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AN ILLUSTRATED KEY TO THE NON-PASSERINE FAMILIES OF BIRDS IN IRAQ

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This key attempts to provide a practical tool for the identification of orders and families of non-passerine birds which are represented in the Iraqi list. In its preparation, the compiler adapted, modified and much expanded Witherby's Key to the Orders, published in the Handbook of British Birds (Vol. 1). The present key is designed to help beginners in Systematic Ornithology of Iraq, to refer birds under examination to their proper families. The writer has also prepared a set of keys, to the species level, for all non-passerine forms, and hopes to be able to complete the task for the Passeres as well.

1. Hind toe connected by a web with inner toe (fig. 1a).

PELECANIFORMES

(a) Very large size; a large pouch attached underneath the bill (fig. 1b).

Pelecanidae (pelicans)

(b) Medium size; no pouch underneath the bill; bill spear-shaped and its cutting edges serrated; neck very long and snake-like (fig. 1c).

Anhingidae (darters)

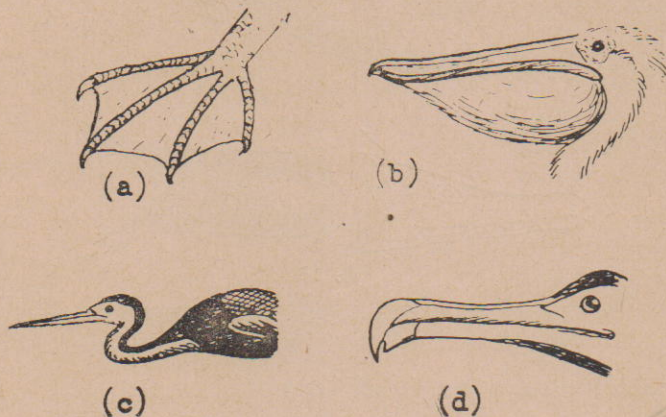
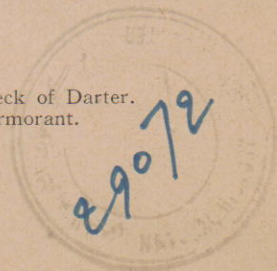


Fig. 1: Pelecaniformes:

(a) Typical foot of Pelecaniformes.
(b) Head of Pelican.

(c) Head and neck of Darter.
(d) Head of Cormorant.



- (c) Medium size; no pouch underneath the bill; bill ending with a hooked nail, and its cutting edges smooth (fig. 1d).

Phalacrocoracidae (cormorants)

- Hind toe not connected by a web with the inner toe 2
2. Cutting edges of bill distinctly serrated or lamellated 3
- Cutting edges of bill smooth or slightly curved (festooned), but without serrations or lamellae 4
3. Bill abruptly curved downwards (fig. 5a); bare part of tibia exceeds 200 mm.; tarsus many times longer than toes.

PHOENICOPTERIFORMES: **Phoenicopteridae** (flamingoes)

- Bill normal; bare part of tibia, if any, does not exceed 40 mm.; tarsus shorter than twice the length of toes; anterior toes webbed (fig. 2).

ANSERIFORMES: **Anatidae** (ducks, geese, swans, etc.)

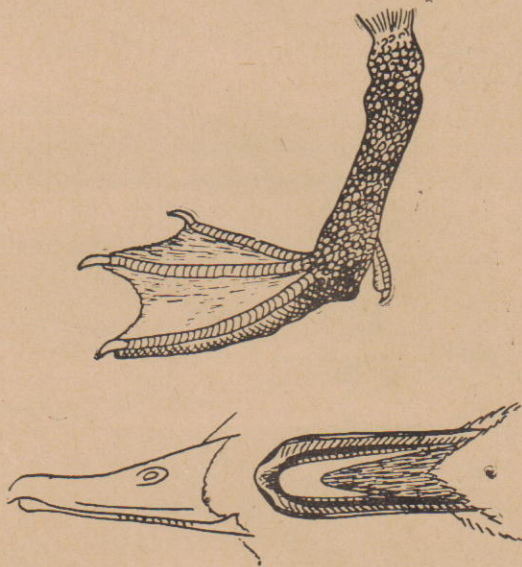


Fig. 2: Typical foot and bill of surface-feeding Ducks. See small hind toe, and lamellae on the cutting-edges of bill.

4. Legs attached about middle of body 5
- Legs attached near vent, far behind middle of body; toes lobed (fig. 3).

PODICIPITIFORMES: **Podicipitidae** (grebes)

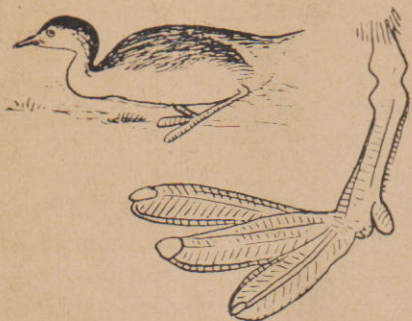


Fig. 3: Little Grebe and typical foot of Podicipitidae.

5. Anterior toes completely webbed (fig. 4,ab).

CHARADRIIFORMES: LARI

(a) Bill hooked at the end; two central tail-feathers elongated (fig. 4c).
Stercoraridae (skuas)

(b) Bill not hooked at the end, upper mandible markedly decurved at the end and longer than lower (fig. 4d); tail usually square or slightly rounded.
Laridae, Larinae (gulls)

(c) Bill tapering, upper mandible not strongly decurved, if at all; tail usually forked (fig. 4eé).
Laridae, Sterninae (terns)

Anterior toes not, or only incompletely, webbed **6**

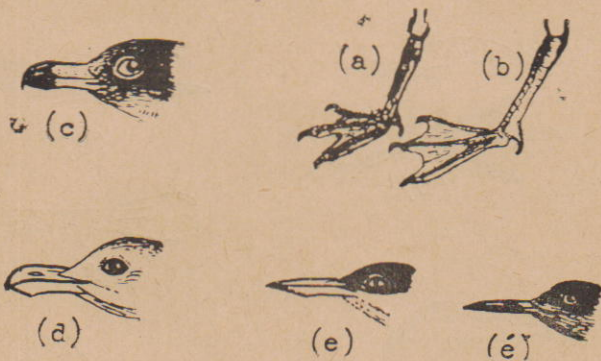


Fig. 4: Charadriiformes.

- (a) Typical foot of Tern.
- (b) Typical foot of Gull.
- (c) Head of Skua.
- (d) Head of Gull.
- (e, é) Head of Terns.

6. Lower part of tibia not feathered (with one exception, Little Bittern, where lores are bare, bill long and straight, head flattened at top) **7**
 Lower part of tibia feathered **13**

7. Lorol or orbital region or both bare 8
 Lorol and orbital region fully feathered 9
8. Patches of powder-down on breast and sides of rump; feathers of back of head more or less elongated; bill straight and tapering (fig. 5c); claw of middle toe serrated on inner edge; hind toe on the same level as anterior toes (fig. 5b).

ARDEIFORMES: Ardeidae (herons, bitterns)

No patches of powder-down; feathers of back of head not elongated, or if so, bill spatulate; claws blunt, and that of middle toe not serrated; hind toe raised above the level of anterior toes (fig. 5d).

ARDEIFORMES: CICONIAE

- (a) Bill massive, straight and tapering (fig. 5e).
Ciconiidae (storks)
- (b) Bill flattened and spatulate (fig. 5f).
Plataleidae (spoonbills)
- (c) Bill slender and distinctly curved downwards (fig. 5g).
Plegadidae (ibises)

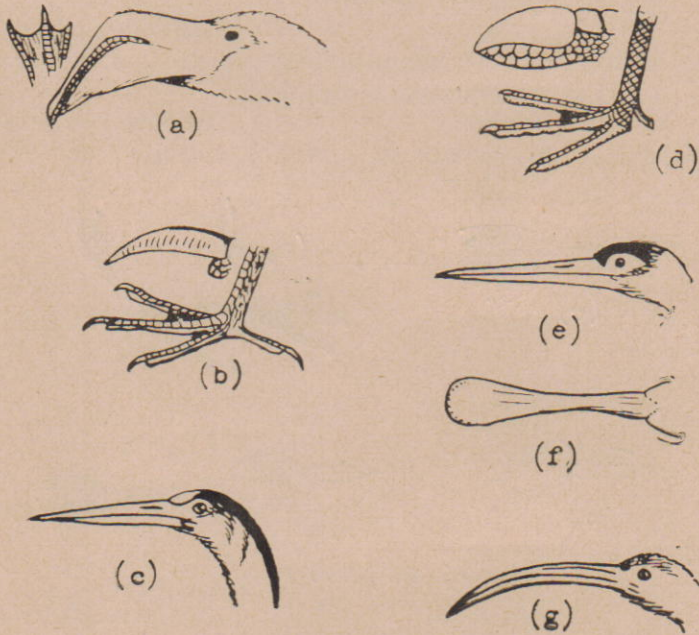


Fig. 5: Ardeiformes:

- (a) Head and foot of Flamingo. (d) Foot and claws of Ciconiidae.
 (b) Head and serrated middle claw of Herons. (e) Head of Stork.
 (c) Head of Heron. (f) Head of Spoonbill.
 (g) Head of Ibis.

9. First functional primary generally longer than, or equal to, second (in a few cases, such as *Vanellus* and *Chettusia*, shorter than 2nd); first real primary narrow and stiff and is concealed by primary coverts (fig. 6) 10
- First functional primary shorter than second; no distinct rudimentary primary 11

Fig. 6: Rudimentary real 1st primary of:—
 (a) Lapwing.
 (b) Grey Plover.
 (c) Common Snipe.



10. Bill either much shorter than half length of head, with curved culmen in Pratincoles accompanied by an emarginated tail (fig. 7a, b); or about equal length of head with both mandibles decurved and tapering in Coursers and tail not emarginated (fig. 7c).
 CHARADRIIFORMES: **Glareolidae** (pratincoles, coursers)

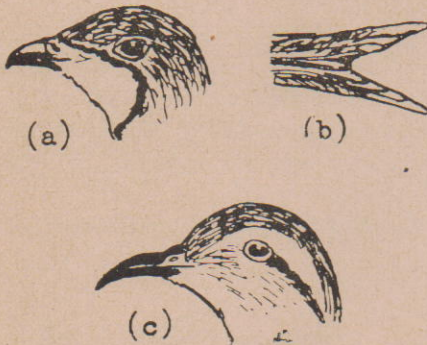


Fig. 7: Glareolidae:
 (a, b) Head and tail of Pratincole.
 (c) Head of Courser.

- Bill never much less than half length of head, often straight, and if noticeably curved, is much longer than head.
 CHARADRIIFORMES: CHARADRII (true waders)

- (a) Bill massive, lower mandible keeled (fig. 8); plumage black and white; anterior toes webbed; a hind toe present.
Dromadidae (crab-plovers)

- (b) Bill strong, laterally compressed and chisel-like at the end; no hind toe present (fig. 9).

Haematopodidae (oyster-catchers)

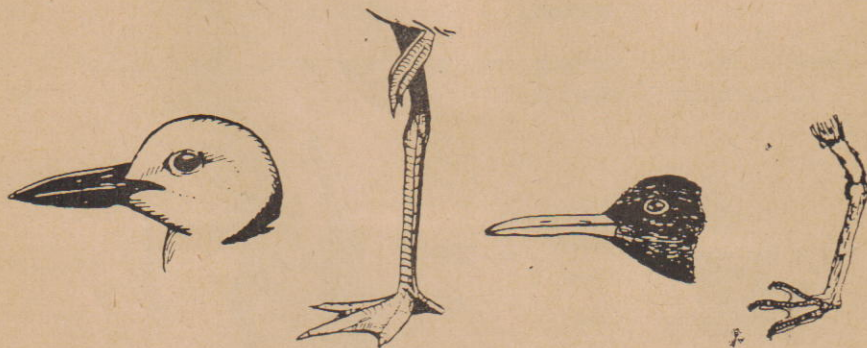


Fig. 8: Head and foot of Crab-Plover.

