MISCELLANEOUS.

Prof. Owen's Lectures on Palæontology.

These Lectures were resumed, at the Theatre of the Government School of Science, Jermyn Street, on the 15th of April. The subject of the *Enaliosauria* was then commenced, and the following is the conclusion of the Lecture, from the notes of the Professor:—

The general form of the cranium of the common or typical species of *Ichthyosaurus*, e.g. *Ich. communis* or *Ich. intermedius*, resembles that of the ordinary cetaceous Dolphins (*Delphinus tursio* and *Delphinus delphis*); but the *Ich. tenuirostris* rivals the *Delphinus gangeticus* in the length and slenderness of the jaws. The essential difference in the sea-reptile lies in the restricted size of the cerebral cavity, and the vast depth and breadth of the zygomatic arches to which the seeming expanse of the cranium is due; still more in the persistent individuality of the elements of those cranial bones which have been blended into single though compound bones in the sea-mammal. The *Ichthyosaurus* further differs in the great size of the premaxillary and small size of the maxillary bones; in the lateral aspect of the nostrils, in the immense size of the orbits, and in the large and numerous sclerotic plates, which latter structures give to the skull of the Ichthyosaur its most striking features.

The true affinities of the Ichthyosaur are, however, to be elucidated by a deeper and more detailed comparison of the structure of the skull; and few collections now afford richer materials for pursuing and illustrating such comparisons than the palæontological series in the British Museum.

The occiput in the *Ichthyosaurus* is well ossified, and of unusually complex structure. It is formed by the basioccipital, a pair of exoccipitals, a pair of paroccipitals, and by a superoccipital; external to which that surface is extended by the parietals, mastoids, tympanics, squamosals, and pterygoids. The chief peculiarity is the large proportional size of the basioccipital. Its outer surface consists of a large hemispheric condyle, with a plate of bone about half the diameter of the condyle, extending forwards from its under and lateral borders, and subsiding towards the upper border, which is impressed by the rough surfaces for the exoccipitals. Part of the periphery of the condyle is sometimes impressed by a groove indicative of the attachment of the capsular ligament, and in some species there is a vertical depression at the middle of the condyle. The fore part of the basioccipital presents, in some species, a slight median emargination, as if for an outlet of an eustachian canal. Anteriorly the basioccipital joins the basisphenoid, laterally the paroccipitals, superiorly the exoccipitals upon which the superoccipital rests. The latter is a vertical, semicircular, or reniform plate of bone, uniting by its upper borders to the parietals, which, with the mastoids, form the 'occipital crest,' or upper boundary of that region.

The exoccipitals are small and reniform. The paroccipitals are

like ordinary transverse processes, broadest where they join the basi-occipital, and extending outwards to abut by a truncated end against the tympanic pedicle. The centrum, neurapophyses, neural spine, and parapophyses of the last cranial vertebra are unmistakeably demonstrated by the Ichthyosaurian condition of the 'occipital bone' of Anthropotomy. The basisphenoid is an irregular subquadrate plate, narrowest behind, where it joins the basioccipital, expanding as it advances forwards; the anterior margin presenting a rough sutural surface at its middle third for the presphenoid, and a smooth emargination on each side of this forming the hind boundary of the spheno-pterygoid vacuities. The hinder half of the under surface of the basisphenoid presents slight rough tuberosities and depressions for muscular attachment, but no processes; and, like the basi-occipital, it is imperforate. The upper or cranial surface has a median pit. Of the alisphenoids I can at present state nothing more precisely than their very small size. The major part of the proper side-walls of the cranial cavity seems to have been cartilaginous in the *Ichthyosaurus*.

The parietals in some *Ichthyosauri* retain their median suture, from which each bone slopes downwards and outwards, forming, at the anterior three-fourths, a surface at first concave, then convex: the concave part belongs to the upper region of the skull; the convex part passes down to form the inner wall of the temporal fossa: the above part of the parietal is divided by an oblique ridge from the posterior fourth of the bone, which is roughened for the insertion of a strong nuchal muscle, and might be regarded as part of the occipital as well as of the upper region of the cranium. The above ridge is continued on to the upper part of the mastoid, and seems to form the true upper boundary of the occipital region, the posterior borders of the parietal forming a lower second ridge in that region. Of the part of the parietal in advance of the upper ridge, the upper and fore part is concave, the hinder part convex: the concavity is divided by an obtuse angle—scarcely a ridge—from the part which sinks more vertically into the temporal fossa: this angle is continuous with the anterior border of that fossa, so that the crotaphyte muscles may not have had their origin extended upon the upper concave surface. The hinder and outer angle of the parietal is overlapped by the mastoid, and extends to within a third of its lower end, forming part of the sides of the occipital surface, and bounding there, externally, the vacuity between the exoccipital, paroccipital, lower part of mastoid, and the above part of the parietal. The median sutural borders of the parietal diverge anteriorly to form the hind half or third of the 'foramen parietale:' the fore part of each parietal extends further forwards, outside the extremities of the frontals which form the front part of the 'foramen parietale;' and it articulates with the frontal and post-frontal.

