

The short vowel, on the other hand, is already fully subjected to the modified mode of expression in the Buddha Gupta inscription.

The Gujrát copper-plates of later days do not however, accept these new forms, but adhere to the general outline of the ancient superposed vowel.*

Further remarks on the different species of Orang-utan.—By

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Our museum having received from Sir James Brooke of Sarawák the superb donation of seven skeletons of large adult Orang-utans, I hasten to communicate the results of my examination of them, as a sequel to my former memoir on the genus published in the 22nd volume of the Society's Journal.

Of these seven skeletons, five are referable to the *Mias Rambí* of Sir J. Brooke; although one of them (a small but full grown female) is marked by himself *M. Pappan*; and another is sent by the new name *M. Chapin*, which is also that of an old female animal, remarkable for its extraordinarily large and vertically elongated orbits. It is probable that this alleged *Chapin* merely represents an individual variation; and Sir J. Brooke states, in his letter announcing the presentation, that some of these skeletons had been labelled by him with the names specified by natives, who, accordingly (as may be supposed in such a case), are not particularly conversant with the osteological distinctions of the different species.

The sixth skeleton is that of an old female of the *Mias Pappan*, with double-crested skull like that of the *male* figured in illustration of my former memoir. It even exceeds that male in size, but the skull is smaller; and the sexual distinctions of the two are unmistakeable. In this female, the epiphyses of the limb-bones, *scapulæ*, *ilia*, &c. are thoroughly ankylosed, denoting completion of growth; even the *symphysis pubis* is united (with much irregular deposition of bone externally), and the sacro-iliac symphysis on the right side only. In no other of our Orang skeletons are the

* Wathen, J. A. S. B. VI.

two latter symphises united. Our male *Pappan* had not quite completed his growth; for some of the epiphyses are loose, and others are but partially soldered: those of the *humeri* are fixed and semi-anchylosed; as are also those of the left *radius* and *ulna*; but the epiphyses of the right *radius* and *ulna* are detached; those of the *scapulæ* and *ilia* are fixed but slightly, and those of the *ischia* more extensively. This animal had therefore (as will be attempted to be shown presently) not completed its full growth: the female being much more advanced in age, with its teeth proportionally worn down. On comparison of the skulls of the two sexes, that of the female is seen to be smaller, with the maxillæ less protruded, increasing the facial angle from 32° to 35° ; the zygomatic arch is much less robust; and the longitudinal grinding surface of the upper molars less by $\frac{3}{16}$ in., while that of the lower molars is less by $\frac{1}{4}$ in. than in the youthful male presented by Mr. Nicholls, and by $\frac{7}{16}$ in. than in Dr. Clarke Abel's Sumatran male. In the form of the ascending ramus of the lower jaw, this female specimen more nearly resembles the Sumatran male referred to than any other of our numerous specimens; but the condyle is considerably larger; and, as compared with Mr. Nicholl's Bornean male, the antero-posterior diameter of the ascending angle is much less; being in the Bornean male (on a level with the surface of the grinders) $2\frac{5}{8}$ in.,—in Abel's Sumatran male but $2\frac{1}{4}$ in.,—and in Sir J. Brooke's Bornean female $2\frac{1}{2}$ in. Lastly, this Bornean female presents the very extraordinary anomaly (throughout the series of placental mammalia) of a fourth true molar above and below, though on the left side only: that of the upper jaw being of small size and round form, its crown scarcely exceeding that of an upper false molar of *MACACUS RHESUS*; and it is placed posteriorly to the ordinary last true molar on a line with its outer surface, that tooth having been pressed a little inward: in the lower jaw the accessory fourth true molar is very little smaller than the normal molars; and it projects from the internal margin of the anterior surface of the ascending angle of the jaw, its crown being directed obliquely inwards much more than forwards or upwards: as a functional tooth, it must, therefore, have been almost useless; though the outer or upper margin of its crown is a little worn down by attri-

tion, as is also the outer cusp of the small accessory molar above. This old female Pappan had been badly wounded in its day; having had its left humerus severely fractured, and the fibula of that side also broken; the fractured bones having healed; the unset humerus, however, in an extraordinary manner, exhibiting two large and deep perforations in the great lumpy mass of united bone, where suppuration had ensued, and large shot had probably been ultimately discharged from the orifices.