Fig. 9: Head and foot of Oyster-catcher.

- (c) Bill more or less slender and straight; toes lobed (fig. 10).

Phalaropodidae (phalaropes)



Fig. 10: Head and foot of Phalarope.

- (d) Bill distinctly long and slender; plumage black and white; no hind toe present. Bill straight in Stilts, and toes not webbed (fig. 11a, b); distinctly curved upwards in Avocets, and toes partly webbed (fig. 11c, d),

Recurvirostridae (stilts and avocets)

Fig. 11: Recurvirostridae:
(a, b) Head and foot of Stilt.
(c, d) Head and foot of Avocet.



(e) Bill short, strong and generally shorter than tarsus; hind toe either absent or very small (fig. 12).

Charadriidae (plovers, lapwings, dotterel, turnstones)

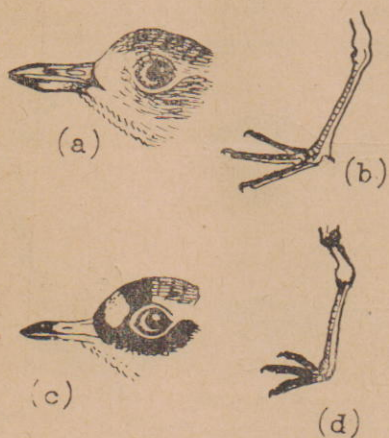


Fig. 12: Charadriidae:

(a, b) Head and foot of Grey Plover.
(c, d) Head and foot of Ringed Plover.

Fig. 13: Scolopacidae:

(a, b) Head and foot of Snipe.
(c, d) Head and foot of Sandpipers.
(e, f) Head and foot of Redshank.

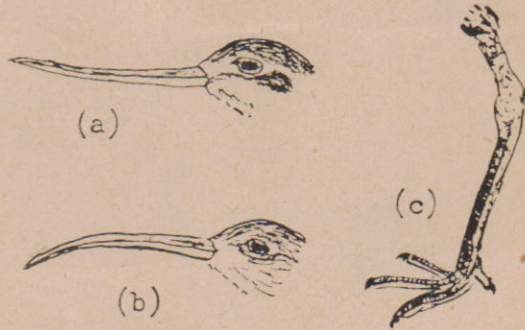


- (f) Bill long or medium, but is generally more or less longer than tarsus, and sometimes equal; plumage not black and white; hind toe present (fig. 13, 14).

Scolopacidae (snipes, woodcocks, godwits, curlews, sandpipers, redshanks, stints, dunlins).

Fig. 14: Scolopacidae:

- (a) Head of Godwit.
(b) Head of Curlew.
(c) Foot of same.



11. Middle toe much shorter than tarsus 12

Middle toe about equal or longer than tarsus. Frontal shields (fig. 15c, e) in Coots, Moorhens and Gallinules; without frontal shields (fig. 15a, b) in Rails, Crakes.

RALLIFORMES: **Rallidae** (coots, rails, crakes)

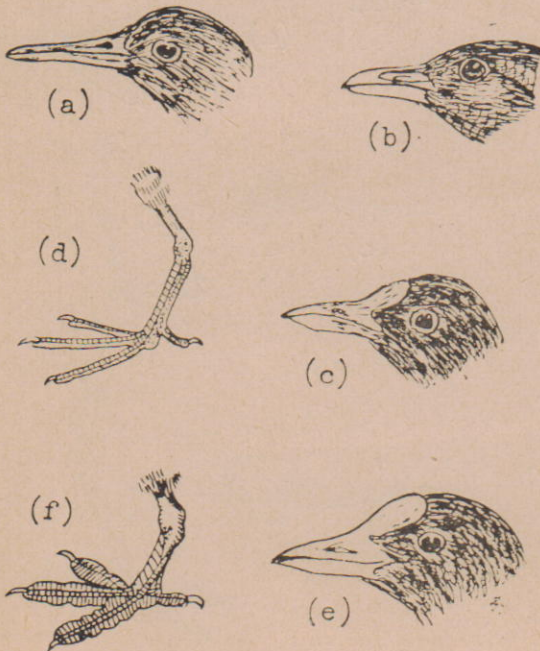


Fig. 15: Rallidae:

- (a) Head of Water Rail.
(b) Head of Crake.
(c) Head of Moorhen.
(d) Foot of Rails.
(e) Head of Gallinule.
(f) Foot of Coot.

12. Bill short and stout, slightly shorter than head; eyes large and yellow, bordered by a whitish eye-stripe; no hind toe (fig. 16).

CHARADRIIFORMES: **Burhinidae** (stone-curlews)

- Bill long, straight and tapering; a hind toe present; neck and legs very long (fig. 17).

RALLIFORMES: **Balearicidae** (cranes)

- Bill short and straight; no hind toe present; neck and legs moderate (fig. 18).

RALLIFORMES: **Otididae** (bustards)

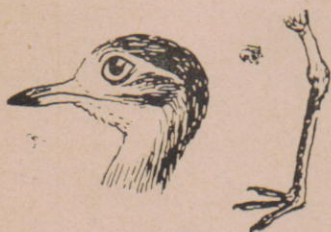


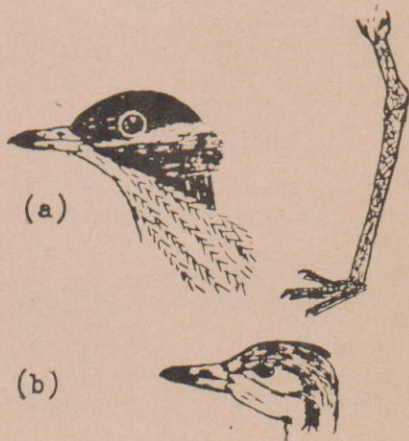
Fig. 16: Head and foot of Stone-Curlew.



Fig. 17: Head and foot of Crane.

Fig. 18: Otididae:

- (a) Head and foot of Great Bustard.
(b) Head of Houbara.



13. Nostrils opening in a soft, fleshy skin (fig. 19b).

COLUMBIFORMES: **Columbidae** (pigeons, doves)

- Nostrils in sharply defined cere at base of upper mandible ... 14

- No cere or soft, fleshy membrane at base of upper mandible ... 16

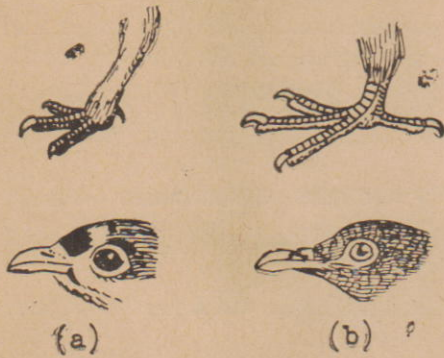


Fig. 19: Columbidae:

- (a) Head and foot of Sandgrouse.
- (b) Head and foot of Pigeon.

14. Two toes directed forwards and two backwards; upper mandible strong and short, curved downwards over the lower: In the Iraqi bird, plumage green, and bill red (fig. 20).

PSITTACIFORMES: **Psittacidae** (Rose-ringed Parakeet)

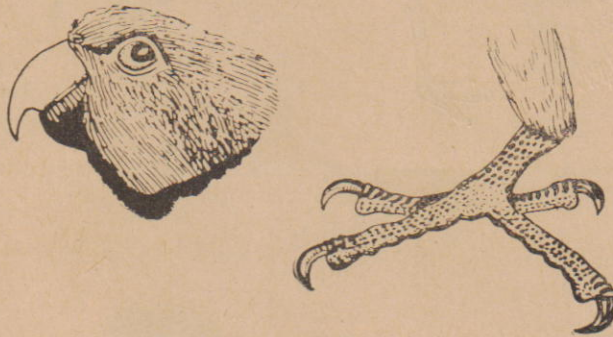


Fig. 20: Head and foot of Parakeet.

Three toes directed forwards and one backwards; bill strong, upper mandible curved downwards near its tip; plumage not green, nor bill is red

15

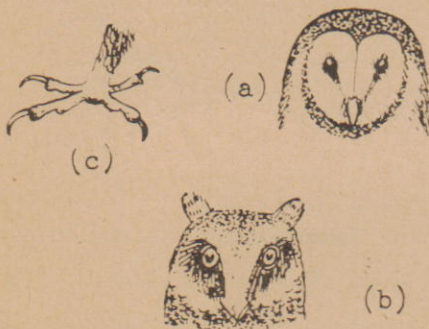


Fig. 21: Strigidae:

- (a) Head of Barn-Owl.
- (b) Head of Long-eared Owl.
- (c) Foot of Owls.

15. Eyes large and directed forwards; base of bill concealed by feathers; toes feathered or covered with short hairs (fig. 21).

STRIGIFORMES: **Strigidae** (owls)

Eyes normal and directed sideways; base of bill clear; toes not feathered:

FALCONIFORMES: (Birds of prey)

- (a) Skin of face, and sometimes crown and neck also, bare or covered with hair (fig. 22).

Aegyptiidae (vultures)

Fig. 22: Aegyptiidae:
(a) Head of Egyptian Vulture.
(b) Head of Griffon Vulture.



- (b) Whole head feathered; spiny scales present beneath toes and posterior side of tarsus (fig. 23).

Pandionidae (ospreys)

Fig. 23: Head and foot of Osprey.



- (c) Whole head feathered; no spiny scales on toes or tarsus (fig. 24).

Falconidae (eagles, hawks, buzzards, falcons, harriers, kites, kestrels)

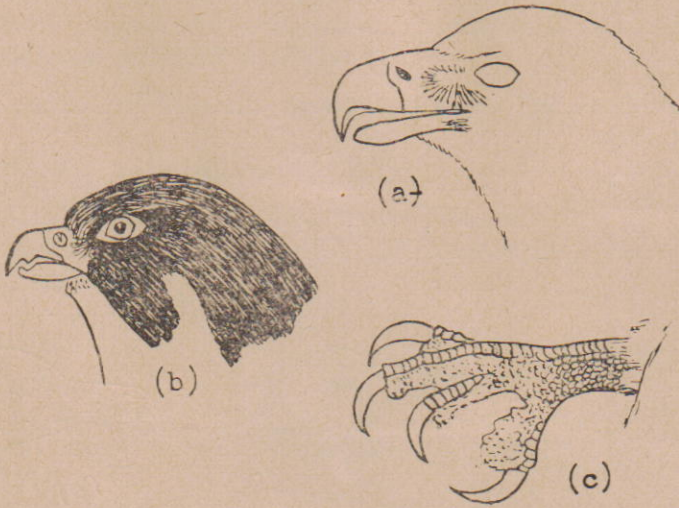


Fig. 24: Falconidae:
 (a) Head of Peregrine. (b) Head of an eagle.
 (c) Foot of Falcons.

16. Toes feathered; no hind toe present (fig. 19a).

COLUMBIFORMES: **Pteroclididae** (sandgrouse)

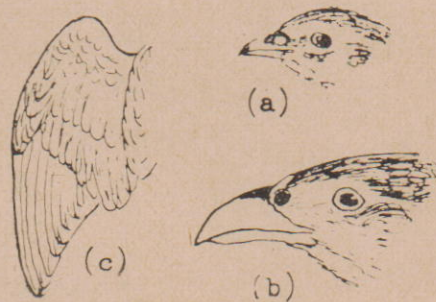
Toes feathered or bare; hind toe present **17**

17. Tail feathers 10 or 12 **18**

Tail feathers more than 12 (with one exception, *Coturnix* (Quail) where tail hidden by coverts, and primaries stiff and rounded) (fig. 25).