The mastoid is a strong triradiate bone, the rays inclining forwards from the centre, which forms the obtuse prominence at each postero-lateral angle of the skull. The upper ray is three-sided, the two upper sides smooth and sloping from the ridge, which is continued

inwards and forwards as a slender process to meet the oblique parietal ridge. The lower ray is a broader plate, smooth and slightly convex outwards, forming the extreme sides of the occipital region; articulating outwardly with the tympanic, and below with the parocciptal and pterygoid. The outer ray is a narrower plate, smooth and slightly convex externally, forming the upper and hinder longitudinal half of the deep zygoma, uniting anteriorly with the post-frontal and externally and inferiorly with the bony plate, described as the "squamous element" of the temporal, in my 'Report on Fossil Reptiles,' 1839, but which I now regard as an accessory sclerodermal bone, analogous to, but not homologous with, the squamous plate in man and mammals.

The presphenoid is a long slender trihedral bone, broadest where it joins the basisphenoid, with the two lower sides converging towards a median obtuse angle. It divides the long and narrow pear-shaped spheno-pterygoid vacuities.

Of the orbitosphenoids I have no accurate cognizance: they may not have been ossified. The frontals are remarkable for their small size, especially in length as compared with breadth, in which one cannot but be reminded of their cetaceous type. The median part of each frontal is convex, the lateral part is concave, notched behind for the parietal, and more deeply in front for the nasal, the process entering which being separated by a very narrow strip of the frontal from the opposite process of the parietal. Laterally the frontals unite by a straight margin directed obliquely outwards and forwards with the post-frontals.

The post-frontal much exceeds the frontal in size; it extends from the upper surface of the cranium horizontally, on each side the frontals, to an equal extent with those bones, then bends obliquely down to form the upper and anterior half of the zygoma. The horizontal plate is semi-elliptic, convex in front, a little concave behind, where it defines anteriorly the temporal fossa. The inner angle overlaps and articulates with the antero-external angle of the parietal; the inner border joins the whole outer border of the frontal, touches the outer point of the nasal; the convex fore-part joins the prefrontal and completes the rim of the orbit above. The zygomatic branch unites with the mastoid behind, and with the super-squamosal and post-orbital below.

The similarity of character in the post-frontal and mastoid is instructive in regard to their general homology.

The prefrontal, I, as yet, know only by its external or facial part. This is a narrow, moderately long, curved bone, extending from the post-frontal to near the nasal aperture, receiving there the upper angle of the lacrymal in a notch, the upper boundary of which is wedged between the lacrymal and nasal: with the latter bone it is in connexion along its whole inner border; it does not join the frontal, and its position and relations in the Ichthyosaurus, as in some fishes, instructively illustrate the true nature of the prefrontal as an element of a cranial segment distinct from that to which the frontal belongs; and not as a mere dismemberment of the frontal

bone. As neurapophyses the prefrontals here lend their whole extent to the support of their neural spine—the nasal bone, which is divided, like the frontal and parietal, by a median suture. The large size of both pre- and post-frontals relates to the large size of the eye, and of the cavity destined to contain it.

The nasals are the longest and largest bones of the cranium; departing, in this respect, widely from the cetacean type, and retaining that of the Labyrinthodont and Crocodilian skulls. They send a pointed process backwards into a corresponding notch of the frontal to close contiguity with the parietals, and they receive in shallower notches the anterior bifurcations of the frontal. The outer angle of the outer notch touches the post-frontal. By the outer border the nasals successively unite with the prefrontal, lacrymal, maxillary and premaxillary, their junction with the former being concealed by the overlapping hind end of the premaxillary; between the lacrymal and maxillary intervenes the nostril, the upper border of which is formed by the nasal.