The seventh skeleton is that of a species altogether distinct and new! Although that of a large old male, with the cranial sutures much obliterated, and the ankylosis of the epiphyses of its limb-bones complete, it is very remarkable for the comparatively slight protrusion of the jaws, and the consequently increased facial angle; apparently, however, to a greater extent than really, from the flatness of the face, the unusually slight protrusion of the sockets of the upper incisors, and, above all, the elevation of the condyle of the lower jaw raising so considerably the occipital portion of the skull and consequently the auditory orifice. The facial angle does not actually exceed $32\frac{1}{2}^{\circ}$; while in the two *Rambis* (male and female) figured in my former memoir, it is as low as 30° —(this being also Prof. Owen's estimate of his adult skulls of the *Rambi*). The *zygomata* (or cheek-bones) are unusually prominent. The canines, incisors, and the first three upper molars on each side, are exceedingly much worn down by attrition; the canines even to a level with the other teeth: but the circumference of these canines, especially in the lower jaw, is conspicuously less than in males and even large females of the *Rambi* and *Pappan*; though they are proportionally larger than in the *Kassar*. It is further remarkable that the frontal ridges of the skull, instead of uniting upon the vertex to form a single sagittal crest (as in the *Rambi*), or continuing separate and well apart throughout (as in the *Pappan*), approach to contact upon the vertex but without uniting; which is very likely to prove a constant and specific distinction, as the present old male shews much irregular deposition of bone externally to its contiguously double sagittal crest. The long bones of the limbs, though fully as stout as in the *Rambi* and *Pappan*, and about twice as stout as those of our old female *Kassar*, yet probably do not exceed the

corresponding bones of the full grown male *Kassar* in length; being very much shorter than those of the adult *Rambi* and *Pappan*: and this remarkable brevity of limb, combined with the conspicuous differences in the skull and sundry other distinctions, can scarcely be considered otherwise than as indicative of specific peculiarity.

Of the five *Rambis* sent, there is unfortunately no specimen of a male of the largest size, comparable to that of which the skull is figured in the 1st and 2nd plates accompanying my former memoir: but there are two large full-grown females (including that ticketed *Mias Chapin*), and also a full grown female of smaller dimensions (which was labelled *M. Pappan*;) with a male of superior age and stature to the male *Pappan* presented formerly by Mr. Nicholls; and also a young male, with the last molars brought into wear, but which nevertheless had not nearly attained its full growth, which bade fair to rival that of the gigantic Sumatran male already noticed.

The specimen to which the name *Mias Chapin* was attached, appears (as already mentioned) to be a large old female *Rambi*, very remarkable for the enormous size and vertically elongated form of its orbital cavities, which measure 2 in. by nearly $1\frac{3}{4}$ in. across. Its skull is larger, though less massive, than that of the female *Rambi* figured in my former memoir: the muzzle is conspicuously more slender, measuring but $2\frac{5}{8}$ in. in greatest width (outside the canines), instead of $2\frac{7}{8}$ in.: and whereas the coronoid process of the lower jaw in the former specimen is smaller and about on a level with the condyle, in the present example (labelled *Chapin*) the posterior or condyle process is unusually prolonged, and raises the skull (with lower jaw *in situ*) so remarkably, that placing it on a level surface together with the other skull noticed, the zygoma of the so-called *Chapin* not only overlaps that of the other, but its lower edge is about $\frac{1}{16}$ in. higher than the upper edge of the zygoma of the other specimen:* the nasal bones, which in the other are united and ascend to the very summit of the *glabella*, in this skull continue separate, and reach only to the lower portion of the *glabella*. This skeleton is very deficient, wanting the *sacrum* and most of the bones of the hands and feet: but all of the long bones are present, with