GALLIFORMES: **Phasianidae** (partridges, seese, chukar, quail)

Fig. 25: Galliformes:
 (a) Head of Quail.
 (b) Head of Partridge.
 (c) Wing of Galliformes.



18. Ten fully developed tail-feathers; wing over 80 mm. 19

Ten fully developed tail-feathers and two small soft ones above lateral tail-feathers; two toes directed forwards and two backwards (fig. 26a). Tail-feathers stiff and tapering in all Woodpeckers (fig. 26b, c); but soft and rounded in Wryneck (fig. 26d, e).

PICIFORMES: **Picidae** (woodpeckers, wryneck)

Twelve fully developed tail-feathers, or else wing not over 60 mm. 21



Fig. 26: Piciformes:

- (a) Foot of Piciformes.
- (b, c) Head and tail Woodpecker.
- (d, e) Head and tail of Wryneck.

19. Head with a large chestnut crest; bill slightly curved downwards (fig. 27). CORACIIFORMES: **Upupidae** (hoopoes)

Head not crested 20



Fig. 27: Head of Hoopoe.



Fig. 28: Head and foot of Cuckoo.

20. Two toes directed forwards and two backwards; bill strong and decurved (fig. 28).

CUCULIFORMES: **Cuculidae** (cuckoos)

Three toes directed forwards and one backwards; claw of middle toe pectinated; nostrils tubular; bill short, weak and broad, with a very wide gape (fig. 29).

CAPRIMULGIFORMES: **Caprimulgidae** (nightjars)

All four toes directed forwards, except in Spine-tailed swifts which do not occur in Iraq; bill weak and short, but the gape is wide; tail emarginated; wings scythe-like when flying (fig. 30).

APODIFORMES: **Apodidae** (swifts)

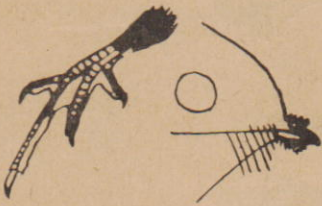


Fig. 29: Head and foot of Nightjar.



Fig. 30: Head, foot and wing of Swift.

21. Middle pair of tail-feathers elongated; bill slender and slightly decurved (fig. 31).

CORACIIFORMES: **Meropidae** (bee-eaters)

Middle pair of tail-feathers not elongated 22



Fig. 31: Head, foot, and tail of Bee-eater.



Fig. 32: Foot of Passeriformes.

22. All toes unconnected (fig. 32).
 PASSERIFORMES: (many families of crows, tits, thrushes, wheatears, flycatchers, shrikes, warblers, sparrows, buntings, starlings and larks).

Some of the front toes tightly connected 23

23. Bill long, straight and pointed, about as long as tail (fig. 33a).
 CORACIIFORMES: **Alcedinidae** (kingfishers)

Bill shorter and ending with a hook, and is shorter than one third of tail (fig. 33b).
 CORACIIFORMES: **Coraciidae** (rollers)

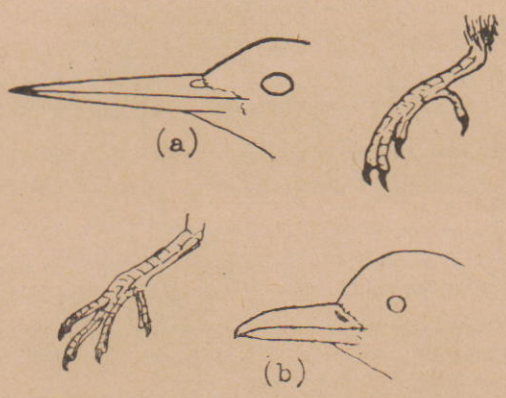


Fig. 33: Coraciiformes:
 (a) Head and foot of Kingfisher.
 (b) Head and foot of Roller.

(الخلاصة)

دليل مصور لتشخيص فصائل الطيور في العراق

(عدا العصفوريات)

للسيد بشير اللوس

استاذ في كلية العلوم ومدير متحف التاريخ الطبيعي

وضع المؤلف هذا الدليل المصور لمساعدة المعنيين بدراسة الطيور العراقية على تشخيص النماذج المعروضة للدرس ، أو التي جمعت في الحقل ، الى مرتبة الفصيلة . وهو يتناول المعلومات والوسائل التي تمكن المبتدي من الوصول الى تشخيص ٣٩ فصيلة تنتمي الى ١٧ رتبة من الطيور - عدا رتبة واحدة وهي رتبة العصفوريات التي تضم أقل من نصف انواع الطيور في العراق .

ان تتبع هذا الدليل وتطبيقه لا يتطلب سوى القليل من المعرفة عن مبادئ علم الطيور ، ولا سيما ما يتعلق منها بمميزات الطيور الخارجية .

ونود تنبيه القاري المبتدي الى ما اتفق عليه في التسميات العلمية للرتب والفصائل . فاسم كل من الرتبة والفصيلة يتألف من كلمة واحدة لاتينية الاصل تمثل اسم نموذج رئيس في المجموعة وينتهي بالمقطع -formes في حالة الرتب ، وبالمقطع -dae في حالة الفصائل . واذا اراد القاري معرفة الاسماء العربية للرتب والفصائل فنشير عليه بالرجوع الى كتابنا عن « طيور العراق » باللغة الانكليزية وعنوانه (The Avifauna of Iraq) المطبوع في سنة ١٩٥٣ وهو النشرة الثالثة من منشورات متحف التاريخ الطبيعي العراقي .

ويعد المؤلف المنشور كتابا عن الطيور العراقية باللغة العربية يتناول بالوصف والتعريف جميع طيور العراق مع كثير من الصور الملونة والمعلومات عن عادات الطيور واطرافها في بلادنا خاصة وبلاد الشرق الاوسط عامة . وسيضم هذا الكتاب ، فيما يضم ، مفاتيح كاملة لتشخيص كافة الانواع في كل رتبة .

A COLLECTION OF INSECTS FROM IRAQ

KAMEL T. KHALAF

College of Education, Baghdad

The material dealt with in this paper was secured mostly between 1953 — 1959 and most of it is kept now in the college collection. Determination of the species was made by various specialists through Dr. P. W. Oman (Director of the Insect Identification and Parasite Introduction Laboratories, Beltsville, Maryland) to whom we are highly indebted. The Anoplura, and the Mallophaga from the domestic fowl were kindly identified by Dr. P.T. Johnson, the rest of the Mallophaga by Dr. K. C. Emerson, the Odonata by Miss. Sophy Parfin, the Isoptera by Dr. T. E. Snyder, the Ephydriidae by Dr. Willis W. Wirth, the Orthoptera by A. B. Gurney, the Anthicidae by R. S. Beal Jr., the Curculionidae by R. E. Warner, the Cincindelidae and Scarabaeidae by O. L. Cartwright, the rest of the Coleoptera by T. J. Spilman, the Lygaeidae and Pyrrhocoridae by P. D. Ashlock, and the remaining Hemiptera by R. I. Sailer.

The reported incidence following each species is for the city of Baghdad unless stated otherwise.

ANOPLURA

HAEMATOPINIDAE

Haematopinus asini (Linn.): From donkey. (May).

H.tuberculatus (Burm.): From water (black) buffalo. (April).

LINOGNATHIDAE

Linognathus setosus (Von Olfers) : From dog. (Dec.).

L.vituli (Linn.): From cattle. (April).

MALLOPHAGA

From Domestic Fowl

Goniodes gigas (Taschenburg) : (Feb.)

G. dispar (B.) : (May and Oct.)

Cuclotogaster heterographis (Nitzsch) : (Feb. and Oct.).

Menacanthus cornutus (Schommer) : (Feb., May, and Oct.).

Goniocotes gallinae (De Geer) : (Feb.).

Lipeurus caponis (L.) : (Oct.).

From Black-winged Stilt

Austromenopon himantopi T. : (Nov).

Quadriceps semifissus (N.) : (Nov.).

Q. hemichrous (N.) : (March).

Actornithophilus himantopi B. : (March).

From Crested Lark

Menacanthus sp. : (Nov.).

From Buzzard

Degeeriella sp. : (Jan.).

Laemobothrian sp. : (Jan.).

From Swallow

Myrsidea rustica (G.) : (March).

Philopterus excisus microsomaticus T. : (March).

From Collared Dove

Columbicola sp. : (Feb.).

Coloceras sp. : (Feb.).

From Pigeon

Campanulotes bidentatus compar (B.) : (Feb. — April).

Columbicola columbae (L.) : (Feb. — April).

Hohorstiella lata (P.) : (March and April).

ODONATA (ZYGOPTERA)

COENAGRIIDAE

nr. *Argiocnemis* sp. : (April).

nr. *Ischnura* sp. : (Nov.).

Platycnemis sp. : Rawā (Sept.).

LESTIDAE

Lestes sp. : (Nov. — Feb.).

ODONATA (ANISOPTERA)

AESCHNIDAE

Anax sp. : (Feb. and March).

LIBELLULIDAE

Sympetrum sp. : (Nov. — Feb., and May). Very abundant.

nr. *Orthetrum* sp. : (Nov.).

nr. *Selysiothemis* sp. : (Nov.).

ISOPTERA

TERMITIDAE

Microcerotermes diversus Silvestri : (Dec. and April).

M. spp. : (Nov. — April).

Species of *Microcerotermes*, according to Snyder, are subterranean termites which build carton nests on tree trunks on the ground, or in buildings. *Amitermes vilis* (Hagen) also occurs in Iraq. This, in addition to *Reticulitermes*, are subterranean or ground nesting. Species of the last mentioned genus and of *Kalotermes*, *Psammotermes*, and *Eremotermes*, are expected by Snyder to occur in this general area.

HODOTERMITIDAE

Anacanthotermes sp. : Najaf (Jan.). According to Snyder, several species of this genus occur in our area; they are desert harvesting termites and crawl on the surface of the ground in full sunlight; they nest underground.

DIPTERA

SPHAEROCERIDAE

Leptocera sp. : (April and March). Very abundant .

EPHYDRIDAE

Ephydra riparia Fallen : (Nov., March, and April). Very abundant.

Brachydeutera argentata Walker : (Nov. and May).

Notiphila cinerea Fallen : (Nov.).

N. riparia Meigen : (Nov.).

Ochthera schembrii Rondani : (Nov.).

Psilopa compta (Meigen) : (Nov., April, May, and July).

P. nigritella Stenhammar : (March).

Scatella paludum (Meigen) : (March and April). Very abundant.

S. lutosa (Haliday) : (April and July).

S. rubida Becker : (July).

Scatophila sp. : (April — Aug.).

Atissa pygmaea (Haliday) : (March, May, and July).

Diclasioipa galactoptera (Becker) : (May).

Peligmus durrenbergensis (Lowe) : (March).

Allotrichoma perspicendum Becker : (Feb. and July).

Hydrellia poecilogastra Becker : (April).

SYRPHIDAE

Tubifera tenax (Linn.) : DIALA (Dec.), Hindyia (Nov.), Basra (April), Rawa (Nov.), and Najaf (May).

T. quinquelineatus (Fabr.) : (Jan.), Hindyia (Nov.), and Mosul.

ORTHOPTERA

BLATTIDAE

Periplaneta americana (L.) : Nymphs and adults. Widely distributed.

Supella supellectilium (Serv.) : (Oct. — May), Najaf (July), Badra (Nov.), and Shaklawa.

Symploce persica B. — Bienko.

Shelfordella tartara (Sauss.) : (May).