The palatines are long slender bones commencing behind, between the pterygoid and ectopterygoid, forming the inner boundary of the small palatal nostril; continuing, mesially, in articulation with the pterygoids, until these diminish to a point, then touching each other at the median line, and united externally to the maxillary and premaxillary: the palatal plates of the latter underlap the palatines.

The maxillary commences behind, under the bent styliform jugal, opposite the anterior third of the orbit; as it advances it expands into a palatine and alveolar plate, articulating internally with the ectopterygoid, forming part of the outer boundary of the naso-palatine aperture, and then uniting with the palatine bone and with the palatal plate of the premaxillary. The palato-alveolar part of the maxillary is divided from the facial part by the well-developed external alveolar wall. The facial part, coming into view beneath the fore-part of the malar bone and of the orbit, expands vertically as it unites with the lacrymal to form the lower boundary of the external nostril; in advance of this the maxillary becomes overlapped by the premaxillary, which gradually covers it from view at about the fifteenth tooth, in *Ich. tenuirostris*, counting forwards, but the maxillary extends further forwards, after it is so overlapped. As a general rule, it supports about one-third of the dental series of its own side of the jaw. In Crocodiles the maxillaries support, generally, three-fourths of the dental series, and their relative size to the premaxillaries is greater in Lizards. Fishes present the nearest resemblance to the Ichthyosaurs in regard to the small share which the maxillaries contribute to the formation of the dentigerous margin of the upper jaw.

The premaxillaries, on the other hand, present in the *Ichthyosaurus* as peculiar a degree of superior magnitude; a difference due not so much to the prolonged form of the snout which obtains in *Crocodilia*, as to the disproportionate shortness of the maxillary bones.

Each long premaxillary begins, behind, by an expanded and deeply

bifurcated end; one division being facial, the other palatal. The latter begins by a point at the fore-part of the palato-nasal aperture; it gradually expands as it advances, underlapping the maxillary and palatine bones, and entering into the formation of the alveolar groove at about the fifteenth tooth. The facial plate of the premaxillary begins behind by a bifurcated end, the notch bounding the fore-part of the external nostril; the vertical plate slowly expands, overlapping the nasal and maxillary and gradually descending to the alveolar border, so as to conceal the maxillary at a distance from the nostril equal to the length of that aperture. The premaxillaries form the major part of the upper jaw. The facial plate is impressed by a longitudinal groove near its lower border.

The pterygoid begins behind by a triradiate expansion; the outer short and broad ray or process, abuts against the inner side of the lower end of the tympanic; the upper narrower ray ascends to be wedged between the paroccipital, mastoid, and tympanic; the inner longest ray is broad and flat, obtusely pointed, and wedged between the paroccipital and basisphenoid. In advance of this triradiate expansion the pterygoid contracts, presenting a concave inner border, which articulates with the side of the basisphenoid, and a more concave outer border, which forms the inner boundary of the cavity which was occupied by the cartiliginous petrosal. The bone again expands, its outer border forming an angular process, to the fore-part of which the ectopterygoid unites; the body of the pterygoid then extends as a rather narrow plate of bone obliquely inwards, bounding the pterygo-sphenoid vacuities, and articulating externally to the ectopterygoids, towards the fore-part of which the pterygoid more rapidly contracts, and is continued some way further forwards as a pointed styliform process, internal to the palatine, and coming into contact with the opposite pterygoid near their pointed ends, which form the mid-part of the bony palate.

The ectopterygoids are long plates of bone, with a rounded obtuse hinder end; very gradually expanding to where they join the palatine, then rapidly contracting to a styloid process, forming the hinder and outer boundary of the palato-nasal opening, and uniting there with the maxillary.

The malar is peculiarly long and slender, commencing anteriorly by a pointed end wedged between the maxillary and lacrymal, assuming the form of a round, slender, slightly bent bar, which expands a little to be wedged, at the back of the orbit, between the post-orbital and squamosal. A long vacant space, the lower outlet of the temporal fossa, divides the body of the malar from the ectopterygoid and pterygoid.

The squamosal* is a short and small subquadrate bone, with three of the angles produced, the fourth thickened into an articular or sutural surface. The upper and anterior angle is wedged between the super-squamosal and post-orbital, the lower and anterior angle underlaps the end of the malar; the upper border unites with

* *Os zygomaticum* in 'Report of Brit. Foss. Reptiles,' 1839, p. 92.

the super-squamosal to the end of the upper and hinder angle. The hind border of the squamosal is concave, and forms the fore part of the "meatus auditorius externus:" the hinder half of the under surface of the squamosal expands and is slightly excavated to articulate with the internal swollen condyloid end of the tympanic.

