AQUILA

A MAGYAR MADÁRTANI INTÉZET

(AZ ORSZ. TERMÉSZETVÉDELMI HIVATAL
MADÁRTANI INTÉZETE)

ÉVKÖNYVE

ANNALES INSTITUTI ORNITHOLOGICI HUNGARICI

1978

MEGINDÍTOTTA
HERMAN OTTÓ

SZERKESZTI
STERBETZ
ISTVÁN

FUNDAVIT
O. HERMAN

EDITOR
I. STERBETZ

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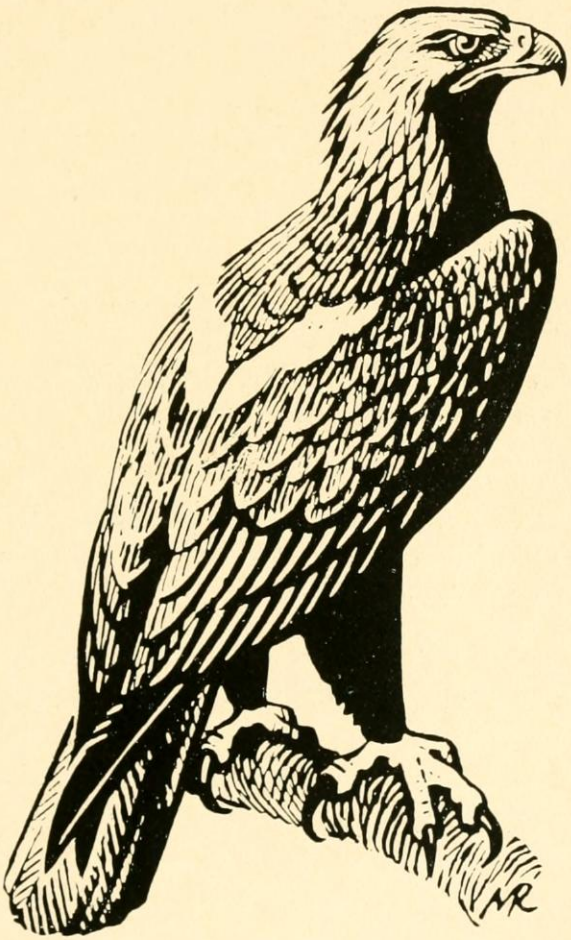

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Kérjük Szerzőinket, hogy közleményeiket írógéppel, két példányban, jó minőségű papírra írva, az alábbi formában szíveskedjenek az Aquila szerkesztőjének küldeni:

Bal oldalon 5 cm-es margó, 60 betűhelyes sorok, 2-es sortávolság és oldalanként 30 sor terjedelem. A táblázatokat ne a szöveg közé, hanem külön oldalra, címfelirattal ellátva készítsék. Forrásmunkák idézésénél az Aquilában rendszeresített forma az irányadó. Újragépeltetés esetén a költségek a szerzőt terhelik. Kérjük a közlemények végén a szerző irányítószámos postacímének feltüntetését. Lapzárta június 30.

A szerkesztő

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PLIO-PLEISTOCENE BIRD REMAINS FROM THE CARPATHIAN BASIN. IV. ANSERIFORMES, GRUIFORMES, CHARADRIIFORMES, PASSERIFORMES

Dr. Dénes Jánossy

National Museum, Budapest

To continue the revision of the fossil Bird remains of the systematical groups — which seemed more important from the point of view of systematics and stratigraphy — of the corresponding territory and age published in previous papers (JÁNOSSY, 1976a; 1976b; 1977), let us further go into discussing four orders not touched upon in this series so far. Due to the nature of fossilisation the order of Passeriformes, the richest one in species at present shows the fewest fossils, chiefly in the older Pleistocene and Pliocene remains. The bones of the other systematic units discussed in this paper are also sporadical finds, only the localities of the Villány Mountains have yielded a lot of Lower Pleistocene remains of ducks. This latter fact speaks seemingly for the activity of predators (chiefly owls) which may specialize on specific diet.

Description of paleospecies:

Order: *Anseriformes*
Suborder: *Anseres*
Family: *Anatidae*
Genus: *Anas* Linnaeus 1758
Anas submajor n. sp.
(Fig. 4/2—5)

Derivatio nominis: submajor, named after the older synonym of platyrhynchos = major and the Latin sub — below due to the older paleontological age.

Diagnosis: A large duck of the size of the mallard *(Anas platyrhynchos)* with deviating proportions in their extremity bones.

Type level: Lower Pleistocene, Upper Villafranchian, Upper Villanyian.

Holotype: left complete Ulna. (Fig. 4/2). Inv. Number: Vt. 83.

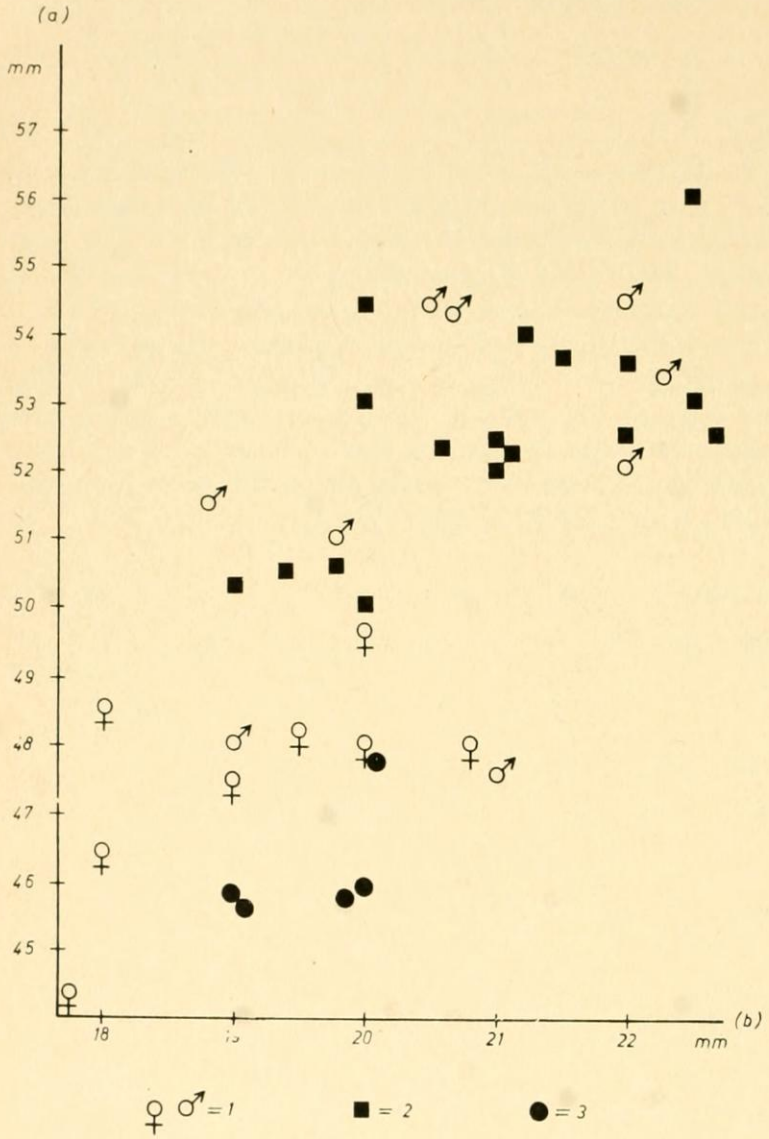
Further material: three nearly complete and 43 fragmentary remains of Coracoidei; 13 proximal and 23 distal fragm. of Humeri; 67 prox. and dist. fragm. of Ulnae; 25 fragm. of Carpometacarpi; 3 nearly complete and 51 fragmentary remains of Femora; 9 prox. and 8 dist. fragm. of Tibiotarsi; 3 prox. and 3 dist. fragm. of Tarsometatarsi; 5 phal. 1 dig. 2, 1 phal. 2 dig. 2, 3 phal. 1 dig. 3, 3 phal. 2 dig. 4, 3 phal. 3 dig. 4, 5 phal. 4 dig. 4 pedis.