Blattella germanica (L.) : Nynphs. (Jan. — April, and Nov.).

POLYPHAGIDAE

Polyphaga aegyptiaca (L.) : Including females and nymphs. (Oct. — June, and Aug.), Ana (Sept.), Mosul (Nov.) and Khasib.

MANTIDAE

Blepharopsis mendica (F.) : Kirkuk (April) and Habania (Nov.).

nr. *Empusa uvarovi* Chop. : (Nov.).

Mantis religiosa (L.) : (Nov. and Jan.) and Aldahalik (Oct.)

GRYLLIDAE

nr. *Gryllodes sigillatus* (Walk.) : (Nov. — Feb.).

Eugryllodes macropterus (Fuente).

Gryllus bimaculatus De G. : (Dec. and May).

Acheta domesticus L. : (Nov., Jan., March — June, and Aug.) and Baqouba (March).

nr. *A. tartarus obscurior* (Uv.) : (Nov., Feb. — May, and Aug.)

A. sp. : Nymphs. (Nov. and Feb. — May) and Basrah (Dec.).

GRYLLOTALPIDAE

Gryllotalpa gryllotalpa L. : (Oct — June, and Aug.), Shaklawa (July), Basrah (Dec.), Dialah (Dec.), Baqouba (April), Imadyia (summer), Ana (June), and Khasib.

TETRIGIDAE

Paratettix meridionalis (Rambur) : (Oct. — May, and Aug.), Samarra (Feb.), Shaklawa (July), Khanaqin (April), Baqouba (April), Hilla (Nov.), and Hindyia (Nov.).

TETTIGONIIDAE

Homorocoryphus nitidulus (Scop.) : Hilla (Nov.)

nr. *Conocephalus turanicus* Sem. : (Feb.).

nr. *Euconocephalus nasutus* (Thunb.) : (Nov., Jan., and Feb.) and Falluja (Oct.).

Tettigonia viridissima L. : (May).

Decticus sp.

ACRIDIDAE

nr. *Sphingonotus rubescens* (Walk.).

- S. carinatus* Sauss. : (May).
S. octofasciatus (Serv.) : (March — June).
Acrotylus insubricus (Scop.) : (Oct., Jan., and April), Samarra (Feb.),
 Karbala (March), and Najaf (Nov.).
Oedipoda miniata (Pall.) : Khanaqin (Dec.).
Pyrgomorpha conica (Olivier) : (Feb. and April), Baqouba (April),
 and Samarra (Feb.).
Tropidopola cylindrica obtusa Uvarov : (Oct. — May, and Aug.),
 Baqouba (Dec. and Summer), Samarra (Feb.) and Khasib.
Thisoicetrus littoralis asiaticus Uvarov : (Summer, Oct., and Nov.).
Thisoicetrinus pterostichus (F. — W.).
Anacridium aegypticum (L.) : (Oct. — March, and April), Shaklawia
 (July), Diwaniya (July), and Khasib.
Locusta migratoria L. : (Nov. — March) and Hilla (Nov.).
Acrida sp. : (Aug.).
Truxalis sp. : (Oct. — June) and Hilla (Oct. and April).
Schistocerca gregaria (Forsk.) : (March — June).
Aioloplus savignyi (Krauss) : (April and Aug.).
A. thalassinus (F.) : (Oct. — March and April), Hilla (Nov.), Hindyia
 (Nov.), and Khanaqin (Dec.).
A. sp. : Nymphs (Feb.) and Baqouba (Dec.).
Calliptamus tenuicercis Tarb.
 nr. *Duroniella laticornis* Krauss : (Oct., Nov., March, April, and
 Aug.) and Koufa (Jan.).
Ochrilidia acuta (Bol.) : (Nov., Dec., Feb., and Aug.), Diwaniya
 (Oct.), and Baqouba (April).

COLEOPTERA

PTINIDAE

- Gibbium psylloides* (Czemp) : (April).

CANTHARIDAE

- nr. *Cantharis livida* L. : (Feb. — June) and Baqouba (March). Abun-
 dant.
Rhagonycha fulva (Scopoli) : (Nov.) and Baqouba (March).
 nr. *Cantharis lateralis nigronotata* Pic : (March — June, and Oct.)
 and Baqouba (Dec.).

MELOIDAE

- Lydus collaris* (F.) : Sa'dia (April).

ALLECULIDAE

- Omoplus* sp. : (April).

ELATERIDAE

Conoderus (*Heteroderes*) spp. : (Dec. — May) .

ANTHICIDAE

Formicomus sp. : (Feb. and March).

Anthicus (nr. *Vacusus*) sp. : Mosul (March).

CURCULIONIDAE

Smicronyx sp. : (Feb. and April).

Apion sp. : Shaklawa (June and July).

Sitona spp. : Mosul (March) and Sa'dia (Nov.).

Hypera sp. : (April).

Coniocleonus pseudoobliquus Gyll. : (Nov. and Dec.), Mansoria
(April), Samarra (Feb.), Baqouba (March), and Sa'dia (Nov.).

Temnorhinus sp. : (April).

Lixus sp. : (April).

nr. *Bangasternus planifrons* Brulle : (Oct. — May).

nr. *Esamus mniszehi* (Hoch.) : (April) and Baqouba (March).

Tanymecus spp. : (Feb — July). Abundant.

CINCINDELIDAE

Megacephala (*Tetracha*) *euphratica* Latr. : (Oct. — Jan., Feb. —
July, and Aug.), Karbala (Feb.), Sa'dia (April and May), Khana-
qin (April), and Hilla (May).

Cincindela lunulata Fab. : (Oct.).

SCARABAEIDAE

Tropinota squalida (Scop.) : (Feb. — June, and Nov.) Falluja (Sept.),
Samarra (Feb.), and Hamar (April). Abundant.

Scarabaeus sacer Linn. : (March — June, Aug., and Nov.), Al-Sedoor
(April), Diwanyia (July) Shaklawa (June), Falluja (July) and
Khasib.

nr. *Pentodon bispiniifrons* Reitt : (Oct. — June), and Falluja (Nov.).
Very abundant.

nr. *P. monodon* F. : (May).

P. sp. : (summer).

Oryctes sp. : (Feb.).

Copris hispanus Linn. : (April).

Onthophagus spp. : (Feb. — June).

Oxythyrea cinctella Schaum. : (Nov., Feb. and April), Sa'dia (May),
Hilla (April), and Khasib.

nr. *Adoretus comptus* Men. : (March and May).

A. discolor Fald. : Shaklawa (Oct.).

- Rhyssemus sp.* : (Oct.).
Pleurophorus caesus (Creutz.) : (March).
Aphodius erraticus (L.) : Baghdad.
Haplidia transversa (F.) : Shaklawa (July).
Phyllognathus sp.

TENEBRIONIDAE

- Trigonoscelis sp.* : Baghdad.
Tentyrina spp. : (March, April, Oct., and Nov.).
Tentyria sp. : (Dec.).
Alphitobius diaperinus (Panzer) : (April).
Tribolium confusum Duval : (Feb.).
Psammodes spp. : (Oct. — June), and Shaklawa (Aug.). Abundant.
 nr. *Adesmia fagergreeni* Baudi : Basra (Dec.) and Samarra (Feb.)
 nr. *A. dilatata* Klug : (April and Nov.), and Samarra (Feb.). Abundant.
A. sp. : (Oct.) and Mosul (March).
Scaurus spp. : (March, April, Oct., and Nov.).
Akis sp. : (Nov.).
Blaps gigas (L.) : (Sept. — May), Najaf (May), Dialah (Dec.) and Khasib.
Cossyphus sp. : (Jan., April and May).
Opatroides punctulatus Brulle : (March, April, July and Nov.) and Baqouba (Dec.). Abundant.
 nr. *Conocephalum setulosum* (Fald.) : (March).

SILPHIDAE

- Silpha arenaria* Kraatz : (May).

DERMESTIDAE

- Attagenus bifasciatus* Olivier : (April and Nov.).
Anthrenus flavipes Le Conte : (March).

COCCINELLIDAE

- Coccinella* 7 — *punctata* L. : Baqouba (April), Rawa (Nov.), Khanaqin (April and Dec.), Hilla (April), Badra (Nov.), Al - Dahalik (Oct.), Kirkuk (April), Koysanjak (Dec.), Koofa (Sept.), and Mosul.
C. 11 — *punctata* L. : (Oct. — June).
Epilachna chrysomelina (L.) : (Jan., Feb., and May), Mosul (Aug.), and Baqouba (Dec.).

HYMENOPTERA

- Vespa orientalis* L. : (Oct. — June), Badra (Nov.), Hilla (Oct. — Jan.), Diwaniya (Oct.), Najaf (Nov.), Khanaqin (Dec.), Mansoria

- (April), Shaklawa (July), Rawa (Nov.), Ana (Sept.) and Khasib.
Apis mellifera L. : (Oct. — May and June), Shaklawa (July), Koofa (Jan.) and Mōsul.
Polistes macaensis (F.) : (Nov. — March), Hilla (April), Khanakin (Dec.), and Khasib.
Eumenes campaniformis esuriens (F.) : (Dec., Feb., and March).
Liris haemorrhoidalis (F.) : (Nov — March), and Samarra (Feb.).
Xylocopa fenestrata F. : (Nov., Dec., and March), Baqouba (April), Diwanyia (July), and Khasib.
Dorylus fulvus (Westw.) : (April), Koofa (Nov.), Diwanyia (Aug.), and Mosul.
Campsomeris thoracica eriophora (Klug) : (Nov. — Feb.) and Hilla (Nov.).

LEPIDOPTERA

- Pieris rapae iranica* Le Cerf : (Sept. — March, and April), Najaf (Nov.), and Hindyia (Nov.).
Colotis fausta Oliv. : (Nov. and Dec.).
Pontia daplidice L. : (Dec. — March) and Najaf (May).
Danais chrysippus L. : (Sept. — April) and Hindyia (Nov.).
Euplagia quadripunctaria splendidior Tams. : Shaklawa (Summer).
Junonia orithya here Lang. : (Nov. — March, and April) and Badra (Nov.).
Papilio machaon centralis Stgr. : (Nov. — Feb., March, and April).

HEMIPTERA

PENTATOMIDAE

- Nezara viridula* (L.) : (Feb., May, and Nov.) and Samarra (Feb.).
Palomena sp. : (Jan.).
Apodiphus amygdali (Germ.) : (April and Nov.).
Eusarcoris inconspicua (H. — S.) : (April and Nov.).
Holcostethus strictus (F.) : (April).
Acrosternum sp.
Bagrada sp. : (Dec.).
Eurydema ornatum (L.) : (March) and Samarra (Feb.).
Stenozygum sp. : Baqouba (Dec.).

COREIDAE

- Omanocoris variabilis* (Dall.) : (Sept. — Dec., Jan., and March — May) and Baqouba (April).
Centrocoris variegatus Kolenati : (April)
C. spiniger (F.) : Shaklawa (July).

- Camptopus lateralis* (Germ.) : Shaklawa (July and Aug.).
Liorhyssus hyalinus (F.) : (Feb. and May).
Dicranocephalus albipes (F.) : Shaklawa (June).
Corizus hyosyami (L.) : Shaklawa (June).

REDUVIIDAE

- Pachynomus pictipes* Klug
Ectomocoris ululans (Rossi) : (March, April, and Dec.).
E. sp. : (April).
Reduvius tabidus Klug : (April).
Oncocephalus spp. : Baghdad and Falluja.
Pygolampis sp. : Baghdad.

MIRIDAE

- Trigonotylus dohertyi* (Dist) : (March).
Liocoris tripustulatus (F.) : Shaklawa (July).
Phytocoris sp. : Shaklawa (July).

