

ARCANA

OF

SCIENCE AND ART:

OR, AN

ANNUAL REGISTER

OF

USEFUL INVENTIONS AND IMPROVEMENTS, DISCOVERIES AND

NEW FACTS,

IN MECHANICS, CHEMISTRY, NATURAL HISTORY,
AND SOCIAL ECONOMY;

ABRIDGED

FROM THE TRANSACTIONS OF PUBLIC SOCIETIES AND FROM OTHER
SCIENTIFIC JOURNALS, BRITISH AND FOREIGN,
OF THE PAST YEAR.

WITH SEVERAL ENGRAVINGS.

"Occurrences, which, according to received theories, ought not to happen, are the facts which serve as clews to new discoveries."—SIR JOHN HERSCHEL.

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specific characters desirable, beyond such as the remarks of Mr. Couch, and the representation here given will supply ; and



(*Hemiramphus Europæus*. Yarrell.)

I would only propose, for distinction's sake, that it should be called *Hemiramphus Europæus*.*

CHARACTERS OF A NEW FORM IN THE FRINGILLIDÆ.

By Andrew Smith, M.D., Surgeon to the Forces, Superintendent of the late Expedition for exploring the Interior of South Africa.

IN the many instances in which we have already detected, amongst birds, well-defined natural groups, we have found a certain harmony of characters pervading the entire of their species ; indeed, it has been that evident harmony which led to their being regarded as natural groups. It is true, in each group some species are found which do not exhibit all the characters of the more typical ones ; yet they nevertheless present us with sufficient indications of their relationship to enable us at once to perceive their proper connexions.

If, then, the existence of these marked corresponding characters are to be regarded as the essence of such groups, it will be necessary whenever a species presents itself which does not possess the qualifications requisite for admitting it amongst forms already established, to view it as a legitimate object for the type of a new subdivision. Under such circumstances, the Sociable Finch of Southern Africa presents itself to our notice. Whilst no one will deny this bird a place in the Fringillidæ, most observers will admit it deficient in the series of subordinate characters which would admit of its being properly included in any of the yet characterized sub-divisions of the family ; and, in proof of what we have affirmed, no two original observers have hitherto placed it in the same genus. By the most accurate inquirers, it has either been placed in the *Ploceus* of Cuvier or the *Euplectes* of Swainson.

Unless we are to allow the characters of a group to stand so loosely defined as to admit of the introduction of forms so remote from the typical ones, that no two observers would, in all probability, refer them to the same genus, we cannot possibly regard the bird now under consideration as appertaining either to *Ploceus* or *Euplectes*. It has not that series of external characters which would establish its place either in the one or the other ; and its resorts and habits are directly opposed to both ;

* Magazine of Natural History, No. 10.

unless it be believed that we have already sufficient evidence to warrant the conclusion, that every natural genus must of necessity have certain modified forms as representatives of other genera

If it is to be discarded from any connexion with either of the above genera, its legitimate position is far from evident: and, therefore, to speculate upon probabilities might only increase that obscurity. What is quite incomprehensible with our present materials, will doubtless become evident when most of the stores which nature has still in reserve shall have been accumulated: and, till then, any labour directed otherwise than to that end will, in all likelihood, only prove labour lost. For the reception of this South African bird, I would, then, propose the

Subgenus PHILETAIRUS.

Bill rather long, and pointed, higher than broad, and entering between the feathers of the forehead: culmen rounded and curved; commissure sinuated; edges of mandibles slightly inflexed: nostrils near base of upper mandible, round, and behind edged with feathers; a few short rigid bristles at angles of mouth. *Wings* moderate; when closed, covering half the tail; three outermost quill-feathers nearly of equal length, and the longest. *Tail* rounded. *Legs* strong, scutellated in front; middle toe considerably longer than the lateral ones, which are nearly of equal length, and shorter than the hinder one. *Claws* strong, compressed, curved, and pointed.

PHILETAIRUS LEPIDUS. (*Ploceus socius* Cuvier, *Euplectes lepidus* Swainson.)

Male. The upper parts of the head and the back drab brown; the sides of the neck, the interscapulars, and a longitudinal stripe in front of each leg at base, black or black-brown; the feathers margined with Isabella; chin, and a stripe between it and anterior angle of each eye, pure black; sides of head and under parts of body, Isabella; quill and tail feathers dark brown; the latter, towards tips, of an Isabella tint; bill a pale horn-colour, inclining to bluish white towards point. Length, from shoulder to tip of wings 2" 10^{'''}; tail, 1" 10^{'''}; tarsus, 10^{'''}; bill, 8^{'''}. Total length of bird, 5 in.

Female. No black on the chin or at the base of mandibles; in other respects resembles the male.

Inhabits the interior of Southern Africa, and is generally found in dry arid situations. A great many individuals are usually found associated together; and under one common roof they build their nests, which in some cases form such large and weighty masses as to break the strong branches of large and lofty trees, upon which they usually place them. In its manners, it resembles the *Pyrgitæ*, and still more, perhaps, the *Ploce*-passer, a small African group, first indicated by me in June, 1836.*

* Magazine of Natural History, No. 10.