sheep* or *Wild* or *Hill-Goat*. Hence my mistake in my first letters to the Secretary of this Society, when I stated that I was informed of the existence of a Wild Mountain-Sheep in the Island of Formosa.

17. *CERVUS TAIVANUS*, Blyth, J. A. S. B. xxix. p. 90; Sclater, P. Z. S. 1860, p. 376, et 1862, p. 152, Pl. XVI.

This species was established in 1858, by Mr. Blyth, from the skull of a buck that I sent him. The animal to which the skull had belonged had been kept, together with some others of the same breed, in a private menagerie at Amoy, whither Chinese junks from Formosa frequently bring these Deer for sale. I am not aware of any Spotted Deer occurring in the Province of Fuhkeen, to which Amoy belongs; and as the wealthier Chinese have a great partiality for Spotted Deer to adorn their parks, this species is the one most usually sought after in that district. Chinese poetry has frequent allusions to the "Red Deer with its snowy spots;" and Chinese pictures, in almost every well-to-do house, exhibit grotesque though somewhat truthful representations of the antlered brethren. Besides the value attached to Deer as an object of ornament, their price is increased by the medicinal properties attributed to their horns. These appendages, cut off when freshly sprouting, are much prized by the



Chinese for the nutriment they afford in cases of debility, just as they prize other gelatinous substances, such as birds' nests, nests of certain species of small Swifts (*Collocaliæ*), sharks' fins, fish-maws, &c. After the velvet is removed, the horn is dried, pared thin with an instrument like a nutmeg-grater, and boiled into a soup, in which state it is used. The velvet is not wasted, but is set aside to deal out in small quantities to matrons of the family to aid them in their convalescence after child-birth. The skin of the Deer is not thought much of, nor is the flesh much valued.

The central or higher range of mountains, which are in parts covered with perennial snow, are inhabited by the *Cervus taiwanus*. These heights abound with large masses of tangled forest, in which the gigantic *Laurus camphora* (the tree whence the drug of commerce, camphor, is distilled) forms no inconspicuous part. These heights are tenanted by tribes of half-clad Indians, of the Malay type, blood-thirsty and savage in the extreme, who keep up a constant warfare with the Chinese colonists of the plains, and resist with atrocity any inroads into their mountain territory. On the lower hills, however, that define the land of the colonist from that of the aboriginal, dealings on a friendly footing are carried on in bartering Chinese commodities for deers' horns, venison, and other results of the chase. To these aborigines, money has no value as a medium of exchange. They live on the flesh of deer and other wild animals, which they only partially broil before eating. They obtain, by barter, from the Chinese matchlocks and gunpowder, which they use to wound the deer, when approached within a few yards by creeping through the thicket. The wounded animal is then surrounded by a closing ring of half-naked savages, and, scared by their wild shouts, falls an easy prey to their metal-headed javelins. When powder fails them, they sometimes manage to intercept one from a herd, and driving him into more open country, scatter a loose and wide-spread ring of humanity round him; the ring rapidly closes in as before, and as the frightened beast attempts to leap or break it, spears are hurled into him from all sides, and he can rarely effect his escape. Other means of capture are also practised, but less successfully, the commonest of which, when the beast is required to be taken alive, are slip-nooses attached to a stake, and so adjusted as either to take him by the leg or by the horns. But the animal captured when full-grown rarely survives; and therefore the young are sought for the purpose of rearing. They are nurtured with great care till a year old, when the horns begin to form. They are then conveyed to the borders and bartered to the Chinese, by whom, as I before stated, they are much valued.

In the city of Taiwanfoo I procured two bucks and a doe of this species, and forwarded them, *via* Hongkong, to the Gardens of the Society; but unfortunately only one, a buck, reached England in safety. This was enough, however, to establish the species, which had hitherto been described only from the skull. Any one visiting the Gardens can now have an opportunity of making himself acquainted with this lovely animal as nature has moulded him; and as the Japanese species, *Cervus sika*, is confined there in an adjoining cage,

a fine opportunity is offered for comparison. The deep red colouring of its hind neck and its larger size distinguish it from that species, as well as the form of its horns, which are shown in the accompanying sketch. (See woodcut.) The white spots on the Formosan Deer are moreover lasting, and do not disappear in winter, as in most species.