GERRIDAE

- Gerris thoracicus* Schumn : (March and April) .
G. paludum (F.) : (March and Nov.).

NOTONECTIDAE

- Anisops sardea* H. — S. : (Nov.).

CORIXIDAE

- Heliocorixa vermiculata* (Pt.) : (March, April, and Nov.) and Basra (April).
Sigara lateralis (Leach) : (Oct., Nov., and Feb.).

NABIDAE

- Nabis sp.* : (May).

PYRRNOCORIDAE

- Pyrrnocoris apterus* (L.) : (Nov., Dec., Feb., and April).
Scantius aegyptius (F.) : March and Nov.).

LYGAEIDAE

- Melanocoryphus superbis* (Pol.) : (April).
Lygaeus creticus Luc.
L. saxatilis (Scop.) : (April and Nov.) and Shaklawa (July and Aug.).
L. pandurus (Scop.) : (Dec.) and Shaklawa (Aug.).
nr. *Ortholomus carinatus* Lind. : (April).
Nysius sp. : (Feb. and March).

- Pachybrachius annulipes* (Bar) : (Feb.)
Dieuches syriacus Dohrn : (Dec.) and Sa'dia (Nov.).
Pionosomus sp. : (April).
Ischnopexa pallipes Dut. : Shaklawa.
Emblethis verbasci (F.) : (April).
E. sp. : (Feb.).

(الخلاصة)

مجموعة من الحشرات العراقية

لدكتور كامل خلف

الاستاذ المساعد في كلية التربية - بغداد

- يسجل المؤلف في هذا المقال مجموعة من الحشرات التي جمعها بين سنتي ١٩٥٣ - ١٩٥٩ والمحافظة معظمها في متحف الكلية . وقد جرى تشخيصها علميا من قبل اختصاصيين اجانب ، ارسلت نماذج منها اليهم لهذا الغرض .
وتشتمل هذه المجموعة على ٢١٤ نوعا من الحشرات موزعة على الرتب التصنيفية المبينة في المقال .
وقد اشار المؤلف الى الاماكن التي جمعت منها ، وتواريخ الجمع .

A SIMPLE TECHNIQUE OF SKELETONISING SMALL ANIMALS

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Technicians all over the world are ever at work doing research to find easy methods and techniques as an improvement of the known methods for producing the same or even better results, with minimum expense and labour. There are many known methods of skeletonising, but what is the method which is practical in this country and suits the climatic conditions with minimum expense? Taking into consideration all the above factors, the technique explained below is the best, easiest and cheapest. The technique itself is easy compared to other known techniques, which are practical in this country. However, it will be observed that in addition to the skill of a Technician, time and patience are required to produce a Skeleton worth exhibiting.

As there is no publication available which deals in detail about skeletonising, this paper should prove to be very helpful to would-be Technicians and others who are already in this field.

The simplest technique practised in most of the Tropical countries is the burying of carcasses either in moist sand or earth, allowing nature to take her course in rotting the carcass, and the white ants to consume all the flesh that is left. Owing to the ground being wet, the carcass rots quickly when the sun warms up the soil. After a few weeks, depending on the size of the carcass, it is unearthed, washed, cleaned and dried in the sun, which takes over the problem of bleaching. One should not overlook the fact that by this method there is no chance of saving the ligaments, and the bones will have to be assembled by the aid of wires and springs.

REMOVING THE FLESH FROM THE CARCASS

As soon as a carcass is received it should be skinned carefully as needed for Taxidermy, leaving only the claws or the hoofs, whichever it may be, intact with the body. By skinning in this way the skin may be put to some use. Having done this, an incision is made near the end of the Sternum down to the end of the Pelvis. This opening will give ample space to remove all the internal organs. Soon after removing the internal organs, wash the remaining carcass well to get rid of all the blood oozing from the cuts. Now cut away the limbs

from the body, taking care not to cut or damage any bones. With little care and the careful use of the knife the legs can easily be separated from the body. Wash all the blood which oozes from these cuts, the longer you wash the better it is. Keep the carcass as wet as possible giving no chance for the blood to dry on the exposed bones. Remove the head from the body taking care not to damage the Larynx. Now all that is left is the removal of the flesh from the limbs and the body. This is achieved by the aid of a sharp scalpel or even a small knife. Cut away as much as possible of the flesh without damaging the bones or the ligaments. With a sharp scalpel remove all the flesh adhering between the ribs, taking care not to separate the sternum. This is the most delicate part of the skeleton, so it is worth taking special care in removing the flesh. Remove only the flesh which can easily be cut away, there is no harm in leaving the flesh adhering to the sternum and the ribs, as this can easily be removed at a later stage. In fact some flesh, if left with the ribs and sternum, helps to keep it in shape until you are ready to work on it. Once all possible flesh has been removed from the body and the limbs, soak in a tub filled with cold water. It is ideal to leave it in running water, but if this is not possible, change the water as often as possible until all the blood is washed away.

CLEANING THE SKULL

There are two methods of cleaning the skull. One is to boil the skull until the flesh peels off easily. Large skulls may be cleaned in this manner. Even in large skulls there is the danger of it being over boiled, when this happens the skull may crack and the teeth are also liable to drop off.

Small skulls are cleaned very easily in the following manner. Remove the brain from the skull through the Foramen Magnum. This is done best either by inserting a brain spoon and removing the brain bit by bit, or by inserting absorbent cotton wool with a pair of long forceps. The cotton wool will absorb all the fluid and the rest of the brain will get pushed out as you push in the cotton wool. The cotton wool is then pulled out; change the cotton wool as often as possible. The brain cavity gets very clean by this method. Now wash well. Remove the eyes, the tongue, and all flesh adhering to the skull bones. Wash all blood away and soak in tub.

CLEANING THE BONES

When the skeleton is left in the water tub with constant change of water, it will be observed that the flesh that is left adhering to the

bones become pale and soft. At this stage the skeleton should be removed from the water, normally after three days in water, laid flat on a table and with the aid of a wire brush or stiff Nylon brush scrubbed well. After a good scrubbing, soak in water again for another day. Remove the skeleton again from the water and scrub well, this time the brush, either the wire or the Nylon, is first soaked in hot boiling water, dipped in Bleaching Powder and the skeleton scrubbed. This process must continue over and over again until all the tiny bits of flesh are removed from the bones. Care should be taken not to get bleaching powder on any parts of your body. The hands are guarded by wearing a pair of gloves. After the days work the skeleton should be returned to the water. This process will take many days of hard work and it will be observed that not only are the bones clean of all flesh but also that the bones get white. At this stage it will be noted that there will be tiny bits of flesh between the spinal column, which is not reached by the brush. To remove the flesh from these places, make a paste of the bleaching powder and apply into all the crevices and leave overnight. The bleaching powder paste eats into all the tiny bits of flesh and is easily removed by a strong jet of water pointed into the cavities. This process may sometimes need be repeated to get it all very clean. Once this is done, all that is left is to clean away the spinal cord itself which would have rotted by now. This is cleaned with the aid of a test tube brush tied onto a wire long enough to pass through the spinal cavity right down to the end of the pelvis. This is best done by keeping the whole skeleton in the water and working the brush up and down while the skeleton is submerged in the water. This method gets the spinal cavity free of all the rotted cord. Having completed this, wash the whole skeleton well in warm water to which a little Tide has been added. With the aid of a brush clean the whole skeleton well and wash in clean water. Luke-warm water is the best. After washing in several changes of water it will be noted that the bad odour is there no more, and the whole skeleton looks clean of all flesh. Now leave the whole skeleton in clean water for the next few days.

Now, we are faced with the problem of degreasing and bleaching. There will be no difficulty in assembling the skeleton as a whole body, as all the ligaments will be intact; but the skeleton would have lost its natural curves. There is no need to worry about this, as this could be adjusted when the the skeleton is finally mounted.

DEGREASING

There are two well known methods of degreasing bones, in use in

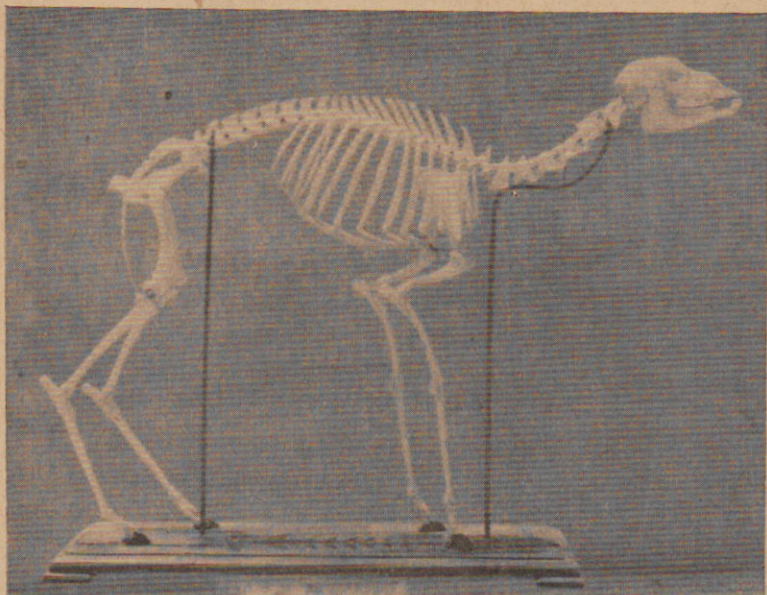
European Museums, one is by the distillation of benzene and the other is by the distillation of Carbon Tetrachloride. The first method is a highly dangerous one, as with the use of benzene we run the risk of fire. Degreasing by the distillation method is simple in operation, provided one has the required tank and an apparatus to produce steam. The tank consists of a solid base of concrete, vent pipes to relieve the pressure, cold water pipe line, glass window fitted for observation and a thermometer to check the temperature. When Carbon Tetrachloride is fed into the bottom of the tank, the steam pipes which are at a temperature ranging from 140 to 160°F. vaporize it. The vapor so produced rises, and when met by the cold water pipes turns into liquid form and come down on the bones which are placed in racks. This liquid washes away all the grease. As long as the steam is on, this process is repeated and the bones are free of grease in a day or two, depending on the size of the bones.

Although it is a very easy method of degreasing, this method has to be overlooked, as there is the question of the construction of such a tank and the apparatus to produce steam, to produce a temperature of 140°F.

The most practical method here, is to dry the bones in the sun. I find that if the bones are soaked daily in water, prior to drying in the sun, most of the grease disappears and also the bones bleach in the process. Soaking in Carbon Tetrachloride helps a great deal, but there is the question of the quantity required and a proper vessel for same. Very good results can be obtained by leaving the bones overnight in water to which a good quantity of Tide has been added, and then rinsing in warm water and drying in the sun. When this process is repeated for weeks the bones are free of all grease. A good scrubbing of the bones with bleaching powder helps to get rid of the grease quick. By doing this, not only are the bones made grease free, they are also bleached.

BLEACHING

Once all the grease is extracted from the bones, bleaching becomes very easy. Very good results are obtained by bleaching in the sun only. However, if the bones are soaked in a weak solution of Hydrogen Peroxide prior to drying in the sun, the bones become milk white. If the bones are dried in the sun only, it will be several weeks before the bones are clean white as such. The bones should be left in clean water overnight and dried in the sun.



Photograph of the skeleton of a Gazelle prepared by the author on the lines of the technique explained.