Description: Due the fact that from among the series of large recent ducks of the world in stricter sense (Anatini group viz. the genus *Anas*) from the zoogeographical point of view only the mallard *(Anas platyrhynchos* Linné) can be taken into consideration (other comparisons see below). Only a search-

ing comparison with the skeletal elements of this species would appear realistic.

In any case the whole quantity of about 300 bones agree morphologically as well as metrically with the same osteological elements of the recent species.

As to the coracoideum we can tell the following: among the nearly fifty bones viz. bone-fragments there are only three more or less complete remains convenient for a detailed comparison. These bones differ at the first glance from the recent ones being relatively shorter and ventrally broader. The reality of this observation can be expressed by a scatter diagram in which we can compare the few fossil material with the ratio of length — width of 17 recent specimens. A fortunate completion to the comparative material represent those ones, which I received for comparison by the courtesy of Burtchak-Abramovich (Tbilisi, USSR) from the locality Binagady. This material includes 17 exemplars of coracoids too and the dispersion of variation differs from the Lower Pleistocene material more than from the recent one. This fact is so much the more important, because the material from Binagady was described as a fossil subspecies of the mallard: *Anas platyrhynchos palaeoboschas* Sherebrowskij, and we can clearly distinguish our fossil form under discussion from it (see Fig. 1.).



1. Fig. 1. Scatter diagram showing the ratio of lenght (a) and proximal width (b = width of the crista articularis sternalis) of the coracoideum of recent and fossil Anas species. 1. Anas platyrhynchos, recent males and females; 2. Anas platyrhynchos palaeoboschas, fossil: Binagady, Upper Pleistocene; 3. Anas submajor, n. sp. Loc. Villány 3. Lower Pleistocene — Recens és fosszilis Anas fajok hollóorrcsontja hosszúságának (a) és proximális szélességének (b = a crista articularis sternalis szélessége) arányát ábrázoló szórásdiagram. 1. Jelenlegi tőkésrécék (Anas platyrhynchos), gácsérok és tojók; 2. Anas platyrhynchos palaeoboschas, Binagady, felső pleisztocén; 3. Anas submajor n. sp., Villány 3, alsó pleisztocén

The Humeri-fragments seem to be more robust than the recent specimens, although this observation cannot be supported metrically. The distal width of the (broken) epiphyses ranges between 14,3 and 15,8 mm (n = 21) and the recent variation of the same measurement is put down in literature to be between 13,5—17,3 mm (WOELFLE, n = 68).

It seems to be very important from systematical-taxonomical point of view that the proportions of our fossil form vary in the ulna in an opposite direction to that form in the coracoideum or humerus. The longer and slenderer form of this bone is very clearly expressed in the scatter diagram, showing the difference against the variation of the in the average more robust recent material.

Taking into consideration the metrical relations of the femur anew, we can establish the following: the length of the complete specimens ranges around the middle of the variation of the recent species, although the distal width exceeds that of the plus-variants of the recent specimens (see scatter diagram, fig. 3).

We cannot search in detail the tibiotarsi and tarsometatarsi due to their fragmentary condition, although the latter ones seem to be absolutely slenderer than the corresponding bones of the recent specimens.

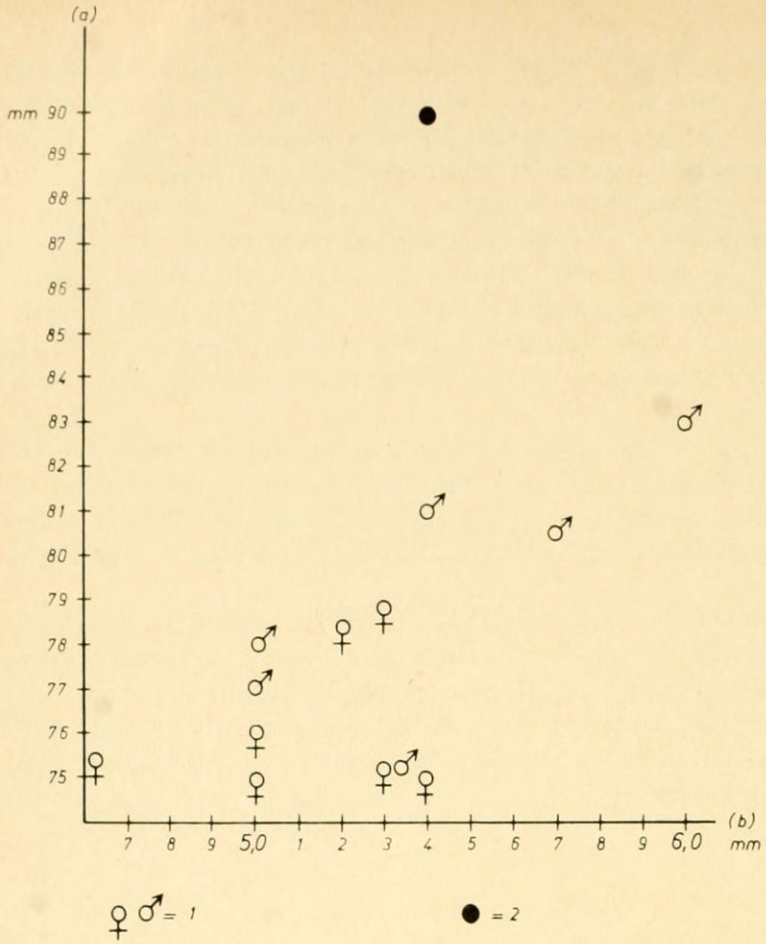
Finally, the allometrical relations of the phalanges pedis are remarkable: the phalanx 1 digiti 2 and phal. 1 dig. 3 are shorter and more robust, the phalanx 1 digiti 4 is longer and slenderer than in the recent species (see measurements table 1).

1. táblázat

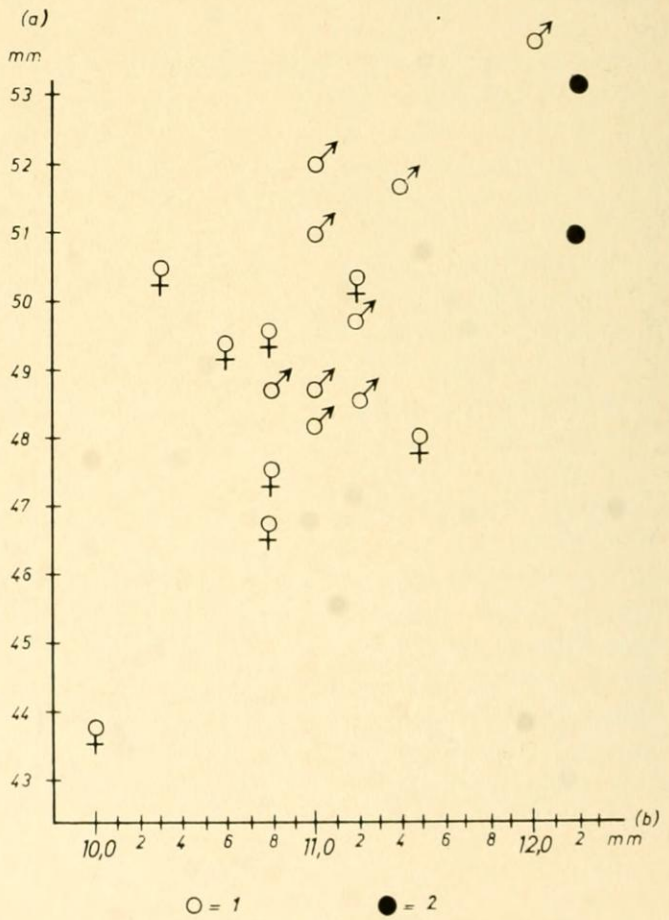
Table 1

Measurements of the phalanges of recent and fossil ducks of the malard-group (in mm)

