

Blood can be secured quite readily from the brachial vein at the bend of the elbow of the wing. The vein comes to the surface here, being covered only by a thin integument and lying alongside the tendon of the biceps. A fine needle thrust into the vein will produce a drop of blood which must be drawn into the pipette and diluted with great rapidity. The counting preferably should be done at once. No injury is sustained by the bird in this procedure and the pain is negligible or absent. It can be utilized in the case of trapped birds without fear of harm.

Since killed birds were of no use in this work and bird trapping was impossible it was necessary to secure market and caged birds. For this purpose permission was secured from the Director of the small Zoological Garden in Manila to get blood from the caged birds there. McGregor and I usually went together taking "Andy", the old and faithful taxidermist at the Bureau of Science, as interpreter. I have a keen recollection of the time that Andy had with a large Sea Eagle (*Cuncuma*) on its back which promptly sank its talons into my ankle and its beak into Andy's hand while a good portion of the native population of Manila crowded around the cage to watch Andy, the eagle and myself battle it out with considerable casualty on all sides.

The results of this brief investigation were so nearly uniform as to warrant the conclusion that the erythrocyte count in birds is approximately two and one-half million red cells per cubic millimeter of blood. This is about one-half the number found in man. On the other hand the hemoglobin readings were about 90 percent or equal to that of man. In other words the cells while fewer in number than in man are larger and carry more hemoglobin per cell. This was not the result expected. Evidently the needs for abundant oxygen are met by an increased speed in the circulation of the blood rather than by increasing the number of oxygen carrying elements in the blood.

The birds studied in this connection were as follows:

|                                               |                                                           |
|-----------------------------------------------|-----------------------------------------------------------|
| Platalea minor, Lesser Spoonbill, averaging   | 3,600,000 per cu. mm.                                     |
| Platalea minor, two weeks later               | 1,800,000; this bird was ill and died shortly thereafter. |
| Nycticorax nycticorax, Night Heron            | 2,400,000 per cu. mm.                                     |
| Ardetta cinnamomea, Cinnamon Bittern          | 2,800,000 per cu. mm.                                     |
| Sula leucogastra, Brown Booby                 | 2,200,000 per cu. mm.                                     |
| *Cathartes aura septentrionalis               | 2,600,000 per cu. mm.                                     |
| *Bubo virginianus (pallascens?)               | 2,500,000 per cu. mm.                                     |
| Cuncuma leucogaster, White-breasted Sea Eagle | 2,600,000 per cu. mm.                                     |
| Haliastur intermedius, Malayan Brahminy Kite  | 2,500,000 per cu. mm.                                     |
| Passer montanus, Mountain Sparrow             | 2,500,000 per cu. mm.                                     |

\*Studied in the United States.

—LEON L. GARDNER, *Camp John Hay, Mountain Province, P. I., November 20, 1929.*

Odd Bill Formation in a California Horned Lark.—A boy in my neighborhood brought to me on February 8, 1930, a California Horned Lark (*Otocoris alpestris actia*) which interested me immediately because of the strange shape of the bill, the upper mandible curving to such an extent as to suggest the hooked bill of a raptor. The length of the upper mandible in this specimen, which I have preserved as a skin, is 13.5 mm., and it extends in a curve downward 4 mm. beyond the tip of the lower mandible, which latter appears to be normal. (See fig. 57.) Both mandibles are stout and smooth with no irregularities except for shape. A possible explanation is a fracture of the upper mandible at some time in the bird's life, possibly as a nestling, resulting in this extension beyond the normal length.

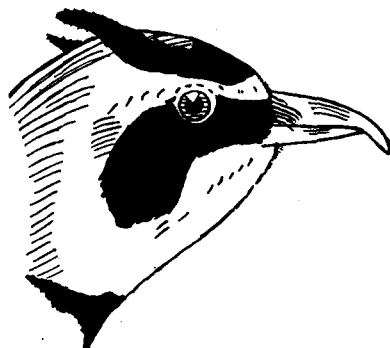


Fig. 57. HEAD OF CALIFORNIA HORNED LARK SHOWING ABNORMAL GROWTH OF ITS UPPER MANDIBLE.

It occurred to me before skinning it that the bird, which was a male, must have had difficulty in securing food. Skinning, however, showed the bird to be well developed, even having traces of fat. The stomach contents consisted entirely of fragments of small black

beetles.—EMERSON A. STONER, *Benicia, California, February 12, 1930.*