MOUNTING

When the bones are all clean and white, it is time to assemble them to form one full skeleton. Choose a fairly thick wire to pass through the spinal cavity. Having soaked the bones overnight in clean water, pass the wire through the spinal cavity, until it reaches the end of the Pelvis. Lodge this end, which should have a sharp point, in the small cavity found in the end of the Pelvis leading to the first bone of the tail. As the ligaments are still wet, you could adjust the wire to form the shape of the spinal column as natural as possible. One should have the imagination of how a normal spinal column will look like. Once the wire is bent to the desired shape it will keep the spinal column as desired. Hang this wire suspended, in two stands until the ligaments are dry. Adjust the tail to the required position, before the ligaments are dry. Once the tail is shaped, tie wire to keep it in position until dry. Choose a suitable size of cork to fit the Foramen Magnum of the Skull and pass this through the head end of the wire, having done this push the skull in position. Apply a little Durofix at the end of the bone fitting to the skull. The skull will adhere itself if left without being moved about. After having made a base board of suitable length and breadth, suspend the body just above the board

and fit the limbs in position; the limbs should be wet to enable you to adjust the position of the legs. Once you have decided on the position, measure the exact height at the head and tail ends of the skeleton and fit two rods of suitable length to hold the skeleton in position. One rod should hold the neck in position and the other the pelvis. Once this is done, using small nails, fit the legs on the board and leave the whole skeleton still suspended until the ligaments of the limbs are dry. Once the ligaments are dry, the wires holding the skeleton in position may be removed. Dry again in the sun for one day and the skeleton is ready for exhibition. You may, if you desire, give a coating of varnish. If the animal mounted is a hoofed one, poison the hoofs with Creosote or Arsenic solution.

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(الخلاصة)

طريقة بسيطة لتحضير الهيكل العظمي للحيوان

للسيد آ. ن. موسى

المحضر الفني (سابقاً) في متحف التاريخ الطبيعي العراقي

- يصف المؤلف في هذا المقال طريقة فنية بسيطة لعمل الهياكل العظمية لأغراض العرض في المتاحف أو المدارس - وهي التي اتبعها في تحضير الهياكل التي أعدها للمتحف ومنها هيكل لغزال (كما في الشكل) ، والخطوات التي اتبعها تتلخص بما يأتي :
- ١ - تخلص اللحم من الهيكل : ويجري ذلك بعد سلخ الحيوان والابقاء على الحوافر أو المخالب . ثم عمل شق في البطن لإخراج جميع الأحشاء . وفصل الأطراف والرأس من الجسم دون قطع العظام . وبعد ذلك ينزع اللحم على قدر الإمكان . وتترك أقسام الحيوان في الماء بضعة أيام لكي تتفسخ بقية اللحم مع ضرورة المحافظة على الارتباطة في المفاصل .
 - ٢ - تنظيف الجمجمة والعظام : ويتم ذلك بواسطة فرشاة معدنية وسكين التشريح وغسل الأجزاء المطلوب تنظيفها عدة مرات بالماء . ويجب معالجتها بالمسحوق القاصر المذاب بالماء بين حين وآخر .
 - ٣ - إزالة المواد الدهنية من العظام بواسطة محلول رابع كلوريد الكربون .
 - ٤ - تبيض العظام بواسطة محلول بيروكسيد الأيدروجين والتعريض للشمس عدة مرات .
 - ٥ - والمرحلة الأخيرة هي ربط العظام بالإسلاك وإقامة الهيكل على قاعدة خشبية .

INJECTING THE CIRCULATORY SYSTEM OF MAMMALS WITH LATEX

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The use of colour medium for injection prior to dissection has been found to be very useful. By the use of such media one can expose the small arteries and veins very clearly for easy identification and location. There has been no paper published dealing with this technique in detail, hence this article will prove to be of use to beginners and those who want to master the technique.

REQUIREMENTS

There is no need for elaborate equipment and instruments for this technique. The following would suffice:

- Pointed Scissors, one medium, one large
- 2 Scalpels
- 4 Beakers
- 2 Glass Polythene Funnels
- 3 Veterinary Syringes (Glass barrel with rubber pistons)
- Hypodermic needles of different sizes, ranging from 18—22, one inch and $1\frac{1}{2}$ inches long. It is better to have about a dozen needles as it will be found that needles get blocked easily with dried Latex.
- Distilled water
- Chloroform
- Formalin
- Acetic Acid
- Suitable jar for the animal to be transferred after injection.

LOCATION OF INJECTION

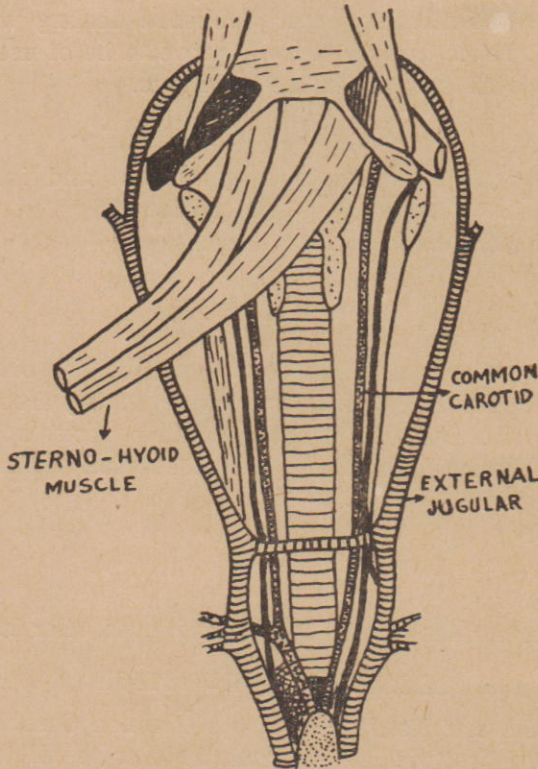
To inject the arteries, inject via the common Carotid towards the tail (caudally). Inject via the External Jugular to fill the veins. The colours used are red for arteries and blue for veins. When injecting the vein the needle should face the head of the animal.

EXPOSING THE CAROTID AND THE JUGULAR

Taking the rabbit as a sample specimen to be injected, proceed in the following manner.

After the animal is chloroformed, make an incision on the under side of the skin just below the jaw. Make a clean cut right down, tak-

ing care not to cut the flesh. The length of the cut is immaterial as long as the cut extends up to the chest. This should be enough to start with. The skin is carefully separated from the neck muscle on the sides. Once the skin has been separated, the Carotid and the Jugular could easily be seen. However, to make it very convenient to work, cut the Sterno — hyoid muscle (see illustration). The animal may be fully skinned prior to injection if desired. The advantage of this being that the Latex could be seen reaching all the small arteries and veins. But this is not necessary.



The Carotids and Jugulars exposed when the Sterno-hyoid muscle is cut.

LATEX

Latex is readily available in liquid form. It will keep for a fairly reasonable time if stored in a cool place and very frequently well stirred. If the Latex is allowed to stand without being stirred, the

inhibitor that prevents the Latex from coagulating will separate from the Latex. It is better to purchase Latex in small quantities to be sure that it will be fresh, rather than store for months.

For use, take a reasonable amount in a beaker and dilute with distilled water till the consistency is just sufficient to pass through a number 18 needle. Filter through a soft cloth or even cotton wool would suffice. Once it is filtered the Latex is ready for injection. Never mix just the required amount of Latex, always take about four times the required amount. This is to enable you to allow the mixed Latex to stand in the beaker for a few minutes to allow any tiny particles which may have escaped being filtered, to settle down in the bottom of the beaker. Then all you got to do is draw the Latex from the top into the barrel of the syringe without disturbing the bottom. This will be a double check to see that no tiny particles escape into the barrel of the syringe. You will require from 20 to 35 cc of Latex for a rabbit depending on the size of the animal.

INJECTION OF LATEX

Adjust the syringe to give a good compression. The Veterinary syringe is easily adjusted to give the required compression. The piston should fit just tight enough not to allow any Latex to escape back into the barrel while injecting.

Some technicians prefer to insert the needle first into the blood vessel and then fit the syringe filled with Latex. I prefer to insert the needle after fitting it to the syringe which has been filled with Latex. This prevents any unwanted movement of the needle once it has been inserted in the blood vessel. As any slight movement will make the needle pierce the wall of the blood vessel. Make sure that the needle is in the lumen of the blood vessel to be injected. As soon as the needle is in the blood vessel hold it firmly and proceed injecting slowly. It will be observed that the pressure will be very even until about 15 to 20 cc. has been injected, depending on the size of the animal. Once a back pressure is felt, relax for a moment and inject again. If the same pressure persists this means that the injection is complete. If you inject any further, any of the small vessels may rupture and the Latex will leak out. As soon as the injection is complete withdraw the needle and clamp the blood vessel to prevent any Latex escaping out. Once the Latex is set the clamp may be removed. In the event of there being a leakage from any of the vessels apply Pot. Alum to stop it.

PRESERVATION

Any of the common preservatives may be used. About 5 to 6 cc of acetic acid may be added, if desired, to the formalin solution, used as preservative.

PRECAUTIONS

If the Latex is not filtered well and is not free of particles the needle will block. filter well and allow to stand for a few minutes.

Wash all utensils used, immediately, especially the needle and the syringe. As the Latex once dried cannot easily be removed.

Do not use much pressure while injecting, proceed slowly and stop when back pressure is felt. In no case force the Latex into the blood vessels.

Do not withdraw the needle before the injection is complete.

الخلاصة

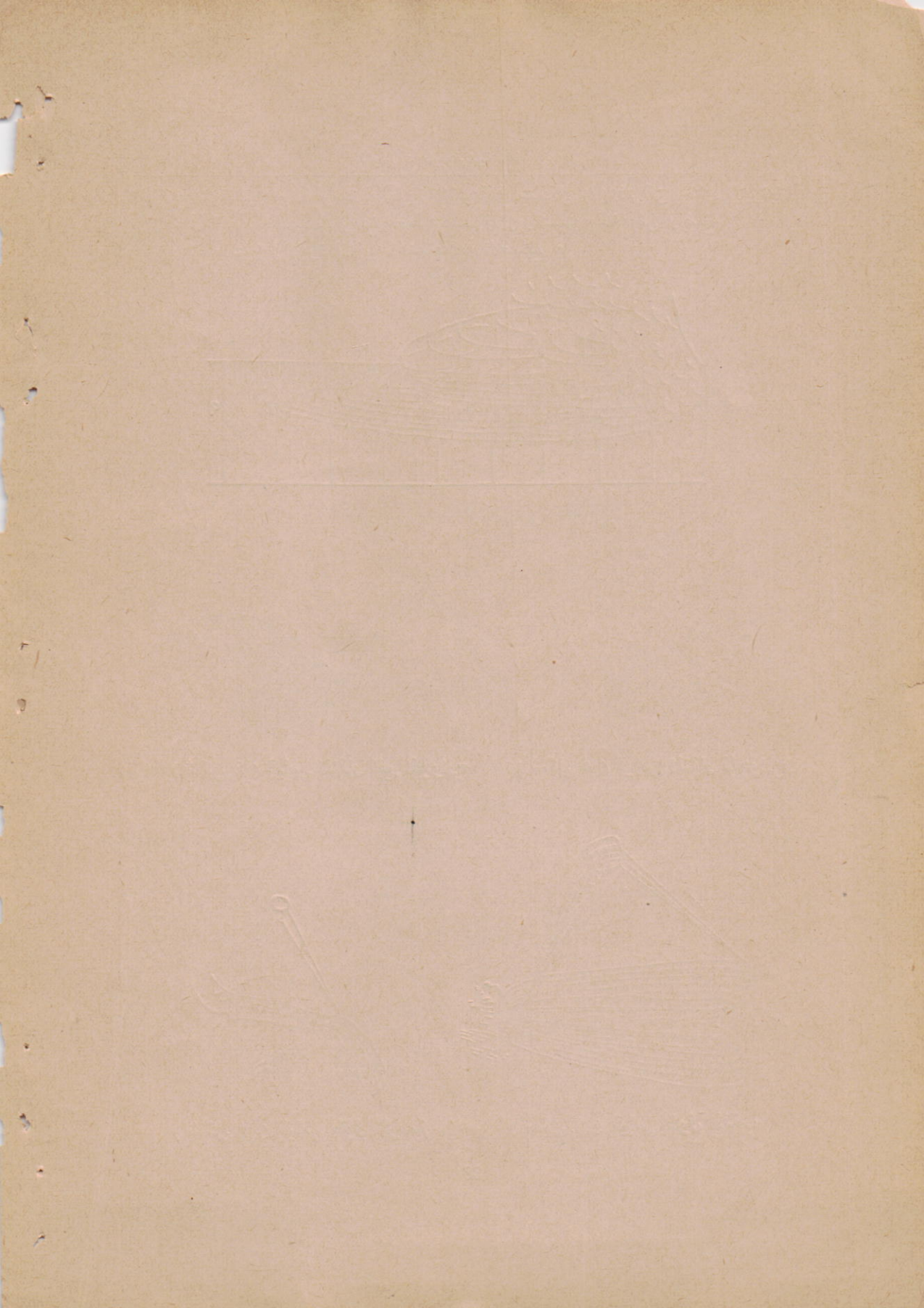
طريقة حقن جهاز الدوران للبائن بسائل ملون