	Length	Proximal width	Distal width
Phalanx 1. digiti 2 pedis:			
Anas submajor n. sp. 1.	20.4	4,0	2.8
Anas submajor n. sp. 2.	19.9	4.0	2.8
Anas platyrhynchos, recent	22.7	3.7	2.8
Phalanx 1 digiti 3 pedis:			
Anas submajor n. sp. 1.	20.2	6.0	3.7
Anas platyrhynchos recent	20.5	±5.5	—
Anas platyrhynchos recent	23.0	5.5	3.7
Phalanx 1 digiti 4 pedis:			
Anas submajor n. sp. 1.	17.0	4.7	3.0
Anas submajor n. sp. 2.	16.0	4.5	3.0
Anas submajor n. sp. 3.	16.0	4.6	3.0
Anas submajor n. sp. 4.	17.0	4.7	2.9
Anas submajor n. sp. 5.	16.0	4.3	2.8
Anas submajor n. sp. 6.	16.9	4.5	2.9
Anas submajor n. sp. 7.	16.3	4.6	3.2
Anas submajor n. sp. 8.	17.8	4.1	2.8
Anas platyrhynchos recent	18.6	4.3	2.9



2. Fig. 2. Scatter diagram showing the ratio of length (a) and width of the diaphysis (b) of the ulna of recent and fossil Anas species. 1. Anas platyrhynchos, recent males and females; 2. Anas submajor n. sp., Loc. Villány 3, Lower Pleistocene – Recens és fosszilis Anas fajok singcsontja hosszúságának (a) és diaphysis-vastagságának (b) arányát ábrázoló szórásdiagram. 1. Jelenlegi tőkésrécék (Anas platyrhynchos), gácsérok és tojók; 2. Anas submajor n. sp., Villány 3, alsó pleisztocén.



3. Fig. 3. Scatter diagram showing the ration of length (a) and distal width (b) of the femur of recent and fossil Anas species. 1. Anas platyrhynchos, recent males and females; 2. Anas submajor n. sp., Loc. Villány 3, Lower Pleistocene – Recens és fosszilis Anas fajok combcsontja hosszúságának (a) és disztális szélességének (b) arányát ábrázoló szórásdiagram. 1. Jelenlegi tőkésrécék (Anas platyrhynchos), gácsérok és tojók; 2. Anas submajor n. s. p, Villány 3, alsó pleisztocén

It is to be mentioned here that I had the possibility of comparing this rich material of ducks — after excluding all groups except Anatini — in the collection of the British Museum (Natural History) with the skeleton material of the following extra-European species of the similar size-category: *Anas specularis* King, *erythrorhincha* Gmelin, *flavirostris* Vielliot, *rubripes* Brewster, *poecilorhincha* Forster, *superciliosa* Gmelin, *melleri* Sclater, *sibilatrix* Poepping *(Rhodonessa)*, *caryophyllacea* (Latham) and *undulata* Du Bois. The fossil remains of the Lower Pleistocene of Hungary agree without doubt, above all with *Anas platyrhynchos*. As mentioned above, an immediate metrical comparison with the only hitherto described fossil member of this group, *Anas platyrhynchos palaeoboschas* SHEREBROWSKIJ proved an absolute difference in measurements and proportions in the coracoideum. All other hitherto described members of *Anas* are in size and age different.

The mosaic-like differences give in this case just, as in many other cases a very nice picture of the evolutiory differences between the two forms of the same lineage.

It remains an open question whether the same remains from the Middle Pleistocene, resembling in their bones to the mallard are or are not extinct forms of or identical with the recent species (e. g. Vértesszöllős or Voigstedt in Eastern Germany).

Anas aff. acuta Linné 1758

Material: Loc. Villány—Nagyharsány-hegy; coll. T. KORMOS; age: Lower Pleistocene, Villanyian: nearly complete and 6 fragm. of Coracoidei; 5 prox. and 2 dist. fragm. of Ulnae; one prox. and 4 dist. fragm. of Humeri; 6 prox. fragm. of Carpometacarpi; two complete, 4 prox. and 14 dist. fragm. of Femora; Phal. 1 digiti 3 pedis.

Vértesszöllős Loc. 2, coll. JÁNOSSY; age Middle Pleistocene: layer 200—240 cm; dist. fragm. of Coracoideum; layer 240—280 cm; phalanx 2 digiti 3 pedis.

Püspökfürdő (Betfia) 2; coll. T. KORMOS; age: Uppermost Lower Pleistocene, Betfia Phase: dist. fragm. of Tibiotarsus.

All bones are of the type of Anas (s. str.) and agree in size and morphology among the European forms mostly with *Anas acuta*. There are some morphological differences, — observable chiefly in the femora, — against the bones of the recent pintail *(A. acuta)*. However, it is questionable whether these differences have any taxonomical value.

Let us give some measurements of the few complete bones: length of the only complete femur: 43 mm, proximal and distal width: 10 mm, width of the diaphysis (middle): 4.2 mm, length of phal. 1 dig. 3: 8.6 mm, width of the diaphysis: 2.7 mm.

Anas. aff. penelope Linné 1758

Material: Loc. Villány—Nagyharsány-hegy; coll. T. KORMOS; age: Lower Pleistocene, Upper Villanyian: 13 fragm. of Coracoidei; 3 distal fr. of Humeri; 19 fragm. of phalanx I digiti 2 and phal. 1 dig. 4 pedis.

The remains agree morphologically-metrically with the corresponding bones of A. penelope, although some of them surpass in size the plus-variants of the recent species.

It is impossible to establish what osteological differences are caused by evolutionary factors and it is very probable that the variation of the Lower Pleistocene forms of species in their size lay close to one another thus producing broad overlappings (e. g. aff. penelope and aff. acuta).

Anas aff. clypeata Linné 1758

Material: Loc. Villány—Nagyharsány-hegy; coll. T. Kormos; age: Lower Pleistocene, Upper Villányian: fragm. of a Coracoideum, one complete and a fragm. Ulna, one nearly complete and 3 fragm. of Carpometacarpi, 2 phal. 1 dig. 4 pedis.

Püspökfürdő (Betfia) 2; coll. T. Kormos; age: Lower Pleistocene, Betfian Phase: Carpometacarpus.

Anas. aff. querquedula Linné 1758

Material: Loc. Villány—Nagyharsány-hegy, collector and age see above: prox. and dist. fragm. of Humeri (may be Spatula too!).

Loc. Püspökfürdő (Betfia) 2; coll. and age see above: 23 fragm. of Carpometacarpi, prox. fragm. of Humerus, dist. fr. of Tibiotarsus, 2 Vertebrae cervicales (part. det. Čapek).

Anas cf. crecca Linné 1758

Material: Loc. Püspökfürdő (Betfia) 2; coll. and age see above; 4 fragm. of Coracoidei.

These fragments stand morphologically nearer to querquedula, while metrically to crecca.

Anas cf. strepera Linné 1758

Material: Loc. Püspökfürdő (Betfia) 2; coll. and age above; dist. fragm. of Humerus, prox. fragm. of Tarsometatarsus (det. Čapek).

Anas albae n. sp.

Derivatio nominis: albae, named after the old Latin denomination "Alba Regia" of the town Székesfehérvár, in the neighburhood of the Locality Polgárdi.

Diagnosis: A very small duck with a smaller and slenderer carpometacarpus than that of the hitherto known Eurasian fossil or recent ducks.

Type locality: Fossil cave in Polgárdi, com. Fejér, near Székesfehérvár.

Type level: Lower Pliocene, Upper Pannonian.

Holotype: Nearly complete carpometacarpus; Inv. Number: Vt. 84.