* In Prof. Owen's figure of a female *Rambi* skull (*Zool. Trans.* I, pl. 35), the condyle-process is similarly elongated.

the shoulder-blades and rest of the *pelvis*; the epiphyses being completely soldered. The limb-bones are even rather longer than in the great female *Pappan*, and in fact exceed in length those of any other of our full-grown specimens: the *humerus* measuring 15 in.; the *ulna* (to tip of styloid process) $15\frac{3}{4}$ in.; femur $11\frac{1}{2}$ in.; and tibia $10\frac{1}{3}$ in.: circumference of middle of trunk of humerus $3\frac{1}{4}$ in.; and of femur $2\frac{7}{8}$ in. The few digital bones seem to accord in dimensions with the corresponding bones of our male *Pappan*. The extreme length of the *scapula* is $8\frac{7}{8}$ in.; and of pelvis $10\frac{7}{8}$ in.: clavicle 8 in. This specimen is marked as having been procured in Sadong (in Borneo).

The next specimen, which was erroneously marked *Pappan*, we consider to be a small female *Rambi*, though fully mature and even old, as shewn by the almost complete obliteration of the cranial sutures, the ankylosis of the various epiphyses, and the amount of attrition of all the teeth. The cranial ridges are very small; and the sagittal crest is hardly at all raised, but nevertheless exhibits a tendency to rise along the median line of the skull, between the frontal ridges which converge from the temples, and to be prolonged in front, anterior to the convergance of the latter, which takes place unusually far back: the nasal bones are united and singularly minute, actually not rising so high as the wide part of the orbital cavities; and the latter are small and circular, measuring barely $1\frac{3}{8}$ in. every way. The skull considerably resembles that of the female *Rambi* formerly figured, only that the sagittal crest is so much smaller; the *zygomata* being also more raised (in consequence of the greater prolongation of the condyle process of the lower jaw); and the orbits are smaller and more circular, and surmounted by much slighter ridges: consequently the face is flatter, and the sockets of the incisors are also less protruded. The skeleton is unfortunately very imperfect, wanting most of the bones of the hands and feet, and one *tibia* and *fibula*: a portion of the lower jaw, with the canine, first præ-molar, and part of the second, is also lost: but the other long bones are present, and the *pelvis* is complete. Length of *humerus* but $13\frac{1}{2}$ in.; of *ulna* $13\frac{7}{8}$ in.; of *femur* $10\frac{3}{8}$ in.; and of *tibia* 9 in.: circumference of middle of *humerus* $2\frac{7}{8}$ in.; and of *femur* $2\frac{3}{4}$ in.: metacarpal bone of middle finger $3\frac{1}{4}$ in.; metatarsal of

corresponding toe $3\frac{3}{4}$ in. : *os calcis* 2 in. Total length of scapula (with *acromion*) $1\frac{1}{8}$ in. ; and of *pelvis* $9\frac{7}{8}$ in. : extreme breadth apart of the *ilia* (or hips) $10\frac{7}{8}$ in. : clavicle $6\frac{3}{8}$ in. This specimen also is marked from Sadong in Borneo.