The body of the tympanic is a small subcompressed stem expanded slightly and truncate above, where it articulates with the mastoid and supersquamosal. The outer border of the stem is rounded and concave, forming the inner and hinder border of the "meatus auditorius." The inner border of the tympanic joins the mastoid and pterygoid. The lower end of the tympanic suddenly expands into a large oblique suboval articular surface, convex from before backwards, slightly concave laterally at its fore part.

The articular element of the mandible is adapted to the hinder half of this condyle; the subangular element articulates with the front half.

The lacrymal forms the lower two-thirds of the anterior boundary of the orbit, and sends off from the middle of its outer margin a short plate or process protecting the lacrymal opening: the bone contracts vertically as it approaches the nostril, of which it forms the hind border, which is slightly concave. The upper border of the lacrymal sends posteriorly a process which fits a notch of the prefrontal, and anteriorly it reciprocally receives a process of the prefrontal and also of the nasal. Inferiorly, the lacrymal unites with the maxillary and malar.

The two supplemental bones of the skull, which have no homologues in existing Crocodilians, are the "postorbital*" and "supersquamosal†;" both, however, are developed in *Archegosaurus* and the *Labyrinthodonts*. The post-orbital is the homologue of the inferior division of the post-frontal, in those Lacertians (*e. g. Iguana, Tejus, Ophisaurus, Anguis*) in which that bone is said to be divided. The post-orbital, in *Ichthyosaurus*, resembles most a dismemberment of the malar; its thin obtuse scale-like lower end overlaps and joins by a squamous suture the hind end of the malar; the post-orbital expands as it ascends to the middle of the back of the orbit, then gradually contracts to a point as it curves upwards and forwards, articulating with the super-squamosal and post-frontal.

The super-squamosal may be in like manner regarded as a dismemberment of the squamosal; were it confluent therewith, the resemblance which the bone would present to the zygomatic and squamosal parts of the mammalian temporal would be very close; only the squamosal part would be removed from the inner wall to the outer wall of the temporal fossa. The super-squamosal, in fact,

* Described as "apparently a distinct and peculiar posterior bone" of the orbit, in the 'Report' of 1839.

† The recognized distinctness of this bone in the skull of the *Ichthyosaurus* inclined me, in 1839, to the view of the zygomatic and squamous parts of the "temporal bone" being distinct elements,—an error out of which I worked myself in subsequent toiling at homologies.

occupies the position of the temporal fascia in *Mammalia*, and should be regarded as a supplemental sclerodermal plate, closing the vacuity between the upper and lower elements of the zygomatic arch, peculiar to certain air-breathing *Ovipara*. It is a broad, thin, flat, irregular-shaped plate, smooth and slightly convex externally, and wedged into the interspaces between the postfrontal, postorbital, squamosal, tympanic and mastoid.

The principal vacuities or apertures in the bony walls of the skull of the *Ichthyosaurus* are the following:—In the posterior region, the "foramen magnum," the occipito-parietal vacuities, and the auditory passages; on the upper surface are the parietal foramen and the temporal fossæ; on the lateral surfaces, the orbits and nostrils, the plane of the aperture in both being vertical; on the inferior surface, the palato-nasal, the pterygo-sphenoid, and the pterygo-malar vacuities.

The "foramen magnum" is formed by the basi-, ex- and super-occipitals, the last having as much, or rather more share, than the ex-occipitals; the basi-occipital contributes a very small part below. The occipito-parietal vacuities are larger than in *Crocodilia*, smaller than in *Lacertilia*; they are bounded internally by the basi-, ex- and super-occipitals, externally by the parietal and mastoid. The auditory apertures are bounded by the tympanic and squamosal. The tympanic takes a greater share in the formation of the "meatus auditorius" in many Lizards; in Crocodiles it is restricted to that which it takes in *Ichthyosaurus*.

The orbit is most remarkable in the *Ichthyosaurus* amongst reptiles, both for its large proportional size and its posterior position; in the former character it resembles that in the Lizard, in the latter that in the Crocodile. It is formed by the pre- and post-frontals above, by the lacrymal in front, by the postorbital behind, and by the peculiar long and slender malar bar below. In crocodiles and in most lizards, the frontal enters into the formation of the orbits, and in lizards the maxillary also. In chameleons the frontal is excluded above, and the maxillary below, from the orbit, as in *Ichthyosaurus*.