Description: Since the determination by Čapek and the publication by Lambrecht (1912, 1933) this remain figures under the designation "*Mergus* sp.". A searching comparison of the bones with the corresponding anatomical elements of different groups of ducks these pieces show without doubt a high measure of likeliness with the morphology of the Carpometacarpus of the genus Anas. The whole shape of the proximal epiphysis, the form of the proc-

essus metacarpalis I., the lesser attenuation of the bone at the point of the fossa carpalis posterior, the form of the joining of the metacarpale III. to the metacarpale II. speak for this relegation. The slenderer form of the metacarpale II. as well as the shorter symphysis metacarpalis distalis resembles somewhat the structure of the corresponding bone of the Mergus and these morphological features could deceive the earlier authors with the determination.

The length of the bone measures 33.7 mm, the width (in the middle) of the mc II. 2.6 mm. The same measurements range with the smallest Eurasian duck, the teal *(A. crecca)* between 34.1 and 39.0 mm (according to WOELFLE and the comparative osteological material of the Museum Budapest, n = 66), as well as 3.0—3.3 mm (n = 13). Among the similarly small recent ducks, the South-American *Anas versicolor* Vielliot is in the average larger, than *A. crecca* (wing length 175—197 mm, by contrast with 170-192 mm with the latter) while the subsaharan African *Anas punctata* Burchell is much more smaller (wing length 145—150 mm). On the other hand both are zoogeographically very far from our territory.

Among the hitherto described fossil species we cannot find analoguous forms in size and geological age: the Middle-Upper Miocene *Anas velox* Milne—Edwards 1868 of the same size category possesses, according to the very exact figures of the author, a Carpometacarpus of different proportions and morphology, the proximal epiphysis being broader, the symphysis metacarpalis distalis considerably higher. A comparison with *Anas meyeri* MILNE-EDWARDS which is geologically considerably older than our remains from the Upper Miocene of Oeningen and *Anas Benedeni* SHARPE 1899 (= *creccoides* VAN BENEDEN 1871) is unfortunately not possible. As to its age, the nearest *Anas eppelsheimensis* LAMBRECHT, 1933 of the Lower Pliocene of Eppelsheim seems to be much more robust in its different bones illustrated.

Genus: *Mergus* Linné 1758
Mergus connectens Jánossy 1972
(Fig. 4/1)

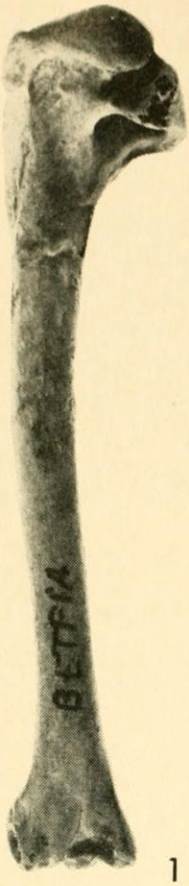
Material: Loc. Püspökfürdő (Betfia) 5; coll. M. KRETZOI; age: Later Lower Pleistocene, Betfia Phase: complete Humerus.

In the course of the description of the new species of *Mergus* in the material of Stránská Skála (JÁNOSSY, 1972) I described this Betfia specimen too. As mentioned there, this bone agrees in all details morphologically as well as metrically with that of the material of the corresponding bones of the Stránská Skála material. Their measurements are the following: length 82.5, prox. width 12.9, width of the diaphysis 6.5 mm. I am publishing in this article the photocopy of this bone to make further comparisons easier (Fig. 4/1).

Genus: *Aythya* Boie 1822
Aythya cf. nyroca Gueldenstaedt 1768

Material: Püspökfürdő (Betfia) 2; coll. T. KORMOS, age: Lower Pleistocene, Betfia Phase: prox. fr. of Carpometacarpus.

Tarkő:; coll. D. JÁNOSSY, 1965; Layer 3; age: Lower Middle Pleistocene, Tarkő Phase; phalanx 2 digiti 3 pedis (posterior).



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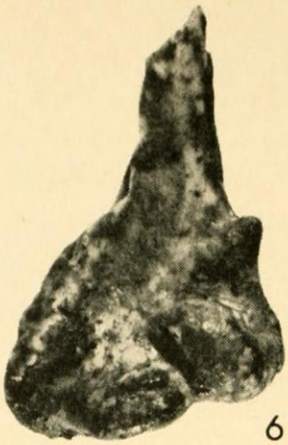

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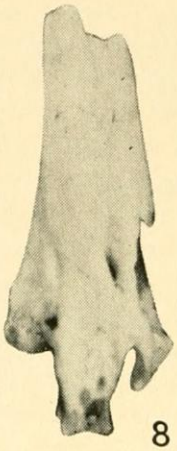

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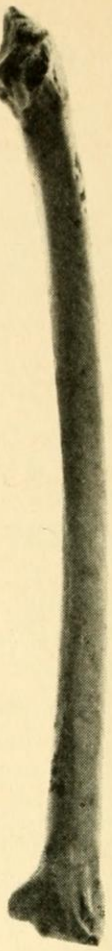

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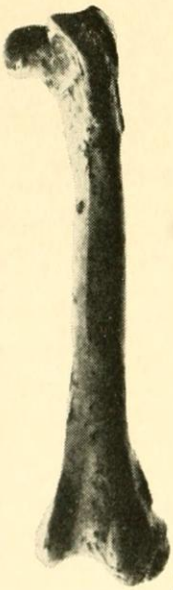

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9

Both remains stand near the recent comparative material and we cannot tell anything of the possible different taxonomical status of the Lower-Middle Pleistocene form.

Genus: *Tadorna* Fleming 1882
Tadorna sp.

Material: Loc. Villány—Nagyharsány-hegy; coll. T. Kormos, age: Lower Pleistocene, Upper Villanyian: 5 fragm. of Coracoidei 4 fragm. of Humeri, 7 fr. of Ulnae, 2 fr. of Carpometacarpi, 3 fr. of Femora.

The very fragmentary remains are only convenient for a generic determination, chiefly due to the morphological features of the proximal and distal parts of humeri and the coracoidei, but for nothing more. Exact measurements can be taken only on the distal fragments of the humeri. The distal width of this bone ranges between 14.0 and 15.7 mm (n = 7), the same measurements vary in the recent *Tadorna tadorna* between 13.7—17.0 mm (n = 37) and in *Tadorna ferruginea* between 16.4—17.2 mm (n = 4). According to these data the remains stand metrically nearer to the former than to the latter species.

Thus, we can only register the presence of shelducks from the Early Pleistocene in our territory.

Genus: *Anser* Linné 1758
Anser aff. anser Linné 1758

Material: Loc. Budapest — Várhegy, Fortuna street 25, Lower Layer, coll. D. Jánossy, 1959. age: Middle Pleistocene, Upper Biharian, Tarkő — Phase: half of the distal epiphysis of a Humerus.

The very scanty fragment shows unambiguously the morphological features of a goose larger than the grey-legged goose *(Anser anser)*. A geologically contemporaneous material aquired from abroad and now standing under the elaboration of the author represents a large extinct form of *Anser*

4. Fig. 4. 1. Mergus connectens Jánossy, Loc. Betfia 5, medial view of the left Humerus; 2. Anas submajor n. sp., Loc. Villány 3, ventromedial view of the left Ulna (type of the species); 3. The same cranial view of the left Femur; 4 – 5. The same oral view of the left Coracoidei; 6. Cuculus csarnotanus n. sp., Loc. Csarnóta 2, lateral view of the distal fragment of the left Humerus; holotype; 7. Turdoides borealis n. sp., Osztramos, Loc. 1, medial view of the proximal fragment of the left Humerus; 8. Porzana ostramosi n. sp., Osztramos Loc. 9, anterior view of the distal fragment of the Tarsometetrarsus; holotype; 9. Gallinago veterior n. sp., Csarnóta Loc. 2, oral view of the left coracoideum; holotype (figures 4/1 – 5 only slightly, figures 4/6 – 9 considerably enlarged; exact measurements see in the text) – 1. Mergus connectens Jánossy, Betfia 5., bal felkarcsont medialis nézetben; 2. Anas submajor n. sp., Villány 3, a singcsont ventromediális nézet (a faj típusa); 3. Ua. bal combcsont craniális nézet; 4 – 5. Ua. bal hollóorrcsontok orális nézet; 6. Cuculus csarnotanus n. sp., Csarnóta 2, bal felkarcsont disztális töredéke, mediális nézet; holotípus; 7. Turdoides borealis n. sp., Osztramos 1, bal felkarcsont proximális töredéke, mediális nézet; holotípus; 8. Porzana ostramosi n. sp., Osztramos 9. bal lábközépcsont disztális töredéke, elülső nézet; holotípus; 9. Gallinago veterior n. sp., Csarnóta 2, bal hollóorrcsont, orális nézet; holotípus (a 4/1 – 5. ábra csekély mértékben, a 4/6 – 9. ábra jelentősen nagyítva; a pontos méreteket lásd a szövegben)

which will be described in an other publication. The scanty fragment discussed in this place belongs with high probability to the same form.

