This species finds its nearest relative in *Mimocichla ardosciacea* of Porto Rico and Santo Domingo, holding somewhat the same relation to it, as regards the color of the ventral surface that *M. rubripes* holds to *M. plumbea*. The wing and tail are each fully three-fourths of an inch shorter in *M. verrillorum* than in *M. ardosciacea*: the culmen is also shorter; but the tarsi are slightly longer and the wing appreciably more rounded. The white in the tail is much purer, and twice greater in extent, tipping the outer five pairs of feathers instead of being confined to the outer four, as in the other species of the genus, and occupying considerably more than the apical half of the outer feather.

This is evidently the bird mentioned by Mr. Ober as "described [to him] by several persons, something like a Thrush, but with yellow bill and legs," and enumerated by Mr. Lawrence* as "5. 'Thrush'?" According to the Messrs. Verrill, the bird is well known to the natives of the island, who call it *Perro vanter*; they, however, esteem it very rare and extremely difficult to get.

SOME BIRD SKELETONS FROM GUADALUPE ISLAND.†

BY FREDERIC A. LUCAS.

By the kindness of Dr. C. Hart Merriam I some time ago came into the possession of several bird skeletons collected at Guadalupe Island, off the coast of Lower California, by Mr. Walter E. Bryant. Guadalupe Island is of peculiar interest from the fact that it seems to have been separated from the mainland only long enough for its fauna to have taken the first steps toward differentiation, the number of peculiar species being very small, and the number even of sub-species limited. In this respect Guadalupe differs vastly from the Galapagos Islands, where specific differentiation has proceeeded so far that each island has its own char-

*Catalogue of the Birds of Dominica from Collections made for the Smithsonian Institution by Frederic A. Ober, together with his Notes and Observations. By George N. Lawrence. Proc. U. S. Nat. Mus., I, 1878, pp. 48-69.

†Read at the Washington meeting of the A. O. U., Nov., 1890.

acteristic species, while many of them are separated by a wide gap from their nearest relatives of the mainland, and we may say that in the Galapagos we see differentiation in its completion, and in Guadalupe in its inception.

The value of these skeletons lies in the fact that they give us some hints as to the comparative rapidity with which external and internal changes may take place, and it is much to be regretted that we possess no good series of skeletons of species common to the island and the continent.

As the climatic conditions existing at Guadalupe are not very different from those prevailing on the mainland, color differences between subspecies, or even closely allied species, would be largely the result of any innate tendency to variation, while structural differences would be due either to the same cause, or to change of habit produced by restricting the range of individuals to a limited area. Now while a considerable amount of individual variation will be found to exist in any extensive series of specimens of a given species, such differences, aside from those of mere size, are, as a rule, either reversionary in character or due to physiological adaptation, the existing groups of birds, and especially the Passeres, seeming to have become so fixed in their respective types that new morphological departures are extremely rare. It would, therefore, have been very strange had any such departure been found to exist in the five species represented, and it is very evident that the skeletal peculiarities presented by the skeletons under consideration are the result of change of habit due to insulation.

In order to express the relative proportions of the limbs and sternum and show the amount of their variation in the birds considered, the length of the vertebral column, exclusive of the caudals, was called one hundred, and the various parts compared with this standard.

The skeletal differences between *Polyborus tharus* and *P. lutosus*, the first on the list, are extremely slight, so slight indeed, that judged by them alone there are no grounds for considering the two birds as belonging to two species. That there are no perceptible distinctions between the skeletons of the two species, is not, however, surprising, for *Polyborus tharus* being nonmigratory, the habits of the two birds must be very much alike and there would be no physiological reason for any change,

while change from any inherent tendency of a species to vary seems to come about very slowly and require a vast stretch of time for its accomplishment.

Comparison of *Pipilo consobrinus* with *Pipilo maculatus megalonyx* and *P. erythrophthalmus* shows a considerable falling off of the island bird in the length of the sternum, for while the legs and wings of all three species are practically alike the sternum of *consobrinus* is but little more than two thirds as long as that of *erythrophthalmus*. *Pipilo erythrophthalmus* is much the strongest of the three species in its wing, for although the wing itself is but a trifle longer than in the others the sternum is not only longer, but deeper than in either *consobrinus* or *megalonyx*, indicating well developed pectoral muscles. As all the Chewinks spend much of their time upon the ground, similarity of habit in this respect would naturally account for similarity in the size of the leg. The migrations of *Pipilo maculatus megalonyx*, are short, this southwestern species inhabiting the mountains in summer and descending to the valleys for the winter. The migrations of *Pipilo erythrophthalmus* on the other hand are extensive, and its greater sternal development is simply a result of the greater length of its travels, while the restriction of *Pipilo consobrinus* to one locality, coupled with its ground-loving habits, has brought about the diminution of its flying apparatus.