The nostril is a longish triangular aperture, with the narrow base behind: it is bounded by the lacrymal, nasal, maxillary and premaxillary, it is proportionally larger than in the Plesiosaurus, and is distant from the orbit about half its own long diameter. Like the orbit, the plane of its outlet is vertical.

The pterygo-palatine vacuities are very long and narrow, broadest behind, where they are bounded, as in lizards, by the anterior concavities of the basi-sphenoid, and gradually narrowing to a point, close to the palatine nostrils.

These are smaller than in most lizards, and are circumscribed by the palatine, ectopterygoid, maxillary, and premaxillary. The pterygo-malar fissures are the lower outlets of the temporal fossæ: their sudden posterior breadth, due to the emargination of the pterygoid, relates to the passage of the muscles for attachment to the lower jaw.

The parietal foramen is bounded by both parietals and frontals; its presence is a mark of Labyrinthodont and Lacertian affinities; its formation is like that in *Iguana* and *Rhynchocephalus*.

The temporal fossæ are bounded above by the parietal internally, by the mastoid and postfrontal externally; they are of an oval form, with the great end forward: in their relative size and backward position they are more Crocodilian than Lacertian.

In the *Ichthyosaurus communis* I have counted seventeen sclerotic plates, forming the fore part of the eyeball. In a well-preserved example the pupillary or corneal vacuity, as bounded by these plates, is of a full oval form, 1½ inch in long diameter; the length of the plates (or breadth of the frame) being from 8 to 10 lines. In the same skull the long diameter of the orbit is 4 inches. The deep position of the sclerotic circle in this cavity, showed how they had sunk, by pressure of the external mud as the eyeball became collapsed by escape of the humours in decomposition.

The sclerotic plates are of an irregular, elongate quadrate form: the borders by which they reciprocally join each other by squamous sutures, are the longest, and are irregular; the hind border is about half the length of the plate, and is very thin; the front or corneal border is thicker, shorter, and is straight. From this border each plate extends outwards and backwards as a flat slightly expanding scale for more than half its length; it then suddenly bends backwards and inwards, defining and encasing the extreme periphery or circumference of the eyeball, and indicating the extreme oblateness of the spheroid.

Whenever the antecedent forms of an extinct genus of any class are known, the characters of such genus should be compared with those of its predecessors rather than with its successors or with existing forms, in reference to gaining an insight into its true affinities.

We derive a truer conception of the affinities of the *Ichthyosaurus* by comparison with the Labyrinthodonts and other Triassic reptiles, and of the *Plesiosaurus* by comparison with the Muschelkalk Macrotrachelians, than of either by comparison with modern Lacertians and Crocodilians.

It is commonly said that the *Ichthyo-* and the *Plesio-saurus* resemble more the Lizards in such and such characters, and in a less degree the Crocodiles, as in such a character.

The truer expression would be, that the Lizards, which are the predominating form of Saurians at the present day, have retained more of the osteological type of the Triassic and Oolitic reptiles, and that the Crocodiles deviate further from them, or exhibit a more modified or specialized structure.

As the *Plesiosaurus* is most allied to, or may be figuratively said to be derived from the Triassic *Pistosaurus*, so the *Ichthyosaurus*, by its fluted and partially-folded teeth, their loose implantation, the retention of the postorbital and supersquamosal, and the exclusion of the frontal from the orbits, may be said to be derived from the Labyrinthodonts; but the modifications are now such as to obliterate all trace of the Batrachian affinities.

The occipital condyle is single, as is also the vomer, which forms no part of the bony palate.

The majority of the Saurian characters, in reference to existing reptiles, of the skull are Lacertian, as indicated in the foregoing description.

The complex, extensive and well-ossified structure of the back part of the cranium is similar to that in the Crocodile; but as this is an adaptation rather than a typical conformation, it affords but a slender argument for their affinity, and the plan of structure, with such varieties as do exist, is rather Lacertian. The occipital expanse and strength depend in both the Crocodile and Ichthyosaur on the necessity for a due extent of surface for the implantation of the powerful nuchal muscles which must have mainly wielded a head destined to overcome the resistance of the watery element in the swift subaqueous course of the Ichthyosaur, and of a head produced anteriorly into long and heavy jaws beset with numerous teeth.