Order: *Gruiformes*
Family: *Gruidae*
Genus: *Grus* Pallas 1767
Grus sp.

Material: Loc., collector and age are the same as with the former. Distal two thirds of the phalanx 1 digiti 4 pedis.

The generical determination of the phalangeal bone is unequivocal. A comparison of it with the same element of the recent species *Grus grus* shows somewhat smaller dimensions with the latter.

The hitherto determined remains of the crane of the older Pleistocene of Europe have so far represented unfortunately so fragmentary fossils that only the generical determination could be done (Voigstedt, Rebielice, JÁNOSSY, 1965, 1974) and the situation is in the present case the same.

Family: *Rallidae*
Genus: *Porzana* Vielliot 1816
Porzana estramosi n. sp.
(Fig. 4/8)

Derivatio nominis: Estramosi, named after the older name of the locality, the Hill Osztramos = Esztramos.

Diagnosis: Porzana species, smaller, than any hitherto described fossil and recent continental forms.

Type locality: Karst Cavity Nr. 9. in the large quarry of the Hill Osztramos, Northern Hungary 40 km north of the town Miskolc.

Type level: Middle Pliocene, "Postpannonian Pliocene", Estramontian level.

Holotype: Broken distal fragment of the left Tarsometatarsus. Inv. Number: V. 78. 120.

Description: The bone fragment shows without doubt the morphological features of rails. This determination is supported by the relation of the trochleae, the position of the foramen supratrochleare as well as the whole shape of the distal part of the bone. An identification as a Charadriiform or a Galliform is excluded.

The family of Rallidae is cosmopolitan and very rich in recent species (about 124 species accepted as valid). Among them the coots and gallinules are birds of larger dimensions. However we can find among the rails and crakes a lot of species of smaller body. I am giving in a list the recent rails with the body-measurements available in the literature, only of the smallest size-category (table 2.).

We have to mention in this place that except for the Eurasian small forms, *P. parva*, *pusilla* and *exquisita*, all the others live in the Americas or are insular forms of the tropics and, therefore, zoogeographically very distinct from our remains.

Despite the fact that it is not possible to take exact measurements on the fossil remain, due to its very fragmentary condition, we can compare it met-

2. táblázat

Table 2

Body-measurements of smaller recent members of rails (in mm)

	Wing-length	Body-length
Porzana parva Scopoli	95—110	180
P. pusilla (Pallas)	76—97	180
P. tabuensis Gmelin	80	150
P. palmeri Frohawk	60	130
P. exquisita Swinhoe	77—83	160(?)
P. flaviventer Boddaert	—	150
P. fusca (Linné)	100	200
Laterallus jamaicensis Rigdway	75	110—125
L. salinazi (Philippi)	75	120
L. spilonota (Gould)	70	110
L. rubra Sclater & Savin	80	—
L. melanophaius Vielliot	80	—
Coturnicops noveboracensis (Gmelin)	80	150
C. notata (Gould)	80	140
Corethrura hauxwelli (Sclater & Savin)	95	—
C. cayannensis Gmelin	90	—
Micropygia schomburgki (Schomburgk)	75	120

rically with the recent material available. The width of the Osztramos-specimen measures above the foramen supratrochleare about 2 mm, the same measurement ranges with four exemplars of *P. parva* between 2.3 and 2.5 mm.

On the basis of these measurements we can suppose with the fossil bird a wing length shorter than 70 mm and a body length below 150 mm. There would be no point in relating our fossil with the insular, endemic form of a Hawaian Island (Laysan), Porzana palmeri, the only crake species of so small dimensions.

The only so far described fossil forms of a like-size category — from the North American Lower and Middle Pleistocene — *Porzana guti* Brodkorb, 1952, *P. auffenbergi* Brodkorb, 1954 and *P. lacustris* Brodkorb, 1958 are to the literary data larger, than our fossil species. Therefore, I propose to designate this form as new one for the science.

Analogically, it is not excluded that we have, due to the extremely small dimensions, an insular endemic form before us.

Genus: *Crex* Bechstein 1803
Crex cf . crex Linné 1758

Material: Püspökfürdő (Betfia) 2; coll. *T. Kormos;* age: Uppermost Lower Pleistocene, Betfia Phase. (det. former by W. Čapek, Brno): two Vertebrae cervicales, cranial fragm. of Coracoideum, prox. fragm. of Humerus, one prox. two thirds and three dist. fragm. of Tarsometatarsi.

A searching comparison of the remains with the bones of four recent specimens of the cornecrake has not yielded differences, neither morphologically nor metrically.

Genus: *Rallus* Linné 1758
Rallus sp. (*aquaticus* group)

Material: Loc. Csarnóta 2, mixed material (no stratum); coll. M. Kretzoi, 1959; age: Uppermost Pliocene, Csarnóta Phase: phalanx 1 digiti 2 posterior (pedis).

The characteristically elongated form of the phalangeal bone proves, without doubt, the relegation of this bone to the Rallids. If we compare the proportions of the bone with those of the same anatomical element of recent European forms of the familly (see table 3.), we can find close relations only to Rallus aquaticus. The Csarnóta-remain is somewhat shorter as with the recent four comparative exemplars, although this observation seems not to be sufficient for proving the taxonomical difference, that may be theoretically expected.

Genus: *Gallinula* Brisson 1760
Gallinula sp. (*chloropus* group)

3. táblázat

Table 3

Measurements of the phalanx 1. digiti 2 posterior of fossil and recent rails (in mm)

Recent material	Length	Width of diaphysis
Csarnóta, 2, fossil	16.7	1.5
Rallus aquaticus, nr. C. 61.8	18.0	1.5
nr. C. 61.28	17.8	1.5
nr. 63.10.1	17.9	1.3
nr. 57.10.10	18.0	1.2
Crex crex, nr. 555	12.0	1.2
nr. 58.6.15	13.4	1.4
nr. 61.19	15.0	1.2
nr. 68.5.20	13.0	1.2
Porzana porzana, without number	13.8	1.0
nr. 57.10.10	13.6	1.0
nr. 58.8.25	14.1	1.0
nr. C. 61.31	14.2	1.1
Porzana parva, nr. 61.10.3	14.3	1.1
nr. 65.8	14.0	0.8
nr. 72.8	14.6	1.1
nr. 73.9.16	14.0	0.9

Material: Loc. Csarnóta 2 (see former species): layer 2: a part of the prox. fragm. of Humerus; layer 3: dist fragm. of carpometacarpus.

The morphological features of rails are observable on the very fragmentary material and they stand in their shape and size closest to *Gallinula chloropus* among the recent comparative material of Rallids. The scanty remains are unfortunately not convenient for further conclusions.

Family: *Scolopacidae*
Genus: *Scolopax* Linné 1758
Scolopax baranensis n. sp.