Junco insularis, when compared with *J. hyemalis*, not only shows great sternal reduction, but reduction in the length of the wing, although the humeri of the two species are much alike.

The case of these birds parallels that of the Pipilos, *Junco hyemalis* being a bird of extensive range and consequently good powers of flight, while *insularis* is of restricted range and equally restricted flight.

Carpodacus amplus is well named, for it is a stout, well-rounded bird, slightly larger than *Carpodacus cassini*, and almost twice the bulk of its nearer relative *Carpodacus frontalis*.

Comparison shows that *C. amplus* is ahead of both these in length of leg, and that it leads *C. frontalis* in length of wing, although showing some falling off in the length of the sternum.

All in all the island bird seems to have undergone but little change from its restricted habitat, and if it has lost in wing power, this has been compensated for by increase in the length of leg and size of skull, this exceeding that of *C. cassini*.

There seems to be an increase in the size of the skull indicated by these specimens, for in this particular *Junco insularis* exceeds *J. hyemalis* and *Polyborus lutosus*, *P. tharus*.

The last bird to be considered is *Salpinctes guadalupensis*, and this species is remarkable from the fact that it has gained and not lost in power of flight, for its wing decidedly exceeds that of *S. obsoletus*, while the sternum of the island bird is a little more than one half longer than that of the continental form. Why this little Guadalupe Wren should have developed such powerful wings, comparatively speaking, is not perhaps quite clear, but it may be possible that in these Guadalupe birds we have a case paralleling that of the insects of the Azores, which either fly well, or do not fly at all, the inference being that all insects of but moderate powers of flight have been swept out to sea and lost. Be that as it may, *Salpinctes*, and to some extent *Carpodacus amplus*, indicates that insulation is not of necessity degeneration so far as the power of flight is concerned.

There are two interesting facts that Mr. Bryant has recorded in regard to *Salpinctes guadalupensis*, the first being that measurements show a slight increase in the length of bill during an interval of ten years, while in the same space of time the species had become the most abundant on the island, *Junco insularis* having previously taken the lead in that respect.

Now there may be no correlation between the power of flight and increase in numbers, but is it not probable that superior wing power would give superior ability to obtain food, to elude the pursuit of enemies and to escape being blown out to sea while superiority in these points would not unnaturally lead to an increase in the number of individuals?

There are certain facts well illustrated by the proportionate measurements for these birds, and although these facts are doubtless well known I do not remember to have seen them formally stated. They are as follows:

The first symptom of weakening flight appears in a decrease in the length of the sternum, diminution in the depth of the keel not taking place until later on.

This is followed by reduction in the length of the wing, beginning with the manus and fore arm, the humerus apparently not being affected until the rest of the wing is perceptibly lessened. Then the outer wing bones disappear, leaving only the humerus

—as in *Hesperornis*,—and finally the humerus itself may be wanting, as in *Dinornis giganteus*, and we have the extreme of degeneration in an absolutely wingless bird.

MEASUREMENTS.

	Leg.	Wing.	Humerus.	Sternum. Length.	Depth.
Pipilo consobrinus	122	90—	30—	23+	9
" maculatus	120	90	30	30	9
" erythrophthalmus	122	91	30	33	11
Junco insularis	112	88	29	22	8
" hyemalis	113	97	30	30	10
Carpodacus amplus	100	99	29—	34	12
" cassini	99	101	29	36	12
" frontalis	94	96	28	36	12
Salpinctes guadalupensis	120	99	30—	35+	6.5
" obsoletus	121	85	28	22	6

RECENT LITERATURE.

The Ornithology of 'The Century Dictionary.'*—'The Century Dictionary' is beyond doubt *the* literary monument of the age. It is the result of seven years of arduous and unremitted work on the part of some forty experts, consisting of eminent specialists in every department of human knowledge. "The plan of 'The Century Dictionary' includes three things: the construction of a general dictionary of the English language which shall be serviceable for every literary and practical use; a more complete collection of the technical terms of the various sciences, arts, trades, and professions than has yet been attempted; and the addition to the definitions proper of such related encyclopedic matter, with pictorial illustrations, as shall constitute a convenient book of general reference." The result is a collection of about 225,000 words with their definitions and etymologies. Technical terms are a conspicuous feature, many thousands having been gathered which have never before appeared in any general dictionary, or even in special glossaries. These include not only names of organs, structures, functions, and processes, but a large proportion of

* The | Century Dictionary | An Encyclopedic Lexicon | of the English Language | Prepared under the Superintendence of | William Dwight Whitney, Ph. D., L L. D. | Professor of Comparative Philology and Sanskrit | in Yale University | In Six Volumes. | Volume I [IV] | [Vignette] Published by | The Century Company. | New York. [1889-90.]