The third female *Rambi* is of large size and fully mature, with the various epiphyses well soldered : but it has even less trace of sagittal crest than the last ; the frontal ridges meeting as far back upon the skull, but not quite uniting, and a small mesial ridge rising between them above the vertex : the orbits are moderately large and a little elongated vertically, measuring $1\frac{5}{8}$ by $1\frac{1}{2}$ in. ; and the nasal bones are united and ascend a little into the glabella. Size about that of the first specimen (marked *Chapin*), but the muzzle rather broader or $2\frac{1}{8}$ in. This specimen is nearly perfect : but the face is disfigured by a bullet which had knocked away the inner half of the right orbit and a tolerably large piece from the occiput ; which fragments are lost. Length of *humerus* $14\frac{3}{4}$ in. ; *ulna* $15\frac{1}{4}$ in. ; *femur* $11\frac{5}{8}$ in. ; *tibia* $10\frac{1}{2}$ in. : circumference of middle of trunk of *humerus* 3 in. ; and of *femur* $2\frac{3}{4}$ in. : metacarpal bone of second or middle figure $4\frac{5}{16}$ in. ; first phalanx of ditto $3\frac{1}{16}$ in. ; second phalanx $1\frac{1}{16}$ in. : metacarpal bone of thumb $2\frac{1}{8}$ in. ; first phalanx of ditto $1\frac{3}{16}$ in. : metatarsal bone of middle toe $3\frac{1}{16}$ in. ; first phalanx of ditto $3\frac{1}{8}$ in. ; second phalanx $1\frac{3}{4}$ in. : metatarsal bone of hallux $2\frac{1}{16}$ in. ; first phalanx of ditto $1\frac{3}{16}$ in. ; and unguinal (!) $\frac{1}{16}$ in. Total length of *scapula* $9\frac{1}{4}$ in. ; *clavicle* $7\frac{5}{8}$ in. ; extreme length of *pelvis* $11\frac{1}{4}$ in. ; and extreme breadth of *ilia* 12 in.

The two remaining *Rambis* are males : and the first to be noticed is a young animal, whose skull had obviously not attained its full dimensions, though the last true molars had been brought into wear : but the general massiveness of this skull indicates that the animal would probably have become a male of the largest size : the sagittal crest had begun to rise on a grand scale ; and the frontal ridges converge directly to it, although these are scarcely indicated for $\frac{3}{4}$ in. before their junction. The teeth are more crowded than in the full grown animal ; the inter-space between the upper canine and outer incisor, which in our large Sumatran male is $\frac{2}{3}$ in., being scarcely $\frac{1}{4}$ in. ; and the first false molar, instead of being completely posterior to the canine, advances considerably on its outer surface

posteriorly: in the lower jaw, also, there is a bony inter-space between the canine and first false molar in the large mature male, but not in the adolescent male: nasals partially ankylosed, and continued upward to the lower part of the *glabella*: epiphyses of the *humeri* considerably ankylosed, and also those of the *tibiæ* and *fibulæ*; but not of the *radii* and *ulnæ*. This skeleton also is tolerably complete. Length of *humerus* $14\frac{3}{8}$ in.; of *ulna* $13\frac{3}{4}$ in.; of *femur* 10 in.; and of *tibia* 9 in.: circumference of middle of trunk of *humerus* $2\frac{1}{16}\frac{5}{8}$ in., and of *femur* $2\frac{1}{16}$ in.: metacarpal bone of middle finger (the epiphyses beginning to ankylose) $3\frac{3}{4}$ in.; first phalanx of ditto $2\frac{7}{8}$ in.; second phalanx $1\frac{7}{8}$ in.: metacarpal of thumb $1\frac{7}{8}$ in.: metatarsal of middle toe $3\frac{9}{16}$ in.; first phalanx of ditto $2\frac{3}{4}$ in.; second $1\frac{5}{8}$ in.: metatarsal of hallux $1\frac{7}{8}$ in. Clavicle $6\frac{1}{8}$ in. Extreme length of *scapula* (minus epiphysis) $7\frac{1}{2}$ in.: of *pelvis* (with ischial but not iliac epiphysis) $9\frac{3}{4}$ in.; and extreme breadth at the hips $10\frac{1}{8}$ in.