Derivatio nominis: baranensis, named after the county Baranya in which the type locality lies.

Diagnosis: Scolopacid of the size of the woodcock having a carpometacarpus absolutely slenderer than the recent species.

Type Locality: Karst fissure of Csarnóta 2, layer.
Mts-Villány, Southern Hungary, coll. M. Kretzoi, 1959.

Type level: Uppermost Pliocene, Csarnóta Phase.

Holotype: proximal fragment of carpometacarpus. Inv. Number: Vt. 82.

Description: A searching comparison of the remain with the same anatomical element of all European Charadriiforms proved without doubt, the presence of the characteristics of Scolopax. The shape of the mc II., the place and form of the whole habit of the picture of the fragment confirms this relegation. Besides, these resemblances the striking slimness of the bone — by equal dimensions was — at the first sight — conspicious. This feature is all the more remarkable, because I. have in the material of the Middle Pleistocene Locality of Konieprusy (Czechoslowakia) — just under elaboration — the same bone but with different proportions in my hands. If we compare the proportions of the bones of recent and fossil forms (see table 4.) we can establish that the corresponding anatomical unite of the Middle Pleistocene

4. táblázat

Table 4

Measurements of the carpometacarpus of recent and fossil Scolopax-species (in mm)

	Length	Proximal width	Thickness of the diaphysis*
Scolopax baranensis n. sp. Csarnóta, Loc. 2	—	3.2	2.5
Scolopax sp., Konieprusy	38.4	±4	3.2
Scolopax rusticola, recent 59.38	38.0	3.8	3.0
nr. 61.30	39.3	3.9	2.9
nr. 65.3.25	38.2	4.1	3.3
nr. 20.69.4.10	38.1	4.0	3.0
nr. 86.1973	38.4	3.7	3.0

* Immediately distally from the processus metacarpalis I.

species varies in a direction opposite to that found in the Upper Pliocene, it is robuster than the recent one, let alone the Upper Pliocene remain. Once again we have another nice example of mosaic like evolution before us, as in many other cases chiefly with birds.

Genus: *Gallinago* Leach 1816
Gallinago veterior n. sp.
(Fig. 4/9)

Derivatio nominis: veterior from the Latin "older" alluding to the geological age of the remains.

Diagnosis: Middle sized species of the genus with mixed osteological features between the two European species.

Type locality: Karst fissure of Csarnóta 2, layer 2/B 1, coll. M. Kretzoi, 1959.

Type level: Uppermost Pliocene, Csarnóta Phase.

Holotype: Nearly complete left Coracoideum. Inv. Number: Vt. 81.

Description: A comparison with the coracoideum of practically all European members of the Charadriiformes shows that out remains agree in all details only with those of the members of the genus *Gallinago*. This determination is in the first place confirmed by the typical structure of the angulus internus and the acrocoracoid, as well as by the whole shape of the bone. The remain shows the usual mixture of morphological-metrical features as they can be observed with the *Gallinago media* and the *G. gallinago*. The slenderer form of the acrocoracoid and the shape and insertion of the processus procoracoideus agree with that of the *G. media*, the distal (ventral) epiphysis in details, however, rather more with that of the *G. gallinago*. In addition the size is nearer to the *G. media*, although the slenderer form of the bone differs from that of both recent species of Europa (measurements see table 5).

The genus *Gallinago* is rich in recent species. Yet, we can really compare our remain only with the Holarctic *G. gallinago* and the Western Eurasiatic —

5. táblázat

Table 5

Measurements of the coracoideum of recent and fossil Gallinago species (in mm)

	Length*	Prioximal width**
Gallinago veterior n. sp., Csarnóta 2	19.8	5.6
Gallinago media, recent	20.6	7.0
Gallinago gallinago, recent, 57.10.9	17.8	5.8
57.10.11	18.8	5.7
73.2.1	19.5	6.0

* Measured from the acrocoracoid to the crista articularis sternalis.
** Only the width of the crista articularis sternalis.

Oriental — Etiopian *G. media*. The on the average somewhat larger Middle viz. Eastern—Northeastern Asiatic forms, the *Gallinago megala*, *nemoricola* and *stenura* are zoogeographically distinct species (with relatively small, from Europe isolated areas), while the Japanese *G. hardwicki* and the Northern (Middle) Asiatic *G. solitaria* are considerably larger at that. There is no reason for us to compare our find with the five South American and two subsaharan African species of the genus — from zoogeographical considerations either.

Gallinago cf. media Latham

Material: Loc. Püspökfürdő (Betfia) 2; coll. T. Kormos; age: Uppermost Lower Pleistocene, Betfia Phase: fragm. of Carpometacarpus, fragm. of Ulna (det. W. Čapek, Brno).

Loc. Tarkő; layer 11; coll. D. Jánossy, 1961; age: Middle Pleistocene, Tarkő Phase: oral fragm. of the Sternum.

These fragments are only partly convenient for further investigations or conclusions: we can only establish the presence of the genus with on the average larger dimensions. The Tarkő-specimen seems to show a mixture of the features of the *G. gallinago* and of the *G. media*, but this fragment is so scant that we cannot say anything more exact about it.

Genus: *Limosa*, Brisson, 1760
Limosa aff. *limosa* Linné 1758

Material: Loc. Püspökfürdő (Betfia) 2; coll. T. Kormos; age: Uppermost Lower Pleistocene, Betfia Phase: fragm. of Phalanx 1 digiti 2 alae (det. Čapek, Brno), a nearly complete coracoideum.

I did not find any difference between the fossil and the recent material. The length of the coracoideum measures 26.8 mm; it agrees with that of the *L. limosa* in high degree, but differs from the same bone of *L. lapponica*.

Order: *Cuculiformes*
Family: *Cuculidae*
Genus: *Cuculus* Linné 1758
Cuculus csarnotanus n. sp.
(Fig. 4/6)

Derivatio nominis: csarnotanus, named after Csarnóta, the type locality.

Diagnosis: Middle sized species of the genus with a humerus possessing a considerably lower processus supracondyloideus than the recent European cuckoo.

Type locality: Karst fissure of Csarnóta 2, layer 3, coll M. Kretzoi, 1959.

Type level: Uppermost Pliocene, Csarnóta Phase.

Holotype: distal fragment of the left Humerus. Inv. Number: Vt. 80.

The bone fragment speaks in all details for a cuckoo and proportions of the condyles of the impressio musculi brachialis inferioris, and those of the processus supracondyloideus are all characteristic for this order and especially for the *Cuculus*. The generical determination may be confirmed by a

comparison of the same bone with two other genera, which we can consider at all zoogeographically, the *Clamator* and *Centropus*, which have a generally similar bone-structure, but in details quite different from the *Cuculus*. Beside the *Cuculus canorus* we may have compared our remains with the corresponding bone of the somewhat smaller *Cuculus saturatus (optatus)*, a sibling species of our European cuckoo. Regrettably, a comparative osteological material from it is not available to me. We have to consider the fact that the latter species have reached recently the Eastern parts of Europe and seem, therefore, to be of Asiatic origin. Other species are zoogeographically distinct from our territory and are all of different size (see table 6).

Coming back to our fossil remain: we can express metrically the difference in the height of the processus supracondyloideus (see table 7); this element

6. táblázat

Table 6

Body-measurements of the recent members of the genus Cuculus (in mm)

	Wing-length	Body-length
Cuculus canorus Linné	208—240	330—360
C. clamosus Latham	170	300
C. fugax Horsfield	166—200	310
C. (Cacomantis) merulinus (Scopoli)	110	230
C. micropterus Gd.	169—209	340
C. pallidus Latham	190	310
C. poliocephalus Latham	152—172	270
C. saturatus Hodgson	179—226	340
C. solitarius Steph.	170—200	290
C. sparveroides Vigors	185—195	400
C. nanus Hume	140	260
C. varius Vahl.	177—193	340

7. táblázat

Table 7

Measurements of the distal part of humerus of recent and fossil cuckoos (in mm)

	Distal width	Hight of proc. supracondyloideus
Cuculus csarnotanus n. sp., Csarnóta	8.0	5.2
Cuculus canorus, recent, 58.5.15	8.5	6.6
58.6.6	8.6	6.1
58.7.15	8.4	6.7
59.7.22	8.6	6.6
—	8.6	6.1

differs absolutely from that of five recent specimens. Beside this, we can observe a difference in the shape and form of the condylus radialis too, which element we cannot exactly measure.