للسيد آ.ن. موسس

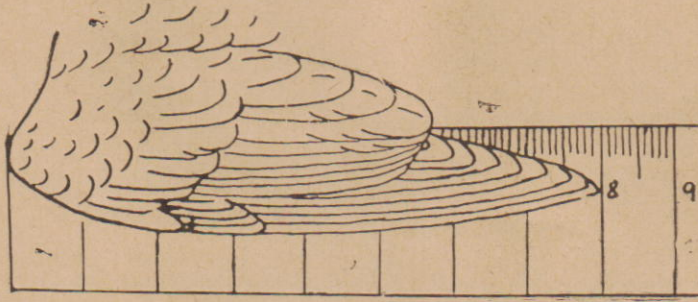
المحاضر الفني (سابقا) في متحف التاريخ الطبيعي العراقي

يشرح المؤلف في هذا المقال الطريقة الفنية لحقن الشرايين والاوردة بسائل ملون من نوع البلاستيك سريع الانجماد ليتسنى دراسة جهاز الدوران في النماذج المعدة للدراسات التشريحية . وقد اتخذ المؤلف الانب كنموذج لاجراء هذه العملية ، وذكر الادوات الضرورية للعمل والخطوات الواجب اتباعها . وهي :

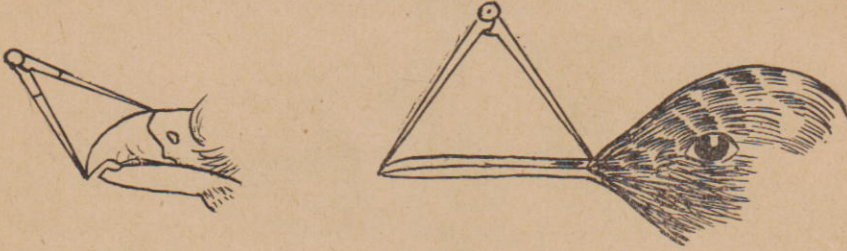
- ١ - تخدير الحيوان بواسطة الكلوروفورم وسلخ جلد العنق ثم قص العضلة الوسطى وتعرض الشريان السباتي والوريد الوداجي في كل من الجانبين .
- ٢ - اعداد السائل الواجب حقنه بلونين : لون احمر للشرايين وازرق للاوردة .
- ٣ - حقن السائلين بواسطة محقنة مناسبة ، الاول في الشريان السباتي والثاني في الوريد الوداجي . على ان يكون الحقن ببطء وحذر لئلا تتمزق بعض الاوعية الدموية . ويفضل المؤلف ان يكون سلخ الحيوان تاما لكي يشاهد السائل عند وصوله الى اطراف الحيوان .
- ٤ - يحفظ الحيوان بعد حقنه في محلول الفورمالين الذي اضيفت اليه بعض القطرات من حامض الخلك .



الرسغ : يقاس طول الرسغ بالطريقة المبينة في شكل (٧) فتركز احدى الابرتين في نقطة اتصال الرسغ بعظم الساق (وتتميز بانخفاض واضح في معظم الحالات) والابرة الاخرى عند بداية الاصابع .



(شكل ٣) كيفية قياس طول الجناح

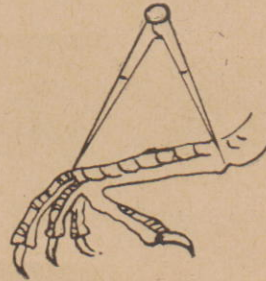


(شكل ٥) قياس المنقار للجوارح

(شكل ٤) قياس المنقار لغير الجوارح



(شكل ٦) قياس طول الذنب



(شكل ٧) قياس طول الرسغ

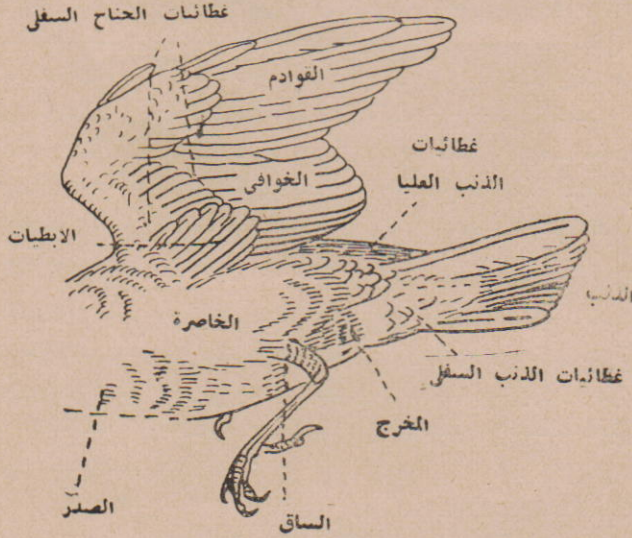
لا يتوهم المبتدئ فيظن ان المفصل الواقع بين الرسغ والساق هو الركبة .
الاصابع (toes) : ان اصابع القدم في الطير أربع ، بصورة عامة ، الاولى متجهة الى الخلف والثانية والثالثة والرابعة متجهة الى الامام . وبعض الطيور فاقدة الاصبع الخلفية ، كما ان غيرها ذات اصبعين الى الامام واصبعين الى الخلف (نقار الخشب) . وللنعامة اصبعان فقط . وبصورة عامة يكون للطيور السابحة والغائصة غشاء يصل بين الاصابع فتدعى الاصابع في هذه الحالة صفاقية (webbed) أو مجذافية . وتدعى الاصبع التي تقع الى الناحية الداخلية من الطير بالاصبع الانسية (inner toe) والتي تقع الى الناحية الخارجية من الطير بالاصبع الوحشية (outer toe) .

المخالب (claws) : هي تراكيب متقرنة تقع في نهايات اصابع القدم وتكون على العموم مقوسة وحادة ولكن درجة تقوسها وقوتها وحدتها تتوقف على عادات التغذى في الطير . وفي بعض الطيور (مالك الحزين وماص المعز) يكون مخلب الاصبع الوسطية مسننا من حافته الانسية فيسمى بالمخلب المشطى (pectinated) .

قياسات الطيور

- يفضل أخذ قياسات الطيور على النماذج الطرية - اى قبل تحنيطها .
- ويستعمل لهذا الغرض مسطرة طويلة أو شريط القياس وفرجال ذو ابرتين . ويجرى القياس على الوجه الآتى :
- طول الطير :** المسافة المستقيمة من طرف المنقار الى نهاية الذنب حينما يكون الطير ملقى على ظهره وقد جعل رأسه ومنقاره على استقامة الرقبة . ومن الضروري عدم مد الرقبة أو تقليصها أثناء القياس .
- الجناح :** يقاس طول الجناح بالكيفية المبينة في شكل (٣) . ويمكن استعمال شريط القياس للطيور الكبيرة . ويلاحظ ان المقصود بطول الجناح هو المسافة المستقيمة بين مطوى الجناح وأطول القوادم .
- المنقار :** يقاس طول المنقار لمعظم الطيور بالكيفية المبينة في شكل (٤) ، اى من حدود ريش الجبهة الى نهاية الفك العلوى للمنقار ، وللطيور الجارحة التي لها بقعة جلدية في قاعدة المنقار يكون القياس من حدود هذه البقعة الى نهاية المنقار كما في شكل (٥) . وجميع هذه القياسات هي للمسافة المستقيمة دون أى اعتبار لتقوس الفك العلوى للمنقار .
- الذنب :** يقاس طول الذنب بالكيفية المبينة في شكل (٦) فتركز احدى ابرتي الفرجال في قاعدة الريشتين المركزيتين والاخرى في نهاية اطول ريشات الذنب ثم يقاس البعد على المسطرة [٥]

• السطح الاسفل للجناح ويغطي قواعد ريش الطيران من الاسفل (شكل ٢) .



(شكل ٢) الجهة السفلى للطير

• **الابطيات (axillaries)** : الريشات النامية في ابط الجناح من الاسفل (شكل ٢) .
 • **الشريط الجناحي (speculum)** : بقعة بارزة اللون في سطح الجناح العلوى (كما في البطوط) .

• **الرسغ (tarsus)** : هو ذلك الجزء من القدم المغطى بحراشف متقرنة . وعندما تكون الحراشف كبيرة ومستعرضة دعيت تروسا (scutes) ويسمى الرسغ عندئذ بالرسغ الترسى (scutellated)، وعندما تكون صغيرة وسداسية الشكل دعى بالرسغ الحرشفي (reticulated)، وعندما تكون الحراشف ملتحمة مع بعضها وتكون ترسا واحدا يغلف الرسغ سمي (booted) .
 • وفي بعض الطيور (العقبان والبوم والقطا) يكون الرسغ مكسوا بريش أو شعر .

• **الفصبة أو الساق (tibia)** : هو الجزء الذى يلي الرسغ من الاعلى في ارجل الطيور ويقابل الساق في الفقريات الاخرى . ويكون مكسوا بالريش في معظم الطيور ، ولكن في بعضها (اللقالق ومالك الحزين والنعام) يكون الجزء الاسفل منه عاريا عن الريش وبذلك يزداد طول الجزء غير المريش من القدم .

• **الفخذ (thigh)** : لا يبدو هذا الجزء من الاطراف الخلفية من الخارج لانه يكون مخفيا تحت الجلد ، وكذلك يكون مفصل الركبة (knee) . ويجب أن

ريشات الذنب (rectrices) : هي ريشات طوال على العموم محدودة العدد تنشأ من ذنب الطير الحقيقي . وتعتبر من ريش الطيران لانها تساعد في التحليق أو الهبوط الى الارض فضلا عن التوازن والتوجيه أثناء الطيران .

الذقن (chin) : المنطقة الصغيرة التي تلي قاعدة المنقار من الاسفل .

الزور (throat) : المنطقة التي تلي الذقن مباشرة وتمثل الاتجاه السفلى للرقبة .

الصدر (chest) : المنطقة التي تلي الزور حيث توجد مقدمة عظم القص والعضلات الكبيرة بجانيه .

البطن (abdomen) : المنطقة التي تلي الصدر .

المخرج (vent) : موقع الفتحة المشتركة وما يجاورها .

الخاصرتان (iliaks) : جانبا البطن الى الاعلى ويخفيهما الجناحان عند عدم الطيران .