The next is a mature male, but certainly not of the largest dimensions: being about the size of the great females already described; and not otherwise recognisable from them than by the general massiveness of the skull (which is remarked at the first glance), and less conspicuously than usual in the present instance, by the form of the *pelvis*. The superciliary ridges are much broader than in any female skull; and the *zygomata* equally robust: the sagittal crest is also broad and well developed: nasals distinct, and reaching up to the lower part of the *glabella*. Skeleton tolerably complete; wanting most of the ungual phalanges and some other small bones. Length of *humerus* $14\frac{3}{4}$ in.; of *ulna* (with loose epiphysis) $15\frac{1}{8}$ in.; of *femur* $11\frac{1}{8}$ in.; *tibia* $9\frac{7}{8}$ in.: circumference of middle of trunk of *humerus* $3\frac{1}{8}$ in.; and of *femur* $2\frac{3}{4}$ in.: metacarpal bone of middle finger $4\frac{1}{4}$ in.; first phalanx of ditto $3\frac{1}{16}$ in.; second phalanx $1\frac{1}{16}$ in.: metacarpal of thumb $1\frac{3}{16}$ in.; first phalanx $1\frac{1}{8}$ in.: metatarsal of middle toe $4\frac{1}{8}$ in.; first phalanx of ditto $2\frac{1}{16}\frac{5}{8}$ in.; second phalanx $1\frac{1}{16}$ in.: metatarsal of hallux $2\frac{1}{16}$ in.: clavicle $7\frac{1}{4}$ in.: *scapula* $8\frac{3}{8}$ in.: *pelvis* $10\frac{3}{4}$ in. in extreme length, and $11\frac{3}{4}$ in. broad at the hips. This specimen was marked *Mias Rambis* by Sir J. Brooke; and is also from Sadong in Borneo: the three skeletons received from Sadong having unfortunately been prepared by interment in the

ground; and the present being the most complete of them and otherwise the least injured.

We now come to the female *Pappan* already noticed; which, though of greater size than the male described on a former occasion, with considerably longer and broader *pelvis*, has nevertheless a smaller skull, less prominently developed jaws, and conspicuously smaller teeth: the zygomatic arch is shorter and a little weaker than in the male; but the superciliary ridges and width of the bony orbits are much the same, and in fact there is little further difference between the two skulls: the bony crests on the vertex are less prominent in the female, and they approach to within $\frac{3}{4}$ in. of each other; whereas in the male they remain 1 in. apart where most approximated: length of base of skull, from between the middle incisors to the anterior margin of the occipital foramen, $6\frac{7}{8}$ in. in the male, and $6\frac{1}{8}$ in. in the female: breadth of *zygomata* apart $6\frac{5}{8}$ in. in both. This skeleton is also nearly perfect. Length of *humerus* 15 in.; of *ulna* $15\frac{5}{8}$ in.; *femur* $11\frac{1}{8}$ in.: *tibia* $10\frac{3}{8}$ in.: circumference of middle of trunk of *humerus* $3\frac{1}{4}$ in.; of *femur* 3 in.: metacarpal bone of middle finger $4\frac{1}{8}$ in.; first phalanx $3\frac{1}{8}$ in.; second $1\frac{1}{8}$ in.: metacarpal bone of one thumb 2 in., of the other somewhat less, and bearing a very short first phalanx, only $\frac{7}{8}$ in.; metatarsal bone of middle toe 4 in.; first phalanx 3 in.; second $1\frac{3}{8}$ in.: metatarsal of hallux $2\frac{1}{8}$ in.: clavicle $7\frac{1}{4}$ in.: *scapula* $8\frac{1}{2}$ in. in extreme length: and *pelvis* $10\frac{3}{8}$ in. long, and $11\frac{3}{4}$ in. broad at the hips.