Cuculus aff. canorus Linné 1758

Material: Loc. Rockshelter Uppony I.; layer 6; coll. D. JÁNOSSY, 1963; age: Lower Middle Pleistocene, Uppony Phase: fragment of a juvenile Tarsometatarsus.

The scanty remain seems to agree in all details with the same bone of the recent cuckoo, but it is not apt for further investigations.

Order: *Passeriformes*
Suborder: *Passeres*

As explained in several places in literature, the generic or more the specific determination of the bones of Passeriformes seems not to be a promising thing to do, chiefly in Middle Pleistocene or geologically older material in which we have to reckon with extra-European forms too. In an attempt to overcome this difficulty, I have tried to analise especially the humerus in which we can seemingly find some very subtle taxonomically exploitable differences.

I intend to publish the results of these investigations some time later. However, I may mention in this place that chiefly the microscopical differences in the foramina pneumatica of the mentioned bone etc. seem to reflect some evolutionary affinities that had been overlooked before. Some groups are on the basis of those osteological features very homogenious (e. g. *Fringillidae*, *Alaudidae*) other ones heterogeneous (e. g. *Sylviidae*, *Turdidae*). On the other hand there are some tropical families osteologically more strongly related than belived before on the basis on other anatomical or phenotypical features: e. g. the *Eurylaimidae*, *Pittidae* and *Dicruridae*.

All in all, these fine differences will in the future help us with the determination of fossil bones and the identification will then be on the basis of such differences not so hopless as it was believed earlier.

Family: *Timaliidae*
Subfamily: *Turdoidinae*
Genus: *Turdoides* Cretzschmar 1826
Turdoides borealis n. sp.
(Fig. 4/7)

Derivatio nominis: borealis, named after the Latin word "northern" due to the subtropical tropical ranges of all hitherto known members of the genus.

Diagnosis: Middle sized member of the genus Turdoides having an absolutely slenderer humerus than in bablers of the same size category.

Type locality: Karstic fissure of Loc. 1; Osztramos, Northern Hungary.

Type level: Middle Pliocene, Estramontian level (see JÁNOSSY 1972).

Holotype: Proximal fragment of the left Humerus Inv. number: V. 78. 119.

Further material (conspecificity doubtfull): Loc. Csarnóta 2; coll. M. KRET-

zoi, 1959; age: Uppermost Pliocene, Csarnóta Phase: proximal fragment of the right Ulna.

Description: The humerus-fragment, discovered in the rich Middle Pliocene material of the Loc. 1. Osztramos, differed at the first glance from all European Passeriformes and I gave about it the following preliminary description (JÁNOSSY, 1972): "The special form of the epiphysis especially that of the tuberculum mediale differs from that of all European families of this group and agrees with that of the *Pycnonotidae* (esp. *Pycnonotus capensis*) and the *Turdoididae* (esp. *Turdodes squamiceps*)..." I did not possess at that time convenient comparative material and an exact description was, therefore, impossible.

Since then I have got such a rich comparative material by courtesy of G. S. COWLES (British Museum Natural History) and of B. STEPHAN (Humbold Museum of Berlin) as enabled me to compare all tropical families of song birds which may be taken into consideration from the zoogeographical point of view. The parergon of these investigations was the above mentioned possibility of a systematical review of some groups on an osteological basis.

I have had the possibility of comparing the fossil piece with the same anatomical unit of the members of the following families: *Timaliidae (Turdoidinae)*, *Pycnonotidae*, *Zosteropidae*, *Chloropseidae*, *Nectariniidae*, *Dicaeidae*, *Dicruridae*, *Pittidae* and *Eurylaimidae*.

The humeri of these families may be relegated into three morphological groups:

1. the *Dicruridae*, *Pittidae* and *Eurylaimidae* with very spongious ("inflated") structure, distinct morphological features in the proximal and distal epiphysis;

2. the *Nectariniidae* and *Dicaeidae* stand in a great number of features near to some European forms (e. g. *Fringillidae*) although the bony wall of the tuberculum mediale (between the pars subtubercularis and pars supertubercularis fossae anconeae, see JÁNOSSY, 1951) is extremely thin with them (semi-transparent) much thinner than with any European form. Similarly, the slimness of the crista interna and the widening of the distal epiphysis is also very characteristic of this group;

3. the *Zosteropidae*, *Chloropseidae*, *Pycnonotidae* and *Turdoidinae* (part of *Timaliidae*) are characterised, among others, by the considerable distal elongation of the fossa pneumoanconea (pars subtubercularis f. anconeae) besides the entire lack of the tricipital fossa (pars supertubercularis f. a.). Such a distal elongation of the mentioned groove is not observable with any of the European forms at all.

Our fossil remain belongs clearly to the third group. A searching comparison of the bone fragment from cranial, caudal, inner and outer side proved clearly the relegation of this find to the group of *Turdoidinae*. The shape of the apex tuberculi interni, the mentioned elongation of the tricipital fossa, the whole view from outer (lateral) side and the relation of the tricipital fossa to the tuberculum mediale, all speak for this determination. Most of these features stand nearest to the *Turdoides* and somewhat to the *Leiothrix*, although I could not observe such a slim form of the proximal epiphysis with any of the said families of the third group. It is only the Pitta that shows this, but with quite a distinct morphology (the proximal width of the bone measures 6 mm).

It is not impossible that this remain will prove in the future to belong to a new genus.

I have to mention in this place that a very scant fragment of an ulna originating from Csarnóta resembles in a high degree that of the recent *Turdoides* squamiceps available for comparison and I think it to be identical or nearly identical with the Osztramos-form.

All in all, we have before us a representive of a tropical-subtropical song bird, the range of which extended in late Tertiary times to our recently temperate climatical belt.

Systematical remark: As explained above, our remains clearly belong to the group of *Turdoidinae*. I had the possibility of comparing the fossil bone with the humeri of the recent species *Turdoides squamiceps*, *T. caudatus*, *T. altirostris*, *Leiothrix argentauris* and *Garrulax leucolophus*.

Without wanting to form an opinion about the so often disputed homogenity of the family *Timaliidae*, I have to establish the osteological uniformity of the group of the "song-babbers" *(Turdoidinae)*, based in the humerus in a high degree. Therefore, I accept the systematical conception of Delacour, Smithies and others, groupping the family *Timaliidae* into 4—5 subfamilies and I cannot agree with the systematical arrangement widespread in modern literature dividing the "giant" family of *Muscicapidae* into ten or more subfamilies, among others the *Timaliinae*. Osteological arguments speak for a clear independence of the "song-babbler"-group understood to be either as a subfamily or a family *(Turdoidinae* or *Turdoididae)*.

*

In the following I am giwing a list of other Passeriformes determined hitherto from the Uppermost Pliocene Lower-Middle Pleistocene of the Carpathian Basin. Considering that most of them are osteologically not separable from their recent representatives, I am listing them without notes with the signs cf. or aff. and I am adding some short remarks only when it is especially needed.