الجناحان (wings) : هما الطرفان الاماميان للطير المتكيفان للطيران ، وينشأ الريش الطويل (remiges) من حافتهما الخلفية . ويتألف الجناح من ثلاثة أقسام اساسية هي العضد والساعد واليد أو الكف . ويمثل الكف ثلاثة اصابع ملتحمة جزئيا أو كلياً . وينشأ ريش الطيران على الجزأين الاخيرين من الجناح فقط .

القوادم (primaries) : ريشات الطيران النامية على الكف وهي محدودة العدد (١٠-١١) وقد تكون الاولى منها صغيرة جدا وغير فعالة .

الخوافي (secondaries) : ريشات الطيران النامية على الساعد وهي محدودة العدد ايضا (١٠-٢٠) .

غطائيات الجناح العليا (upper wing-coverts) : الريش الذي ينشأ على السطح الاعلى للجناح ويغطي قواعد ريش الطيران . ويتألف من عدة صفوف تدعى كما يأتي :-

غطائيات الجناح الصغرى (lesser wing-coverts) : - بضعة صفوف من الريش القصير تقع في الجهة الامامية .

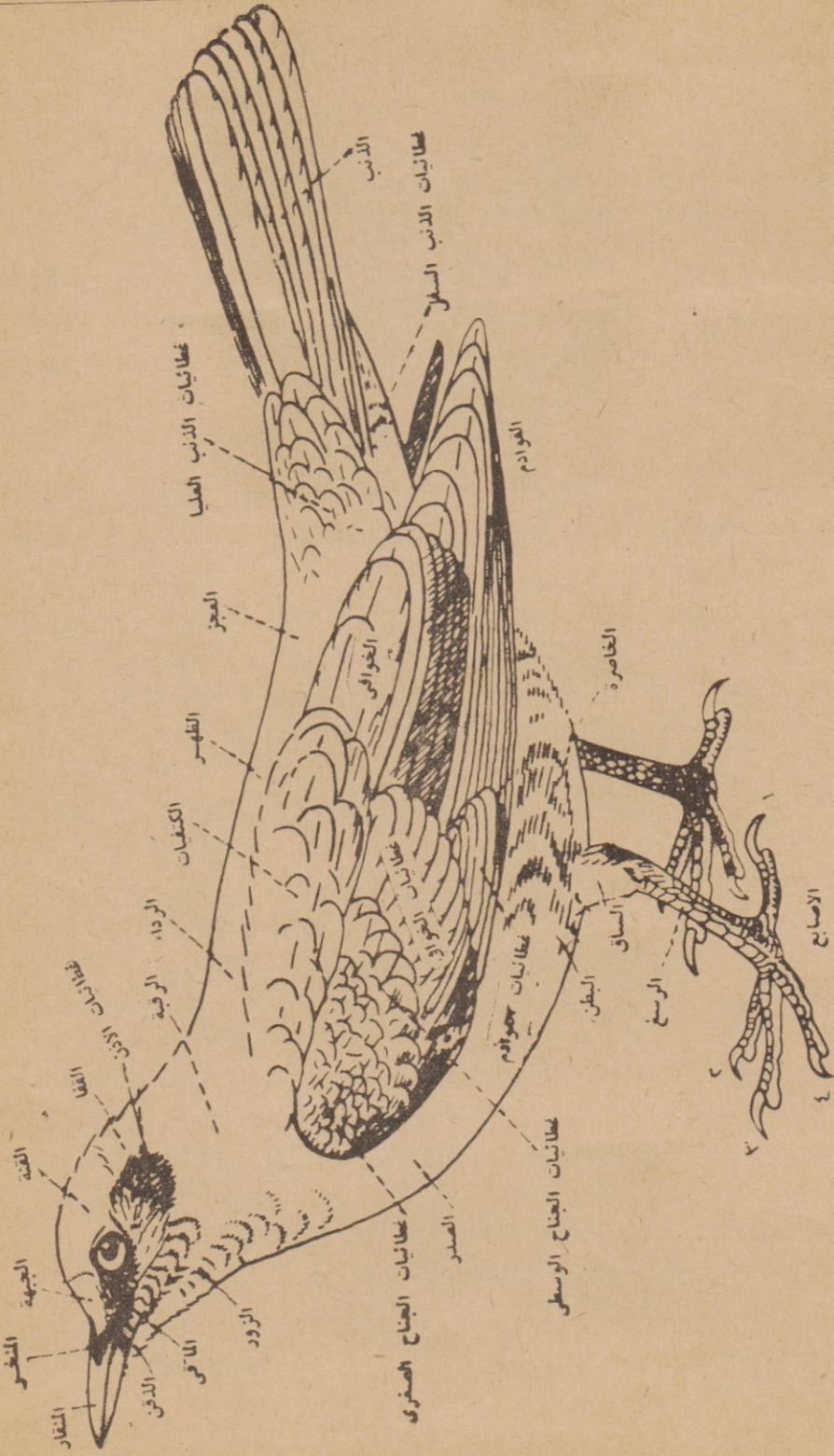
غطائيات الجناح الوسطى (median wing-coverts) : - صف من الريش المتوسط الطول يلي الاول .

غطائيات الجناح الكبرى (greater wing-coverts) : - صف من الريش

الاطول يغطي قواعد القوادم فيسمى غطائيات القوادم (primary coverts)

ويغطي قواعد الخوافي فيسمى غطائيات الخوافي (secondary coverts) .

غطائيات الجناح السفلى (under wing-coverts) : مجموع الريش الذي ينشأ من



(شكل ١) طوبوغرافية الطير

العينان (eyes) : وتقعان على جانبي الرأس في معظم الطيور ، عدا في انواع البوم حيث تكونان متجهتين اماما . وللعين ثلاثة اجفان جفن علوى وجفن سفلى وجفن ثالث غشائى ونصف شفاف يدعى (nictitating membrane) يمكن سحبه فوق المقلة من زاوية العين الانسية . والمنطقة المحيطة بالعين تدعى بالمنطقة المحجرية (orbital region) وقد تكون فى بعض الطيور (البجع ومالك الحزين) جلدية عارية من الريش وذات لون متميز .

القرحبة (iris) : هى الجزء الدائرى الملون من العين ويتوسطها البؤبؤ (pupil) وهو منفذ النور الى داخل العين حيث الطبقة الشبكية (retina) الحساسة .

الحاجب العينى (supercilium) : يطلق هذا الاسم على المنطقة الضيقة التى تعلو العين عندما يكون لون تلك المنطقة متميزا عن اللون المحيط به .

الخط العينى (eye-stripe) : هو الخط القاتم الذى يمتد من زاوية العين الخلفية الى مسافة ما خلفها - ويوجد في بعض الطيور .

الجبهة (forehead) : المنطقة الضيقة التى هى في مقدمة الرأس وعند قاعدة المنقار من الاعلى .

القنة (crown) : قمة الرأس وهى التى تلى الجبهة من الخلف .

القفا (nape) : المنطقة التى تلى القنة من الخلف أو مؤخرة الرأس . وفي بعض الطيور يكون ريش هذه المنطقة مرسلا وطويلا فيدعى بالقنزعة (crest) .

غطائيات الاذن (ear-coverts) : تطلق على الريش القصير الذى يغطى فتحة الاذن ، ويقع خلف العين الى الناحية السفلى .

الخدان أو الصدغان (cheeks) : جانبا الوجبة تحت مستوى العينين .

الخطان الشاربىان (moustachial stripes) : هما خطان بلون متميز عما يحيط بهما ويمتدان من زاويتى الفم الى الناحية الخلفية السفلى تحت الخدين .

الرقبة (neck) : الجزء الذى يصل الرأس بالجذع ، وقد تكون طويلة جدا في بعض الطيور (اللقلق ومالك الحزين والتم) .

الرداء (mantle) : المنطقة الامامية من الظهر والتي تلى الرقبة مباشرة .

الظهر (back) : المنطقة الوسطى من الظهر وخلف الرداء مباشرة .

العجز (rump) : المنطقة الخلفية من الظهر .

الكتفيات (scapulars) : الريش النامي من منطقة الكتف حيث يتصل الجناح بالجسم . وقد يكون طويلا في بعض الطيور (مالك الحزين وابو منجل) ولا سيما في موسم التفريخ .

غطائيات الذنب العليا والسفلى (upper and lower tail-coverts) : هو الريش الذى ينشأ من قاعدة الذنب ويغطى قواعد ريشاته من الاعلى ومن الاسفل .

طوبوغرافية الطير

TOPOGRAPHY OF THE BIRD

بشمير اللوس

الاستاذ في كلية العلوم ومدير متحف التاريخ الطبيعي العراقي

لا بد للمبتدئ بدراسة الطيور من الامام بما تعارف عليه المختصون من تعابير لتحديد مناطق الجسم الظاهرة لما في تعيين اوصافها من أهمية في تشخيص الانواع والتعرف على الاختلافات القائمة بينها . وتؤلف هذه المناطق ما يسمى بطوبوغرافية الطير (شكل ١) . وبالرجوع الى الشكل المشار اليه يستطيع القارئ معرفة الحدود التقريبية للمناطق التي ترد اسماؤها في اوصاف الطيور وتكوين صورة واضحة عن الطيور الموصوفة . وقد أردنا الاصطلاحات باللغتين العربية والانكليزية لفائدة المتبعين في الكتب الاجنبية . ولا بد من الاشارة الى انه لا توجد حدود فاصلة بين معظم مناطق الريش على جسم الطير ، وانما تدل الاسهم على المواقع الوسطى للمناطق المذكورة . وأكثر المناطق تحديدا هي التي لها علاقة بالجنح والذنب .

المنقار (bill) : هو الغمد المتقرن الذي ينشأ على الفكين الخاليين من الاسنان . ويتألف من جزأين جزء علوى يدعى الفك العلوى (upper mandible) وجزء سفلى يدعى الفك السفلى (lower mandible) . ويطلق على النتوء العلوى للمنقار (culmen) . ويختلف شكل المنقار وحجمه باختلاف انواع الطيور وطبيعة الغذاء .

المنخران (nostrils) : فتحتان للتنفس تقعان في قاعدة الفك العلوى للمنقار . وفي بعض الطيور (الجوارح والبوم) ينفتح المنخران في بقعة جلدية لينة تدعى (القير cere) ، أو في جزء لحمي منتفخ يقع في قاعدة المنقار من الاعلى (الحمام) .

الشعرات المنخرية (nasal bristles) : هي شعرات قاسية تمتد من الجبهة فوق المنخرين في بعض الطيور (كالغرابيات) . وهي عبارة عن ريش محور .

الشعرات الفمية (rectal bristles) : هي شعرات نحاف قصار وحساسة تنشأ عند زاويتي الفم في بعض الطيور (السمامة وماص المعز والهواذج) .

الماقي أو القسمة (lores) : هي المنطقة الكائنة بين العين وقاعدة المنقار ، وتكون في معظم الطيور مكسوة بريش ولكنها في بعضها (كاللقلق ومالك الحزين والبعج) عارية عن الريش .

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جامعة بغداد

كلية العلوم

متحف التاريخ الطبيعي العراقي

كانون الاول ١٩٥٩

نشرة رقم (١٧)

المحتويات

صحيفة

(القسم العربي)

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طوبوغرافية الطير
قياسات الطيور
للاستاذ بشير اللوس

(القسم الانكليزي)

مع خلاصات بالعربية

دليل مصور لتشخيص فصائل الطيور العراقية (عدا العصفوريات)

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للاستاذ بشير اللوس

مجموعة من الحشرات العراقية

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للدكتور كامل خلف

طريقة بسيطة لتحضير الهيكل العظمي للحيوان

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للسيد آ . ن . موسى

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مطبعة الرابطة - بغداد

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