This Deer is called by the Chinese *Lok*, or Stag.



18. *CERVUS SWINHOEI*, Sclater, P. Z. S. 1862, p. 152, Pl. XVII.

It was not till my late visit to the City of Taiwanfoo, S.W. Formosa, that I came across this species. It struck me at once as a novelty, and I managed to procure two bucks, both of which have fortunately reached the Gardens of the Society in good health. On my visit to the Tamsuy district, N.W. Formosa, I again met the animal in a state of confinement in the hands of the Chinese, and secured a buck for the Acclimatization Society of Melbourne; but a live female I could not manage to procure. This species may at once be distinguished from the other by its total want of spots, by the absence of the white patch that adorns the parts about the tail, by its coarse reddish brown hair, appearing almost black in some lights, but, above all, by the occurrence of a large sac between the eye and nose. This curious organ, whatever its properties may be, it has the power of opening and shutting. It appears to be expanded most frequently when the beast is irritated. At a distance the deer looks as if he possessed four eyes, whence the Chinese definition of this species as "the four-eyed." It is, however, more generally known in Formosa as the "Cheeang." What the horns of this Deer are like we shall not be able to tell for some months, until the animals in the Gardens

reproduce those they have just shed ; but it strikes me the horns will only consist of short double-pronged antlers, as in the Hog Deer.

On the lower range of hills, varying from 1000 to 5000 feet, the *Cervus swinhooi* maintains its ground ; and as those hills chiefly occur in the northern portion of the island, its lot falls among another but closely allied race of savages. The Kwei-ying are a finer race than their brethren, the *Kalees* of the south, but they are equally savage. By them the same kind of barter is carried on with the Chinese colonists, and, as far as I could learn, the same mode of hunting deer. The country where this deer is found is also densely covered with bush, in which the savage lurks with his matchlock, jealous of every intruder on his hunting-haunts. Like all wild races, especially of the Malay type, he is very treacherous, and never to be depended on unless you can carry with you sufficient means to enforce freedom from molestation. One hour he will profess for you everlasting friendship, and the next, on some trifling caprice, aim a bullet at your head. The Chinese are very fearful of the aborigines, and can rarely be got to cross the boundary-line ; and the savages have such frequent feuds amongst themselves that, in travelling through their territory, friendship professed for one clan may cost you your life at the hands of the next you go amongst. One has on such journeys so much to do with diplomacy, intrigue, and bribery, that, apart from collecting, the incessant toil and expense make travelling in the wild mountainous interior of Formosa quite an arduous undertaking.

5. NOTES ON THE INCUBATION OF PYTHON SEBÆ, AS OBSERVED IN THE SOCIETY'S GARDENS. BY P. L. SCLATER, M.A., PH.D., F.R.S., SECRETARY TO THE SOCIETY.

The fact of a specimen of the West African Python (*Python sebæ*) having deposited eggs and commenced incubation upon them, in the Society's Gardens, at the beginning of the present year, has been already mentioned at one of the Meetings of this Society by Dr. A. Günther\* ; and many notices on the same subject have appeared in various newspapers and periodicals, scientific and unscientific. Yet I think that such an important event ought not to escape record in the Journal of the Society, and I have therefore drawn up the following short statement of the principal facts of the case for publication in the 'Proceedings.'

A pair of the West African Python (*Python sebæ*) have for some time occupied the large compartment in the middle of the northern side of the Reptile-house. The female was received by the Society in 1849, and has therefore been about thirteen years in the Gardens ; the male was purchased on the 18th of April, 1859, since which time he has been in company with the female. The female is one of the largest Pythons we have ever had, measuring about 22 feet in length. The male is of smaller dimensions, measuring about 14 feet in length.

\* See *antea*, p. 1.