Lastly, we arrive at the new species, which may be designated *PITHECUS CURTUS*. It is perhaps the genuine *Mias Chapin* of the Dyaks. The specimen is decidedly male, and well advanced in years; and the skull has a more anthropoid appearance than that of any other Orang known. This chiefly results from the much reduced prolongation of the muzzle, while the cheek-bones project remarkably, giving a sort of Kalmuk expression to the skull! The absolute projection of the maxilla, in a horizontal line carried from the lower margin of the orbital ring, is, in our large Sumatran male *Rambi* skull, fully 3 in.; in the male *Pappan* it is about the same; in the female *Pappan* $2\frac{1}{2}$ in.; in the old female *Kassar* (a much smaller animal) about $2\frac{1}{4}$ in.; and in the great male *CURTUS* barely 2 in.! Extreme breadth of *zygomata* 7 in.: height of the skull, with lower

jaw *in situ*, 11 in.: length, in a straight line, from the summit of orbital cavity to between the incisors, $4\frac{1}{4}$ in. (the same measurement being in the male *Rambi* $5\frac{1}{8}$ in., and in the male *Pappan* $4\frac{5}{8}$ in.): length from occipital foramen to base of upper incisors 6 in. (in the male *Rambi* $7\frac{1}{8}$ in., and male *Pappan* $6\frac{7}{8}$ in.): length of bony palate 3 in. (in the others $3\frac{7}{8}$ in., and $3\frac{5}{8}$ in.): orbital cavities $1\frac{5}{8}$ by $1\frac{1}{2}$ in. across: extreme width of bony orbits apart externally 5 in.: extreme breadth of ascending ramus of lower jaw $3\frac{7}{8}$ in.; height of the condyle $4\frac{3}{8}$ in.; length of grinding surface of the upper molars $2\frac{1}{16}$ in. The skeleton is fortunately nearly perfect. Extreme length of *humerus* $13\frac{1}{4}$ in.; *ulna* $14\frac{3}{16}$ in.; *femur* $10\frac{3}{16}$ in.; *tibia* $9\frac{3}{8}$ in.: circumference of middle of trunk of *humerus* $3\frac{1}{4}$ in.; of *femur* $2\frac{7}{8}$ in. (length and circumference of *humerus* of old female *Kassar* $12\frac{3}{4}$ and $2\frac{1}{4}$ in.; ditto of *femur* $9\frac{7}{8}$ in. and $2\frac{1}{4}$ in.): length of metacarpal bone of middle finger $3\frac{7}{8}$ in.; first phalanx of ditto $2\frac{1}{16}$ in.; second $1\frac{1}{16}$ in.; metacarpal bone of thumb $2\frac{1}{16}$ in.; first phalanx $1\frac{1}{8}$ in.; metatarsal bone of middle toe $3\frac{1}{16}$ in.; first phalanx $2\frac{3}{4}$ in.; second $1\frac{5}{8}$ in.; metatarsal bone of *hallux* 2 in.; clavicle $6\frac{7}{8}$ in.: extreme length of *scapula* $8\frac{3}{4}$ in.: of *pelvis* $10\frac{1}{8}$ in.; and breadth at the hips 11 in. Length of the vertebral column, from atlas to *sacrum*, measured internally, $16\frac{1}{4}$ in.; in the scarcely full grown male *Pappan*, $17\frac{1}{2}$ in., and in the old female *Kassar*, $15\frac{1}{4}$ in.: *axis*-vertebra soldered to the next. As compared with the *Rambi* and *Pappan*, the metacarpals and metatarsals are shorter, and the first phalanges of the fingers and toes are longer.*

* A friend who has resided long in Borneo, and has examined numerous skulls of *Orang-utans* (including those which have passed through the hands of Sir J. Brooke), informs me that he has remarked that, in the adult and aged specimens of the *Rambi* and *Pappan*, the canines are always perfect; whereas in those of the small *Kassar* they are as regularly broken or worn down to about a level with the incisors. This remark is borne out by the series of skulls now under examination. The canines are long and unbroken in all the specimens of the *Rambi* and *Pappan*; and are ground down in the old female *Kassar*, and also in the old male *P. CURTUS*! Denoting probably a difference of food. Moreover, the same gentleman informs me that different species of these animals do not appear to inhabit the same district; and he thinks that the *P. OWENII* represents, in the southern part of the great island, the *P. MORIO* of the northern part.