The fixation of the tympanic, the posterior position of the orbits, the position and proportions of the temporal fossæ, and the absence of parietal hypapophyses on the basi-occipital, are Crocodilian characters.

The median division of both parietal and frontal, the division of the postfrontal, or superaddition of the postorbital, the meeting of the post- and pre-frontals above the orbit, are characters met with in some existing Lizards, as well in Labyrinthodonts.

The huge orbits, the very long nasal and premaxillaries, the very short and small frontals and maxillaries, the long continuous groove for the loose insertion of the teeth, the shortness but great vertical depth of the compound zygoma, and the non-articulation of the nasals with the maxillaries on the external surface of the skull, are strictly Ichthyosaurian.

The posterior position of the nostrils, the small size and position of the palato-pterygoid foramen, are marks of affinity to *Plesiosaurus*, in common with which genus the cranial structure of the *Ichthyosaurus* exhibits a majority of Lacertian characters.

In comparing the jaws of the *Ichthyosaurus tenuirostris* with those of the Gangetic Gharrial, an equal degree of strength and of alveolar border for teeth results from two very different proportions in which the maxillary and premaxillary bones are combined together to form the upper jaw. The prolongation of the snout has evidently no relation to this difference, and we are accordingly led to look for some other explanation of the disproportionate development of the premaxillaries in the *Ichthyosaurus*: it appears to me to give additional proof of the collective tendency of the affinities of the *Ichthyosaurus* to the Lacertian type of structure. The backward, or antorbital position of the nostrils, like that in Whales, is related to their marine existence. But, in the Lacertians, in which the nostrils extend to the fore part of the head, their anterior boundaries are formed by the premaxillaries: it appears therefore to be in conformity with the Lacertian affinities of the Ichthyosaur that the premaxillaries should still enter in the same relations with the nos-

trils, although this involves an extent of anterior development proportionate to the length of the jaws; and the forward production of these sharp-toothed instruments fitted them, as in the modern Dolphins, for the prehension of agile fishes.

In most Lacertians the median suture of the premaxillaries is soon obliterated; the like obtains in the *Plesiosaurus*, but the suture is persistent in the *Ichthyosaurus*, as in Labyrinthodonts and Crocodiles.

Note on Anemone nemorosa purpurea.

By Dr. J. E. Gray, F.R.S. &c.

In general, the flowers of *Anemone nemorosa* are white, or white with a more or less broad purple streak up the centre of the outside of the outer petals. In a field at Pinner, Middlesex, there are patches of this plant, intermixed with patches of the usual kind, which have a darker foliage, and the flower entirely of a dark purple-lilac. I may also add, that the usual colour of the Primrose in the neighbourhood of Haverfordwest is pale bluish-red; and all gradations between that colour and yellow are to be observed.

Description of a new species of Woodpecker. By P. L. Sclater.

Melanerpes rubrigularis.

Supra nitenti-niger: linea circumnuchali ab oculis incipiente, altera utrinque suboculari a rictu latiore, tectricibus alarum superioribus, dorso postico et caudæ tectricibus superioribus, necnon maculis secundariarum trium extimarum apicalibus et in pogonio externo primariarum tertiæ, quartæ et quintæ albis: subtus nitenti-niger, gula media ruberrima, abdomine medio flavicante, lateribus et crisso albo nigroque variegatis; tectricibus alarum inferioribus et remigum pogonio interiore cinerascenti-nigris, maculis quadratis numerosis albis: caudæ rectricibus omnino nigris: rostro et pedibus nigris.

Long. tota 8·5, alæ 5·4, caudæ 3·5, rostri a fronte 1·0, tarsi 0·8.

This Woodpecker, which is represented by Mr. Bridges as very rare, appears to have escaped the researches of the American naturalists; at least I am acquainted with no record of its existence, though it may have been described quite lately. It appears to be well placed in the genus *Melanerpes*, of which no less than six species are already known to inhabit California, namely *M. erythrocephalus*, *M. torquatus*, *M. thyroideus* (Cassin, B. Cal. pl. 32: *Picus nataliæ*, Malherbe, Cab. Journ. f. Orn., 1854, p. 271), *M. formicivorus* (Cassin, B. Cal. pl. 2), *M. albolarvatus*, and *M. ruber*. From all these it is quite different in colouring, and may be recognized at once by its black breast and bright scarlet throat-mark, whence I have named it *M. rubrigularis*.

"A very rare bird, the only one of the species I have ever seen. Shot in Trinity Valley, on the pines. Probably this may occur more