This pair of Pythons were several times observed *in copulâ* by the keeper, in the month of June 1861. Towards the middle of December, 1861, the female was remarked to be much increased in size, the enlargement extending about 8 feet along the body. The keeper, knowing that she had not fed for many weeks, imagined this alteration of size to be the result of disease; and it was only a few days before the 13th of January that the true cause of her abnormal appearance was suspected. On the morning of the 13th of January the keeper found that in the course of the previous night this animal had deposited a large mass of eggs, and had taken up a position coiled completely round them, so as nearly to exclude them from view. The eggs, as we afterwards ascertained, were about 100 in number; they were nearly round in shape, but soft, and soon became much compressed, measuring each about 3 inches in diameter. They seemed to have been deposited in a circle, probably from the creature crawling round, and excluding them one after the other. They were not strung together by any membrane, but apparently completely separate when excluded, though afterwards fastened into one large conical mass, adhering by the viscid outer membrane, and pressed together by the weight of the superincumbent mother.

The Python retained her position coiled round and over the eggs more or less constantly until the eggs were eventually removed on the 4th of April. During this time she quitted them upon very few occasions, and then only temporarily, having passed altogether nearly thirty-three weeks without taking food.

On the 4th of March the Python showed symptoms of being about to cast her skin, and was then off her eggs from 9 P.M. until 7 A.M. on the following morning. During this interval the skin came off in shreds (always an unhealthy symptom in snakes), the process lasting about 10 hours instead of 3 or 4, as is usually the case with these large serpents.

Knowing the interesting nature of M. Valenciennes's experiments on the temperature of the Python which incubated in the Jardin des Plantes at Paris in 1841\*, I was anxious to ascertain whether any similar increase of temperature was observable in the present case. The instruments first employed for this purpose were not sufficiently delicate to produce any very reliable results. I therefore applied to Messrs. Negretti and Zambra, the well-known optical instrument-makers, who provided thermometers expressly adapted for the purpose† and kindly attended themselves to assist in making the

\* For an account of these, see 'Comptes Rendus,' 1841, xiii. p. 126.

† These thermometers are spoken of as follows in the 'London Review' for March 15th:—

"In testing the heat of the incubating Python and her eggs, it will be readily imagined that the most sensitive thermometers would be required to obtain reliable and satisfactory results, not only on account of the possible danger, through disturbing and irritating the snake, of her striking and giving the operator a lacerated wound with her pointed teeth, but from the desirability of obtaining as instantaneous results as possible to avoid the interference of cold drafts of air, alterations of the creature's position, and other circumstances which must produce interferent effect. To Messrs. Negretti and Zambra the highest praise is due for

necessary experiments. The compartment of the Reptile-house in which the Python is kept being warmed with hot-water pipes, and the temperature of snakes varying, as is well known, with that of the surrounding medium, it seemed to me that the only mode of obtaining reliable results was by comparison of the heat of the incubating female Python with the heat of the non-incubating male, in the same compartment of the Reptile-house. It appeared to me that any decided difference observable between these two animals, subject to exactly the same external conditions, could be only attributable to the incubation. Our first experiments with Negretti and Zambra's instruments were made on February 12th, and gave a difference of  $2^{\circ}8$  of Fahrenheit's scale in favour of the female, when the temperatures were taken at the surface of the body. When the temperature was examined between the folds of the bodies of the respective animals, the difference was found to be increased to  $6^{\circ}8$ . The experiments were repeated on the 23rd of February, the 2nd of March, the 9th of March, and the 16th of March, with varying results, but always showing an increased temperature of greater or less amount in the case of the incubating female, as the following Table will show :—

Date.	Temperature of air in den.	Temperature of male.	Temperature of female.	Difference.
Feb. 12	$58^{\circ}6$	On surface .. $70^{\circ}2$ Between folds $74^{\circ}8$	On surface .. $73^{\circ}0$ Between folds $81^{\circ}6$	$2^{\circ}8$ $6^{\circ}8$
Feb. 23	$65^{\circ}4$	On surface .. $71^{\circ}8$ Between folds $74^{\circ}0$	On surface .. $75^{\circ}4$ Between folds $83^{\circ}2$	$3^{\circ}6$ $9^{\circ}2$
March 2	$60^{\circ}0$	On surface .. $71^{\circ}6$ Between folds $76^{\circ}0$	On surface .. $84^{\circ}0$ Between folds $96^{\circ}0$	$12^{\circ}4$ $20^{\circ}0$
March 9	$61^{\circ}0$	On surface .. $72^{\circ}8$ Between folds* ....	On surface .. $79^{\circ}5$ Between folds $86^{\circ}5$	$6^{\circ}7$
March 16	$66^{\circ}0$	On surface .. $72^{\circ}4$ Between folds $77^{\circ}6$	On surface .. $77^{\circ}6$ Between folds $86^{\circ}0$	$5^{\circ}2$ $8^{\circ}4$