With the grand series of skulls and skeletons of adult Orang-utans now subjected to examination, amounting to twelve in all (*viz.* 3 males and 4 females of *PITHECUS BROOKEI* or *Mias Rambi*, 1 male and 1 old female of *P. SATYRUS* or *M. Pappan*, one old male of the *P. CURTUS* or *M. Chapin*?, an old female of the *P. MORIO* or *M. Kassar*, and the adolescent female with short fore-arms, provisionally designated *P. OWENII*,—in addition to Prof. Owen's excellent lithographs of the male *Kassar* and of male and female *Rambi* in the *Trans. Zool. Soc.*, Vols. I and II), the observer is first struck with the very obvious and conspicuous distinctness of the comparatively puny *Mias Kassar*, and of the adolescent small skeleton, from all the rest. The next glance suffices to separate the *Rambi*, *Pappan*, and *P. CURTUS*: the last being quite as thoroughly distinguished apart by the *tout ensemble* of its appearance, as the *Pappan* is by its conspicuously double-crested vertex. I should think that no zoologist, accustomed to the discrimination of specific characters, would hesitate, with the present series of skulls before him, to acknowledge the distinctness of each of these three; but such an observer would ponder for awhile over the remarkable female *Rambi* skull with enormous and vertically oblong orbits, and would doubtless hesitate in regarding it as specifically identical with the old female *Rambi* of small size; so great is the contrast between them. Presuming, however, that he arrived at the conclusion here ventured upon, it still follows that the *Rambi* is subject to an extraordinary amount of variation for a wild animal; and this, although it may not invalidate the opinion of its distinctness from the *Pappan* and *P. CURTUS*, nevertheless prompts a reconsideration of the grounds for the view formerly expressed, with regard to the specific distinctness of the small specimen having short fore-arms. From the detached state of the epiphyses of its limb-bones, it is certain that that specimen was not full-grown; and as those of the *ulnæ* at least (as shewn by the skeleton of the adult male *Rambi*, and also by that of the male *Pappan*,) are the last to become ankylosed, it should follow that the fore-arm continues to increase in length after the upper arm and the leg had ceased to grow: but the difference is still too great to be thus accounted for satisfactorily: and upon re-comparison of this specimen with the undoubtedly aged female *Kassar*, I deem it

prudent to await the further evidence which Sir J. Brooke has kindly promised that he would endeavour to procure and send, before venturing to confirm or modify my previously expressed opinion on the subject.

This fact would appear certain, that the partial ankylosis of the epiphyses of the limb-bones does not rigorously denote cessation of growth: unless the female Orangs attain to greater stature than the males, which is most unlikely. It would seem rather, that as the earthy salts are continuously absorbed and re-deposited, some continuance of extension supervenes, until finally checked and stopped by the considerably increased deposition of bone. The skull also continues long to increase in size, after the last true molars have been brought into use.

As regards the sexual distinction, a practised eye discerns it readily in the adult skull, by its superior general massiveness in the male; and, in the skeleton, the larger and broader *pelvis* of course denotes the female animal, combined with a proportionally smaller and less robust skull than in the other sex. There is no reason to doubt the correct determination of sex in any one of the specimens here noticed.

The occasional but rare occurrence of the unguinal phalanx to the *hallux* or great toe, would seem to be proper to no particular sex or species; for it exists in our male *Pappan* from Sumatra, and in our female *Rambi* from Borneo.

It now remains to connect the osteological with the external characters of the different species; to determine the stature attained by the largest males of the *Rambi*, *Pappan*, and also *Kassar*, to obtain further information of the *PITHECUS CURTUS*, and to verify or otherwise the *P. OWENII*. With the powerful aid of the accomplished Raja of Sarawak, we trust to be enabled ere long to resolve these various problems.