These observations were made on the different occasions by Mr. Bartlett, Mr. Negretti, Mr. Zambra, Mr. E. W. H. Holdsworth, F.Z.S., and myself.

On the 4th of April the eggs were evidently decomposing, and gave forth a very strong and nauseous odour. As the snake, which

having manufactured expressly for these experiments the most sensitive and most perfect thermometers ever constructed. In less than three seconds the quick-silver will rise or fall from one end of the scale-tube to the other; and although a longer time than this has always been allowed by the reptiles in the experiments made, it was most desirable to be provided with efficient means against any emergencies.

"The total length of the tube is 13 inches, and the bore, by actual measurement, was found to be less than the  $\frac{1}{1000}$ th of an inch in diameter; in the experiments the motion of the mercury in it was watched with a powerful hand-lens or magnifier. The range of the scale is from  $30^{\circ}$  to  $105^{\circ}$ ; the length of the bulb, or reservoir for the mercury,  $\frac{1}{2}$  inch, its diameter  $\frac{1}{8}$  inch; it is made extremely thin, so as to insure the greatest sensitiveness by the quickest possible transmission of temperature."

\* Not observed, the male being very restless.

had now sat upon them nearly ten weeks, was evidently suffering from the effects of a fast of thirty-two weeks, and there appeared to be no reasonable prospect of hatching the eggs, they were removed. On examination, we found about five or six with the embryos partially formed. In one of these the embryo was about 11 inches in length, the scaling and markings were shown, the colour was partially developed, and the animal was evidently nearly ready for exclusion. But the greater number of eggs contained only fatty matter in a state of decomposition, and bore no traces of having ever been impregnated.

A single egg removed from the mother fifteen days after incubation commenced, curiously enough, chanced to be a good one. The embryo contained in this was alive when it was opened, and measured about 6 inches in length.

About a month after the eggs were removed, the snake, which had been at first very restless, changed her skin, fed as usual, and has since remained in good health.

I think that the present case, taken in conjunction with that which happened in 1841 at Paris, and that of the Indian Python, kindly communicated to me by George O. Wray, Esq., and already noticed at a previous Meeting of this Society\*, lead to the conclusion that it is the normal habit of these highly developed Ophidians, the *Pythones*, to incubate their eggs much as in the superior class of birds. But it would appear that the Boas of the New World do not follow the same practice; for Mr. Westerman informs me that the female *Boa constrictor*, which bred in the Zoological Gardens of Amsterdam in 1861, brought forth living young ones, though some eggs were produced at the same time.

6. ON SOME BIRDS TO BE ADDED TO THE AVI-FAUNA OF MEXICO. BY P. L. SCLATER, M.A., PH.D., F.R.S., SECRETARY TO THE SOCIETY.

(Plate XLVI.)

In a small collection of Mexican birds sent to me for examination by M. F. Parzudaki, of Paris, I recognize several species new to the fauna of Mexico, and not mentioned in my former communications to this Society on the subject of Mexican ornithology, and others requiring some few remarks. These are—

1. *DENDRÆCA SUPERCILIOSA* (Bodd.), Baird, B. N. A. p. 289.

This specimen differs from others in my collection from N. America and Jamaica in having the whole supercilia anterior to the eye bright yellow, like the breast. Yet it is obviously not in full plumage, being dull brownish grey above, and with the black markings hardly defined. Prof. Baird alludes (*l. c.*) to somewhat similar variations. At first I could hardly persuade myself that it was not of a different species.

See P. Z. S. 1862, p. 108.