To avoid unnecessary repetitions I am giving the following abbreviations of localities: Cs = Csarnóta, Uppermost Pliocene, Csarnótan Phase; coll. M. Kretzoi; V. K. and V. N. = Villány — Kalkberg (= Villány 3) and Villány-Nagyharsány-hegy, Lower Pleistocene Villanyian coll. T. Kormos; P. = Püspökfürdő (= Betfia), Uppermost Lower Pleistocene, Betfia Phase, coll. T. Kormos viz. M. Kretzoi; K. = Kövesvárad, Lower — Middle Pleistocene, Templomhegy Phase, coll. D. Jánossy; M. = Méhész, age the same; T. = Tarkő, Middle Pleistocene Tarkő-Phase, coll. D. Jánossy; V. Sz. = Vértesszöllős 2, age the same, coll. D. Jánossy; U. = Uppony I. Middle Pleistocene, Uppony-Phase, coll. D. Jánossy.

Family: *Alaudidae*
Alauda cf. arvensis Linné

Loc. P. 2 (det. W. Čapek and D. Jánossy): two Carpometacarpi.

Family: *Hirundinidae*
Hirundo sp.

Loc. V. K.: Humerus, Carpometacarpus.
Loc. V. N.: prox. fr. of Humerus, Ulna.
Loc. P. 2:3 Humeri, prox. fr. of Ulna, 4 Carpometacarpi, Phalanx 1. digiti 2 anterior (alae), Tibiotarsus, Tarsometatarsus.
Loc. Hórvölgy, Uppermost Middle Pleistocene, coll. D. JÁNOSSY dist. fr. of Humerus (extremely large form, larger than my plusvariant of the recent *Hirundo rustica*, width of distal epiphysis of the humerus 5.0 mm).

Family: *Corvidae*
Pyrrhocorax aff. graculus Linné

Loc. Cs. Layer 2: dist. fr. of Ulna; layer 10: prox. fr. of Carpometacarpus; Layer 23: cranial fr. of coracoideum; without layer — mark: dist. fr. of Humerus.
Loc. P. 2: dist. fr. of Ulna, dist. fr. of Tibiotarsus; prox. fr. of Tarsometatarsus, Phalanx unguae.
Loc. M.: dist. fr. of Femur.
Loc. T. Layer 3: diaph. of Femur; Layer 4: Ulnare, 2 fr. of Ulnae, prox. fr. of Tarsometatarsus; without layer-mark: Humerus Tarsometatarsus, Coracoideum, Scapula.

Pyrrhocorax cf. pyrrhocorax Linné

Loc. Solymár, Uppermost Middle Pleistocene, Solymár Phase, coll. D. JÁNOSSY: Femur.
The only specimen of *Pyrrhocorax* originating from our Pliocene or Pleistocene which agrees in all details more with *P. pyrrhocorax* than with *P. graculus*. The measurements of the bone are: length: 41.6; prox. width.: 8.4; width of the diaphysis 3.7; distal width: 8.6 mm.

Pica aff. pica major Jánossy

Loc. Cs. Layers 1 and 2: two dist fr. of Tarsometatarsi, phal. 1 digiti 1, dig. 2, dig. 3 and dig. 4 pedis.
Loc. V. K.: Cranial fragm. of Coracoideum.
Loc. V. N.: dist. fr. of Humerus.
Loc. V. Sz. 2: Phalanx 1, digiti 2 anterior.

Coloeus aff. monedula Linné

Loc. V. K.: dist. fr. of Humerus.
Loc. V. N.: Carpometacarpus.
Loc. P. 2: Coracoideum
Loc. U. Layer 1: dist. fr. of Humerus

Garrulus or *Nucifraga* sp.

Loc. Cs. 2, Layer 13: dist. fr. of Humerus.

Garrulus aff. glandarius Linné

Loc. P. 2 (det. W. Čapek): fr. of Furcula, cranial fr. of Coracoideum, 2 prox. fr. of Ulnae, prox. fr. of Carpometacarpus, dist. fr. of Femur.

Corvus hungaricus Lambrecht 1916

Loc. V. N.: Tarsometatarsus (type of the species) and dist. fr. of the same, prox. fr. of Ulna.

Corvus betfianus Kretzoi 1961

Loc. P. 5: dist. fr. of Carpometacarpus (type of the species).

Corvus janossyi Chauviré 1975

Loc. T. Layer 2: cranial fragm. of Coracoideum, proximal half of the caput Humeri; without layer-mark: Premaxilla.

The taxonomical independence of this extinct raven had been supposed on the basis of the poor material of Tarkő but an exact description was possible only based on the very rich French remains (Chauviré, 1975).

Family: *Paridae*
Parus cf. lugubris Temminck

Loc. P. 2 (det. W. Čapek): Premaxilla, ulna, dist. fr. of Tarsometatarsus.

Parus cf. major Linné

Loc. P. 2 (det. W. Čapek): prox fr. of Humerus.

Parus cf. ater Linné

Loc. T. Layer 1: Premaxilla.

Parus sp. (small species)

Loc. U. Layer 1: Premaxilla.

Aegithalos cf. caudatus Linné

Loc. p. 2 (det. W. Čapek): prox. fr. of Humerus.

Family: *Sittidae*
Sitta sp. I. and II.

Loc. Cs. 2 five dist. epiphyses of tarsometatarsi from the layers 17, 19 and 21.

As analized in detail in another place (Jánossy, 1974) there are not any generically very well determinable fragments of the nuthaches for further conclusions available. In the Csarnóta-material there are two size categories. One of the size of *Sitta europaea*, and another smaller one.

Family: *Certhiidae*
Certhia cf. familiaris Linné

Loc. P. 2 (det. W. Čapek): Humerus.

Family: *Turdidae*
Turdus viscivorus-group

Loc. Cs. 2. Layer 21: prox. fr. of Humerus.
Loc. P. 2 (det. W. Čapek): Diaphysis of Humerus, prox. and dist. fragm. of Tarsometatarsus, Phal. 1 digiti 2 alae.
It is to be mentiones that the Upper Pliocene remain from Csarnóta agrees also in a high degree with the recent material. There are only very subtle differences, the taxonomical value of them being questionable.

Turdus cf. merula Linné

Loc. P. 2 (det. W. Čapek): 3 oral fragm. of Sterna, Coracoideum and cran. fr. of the same, 6 fr. of Humeri (5 prox. and 1 dist.) 2 prox. fr. of Ulnae, 5 Carpometacarpi, prox. and dist. fr. of Tibiotarsi, Tarsometatarsus and 3 dist. fr. of the same.

Turdus cf. philomelos Brehm
(syn. *Turdus musicus*)

Loc. P. 2 (det. W. Čapek): 2 oral fr. of Sterna, 2 Humeri and 5 prox. and 1 dist. fr. of the same, Ulna and 3 dist. fr., 4 Carpometacarpi, prox. fr. of Tibiotarsus, 2 dist. fr. of Tarsometatarsi.

Saxicola cf. torquata Linné
(syn. *Pratincola rubicola*)

Loc. P. 2 (det. W. Čapek): prox. and dist. fr. of Humerus.

Family: *Sylviidae*
Sylvia cf. communis Latham
(syn. *S. cinerea* = *rufa*)

Loc. P. 2 (det. W. Čapek): Humerus, Ulna, Carpometacarpus.

Acrocephalus cf. palustris Bechstein

Loc. p. 2 (det. W. Čapek): prox. fr. of Humerus.

Hippolais sp.

Loc. Cs. 2 Layer 2; prox. fr. of Carpometacarpus.

Family: *Motacillidae*
Motacilla alba Linné

Loc. P. 2 (det. W. Čapek): Humerus, Carpometacarpus.

Anthus sp. (*campestris-spinoletta* — group)

Loc. K.: Humerus, fragm. of Tarsometatarsus, fragm. of Synsacrum.

Motacillidarum gen. et sp. indet.

Loc. Cs. 2 Layer ?: prox. and dist. fr. of Humerus, prox. fr. of Carpometacarpus.

Family: *Laniidae*
Lanius cf. minor Gmelin

Loc. P. 2 (det. W. Čapek): fragm. of Caput Humeri.

Family: *Sturnidae*
Sturnus cf. vulgaris Linné

Loc. P. 2: Carpometacarpus.

Family: *Fringillidae*
Coccothraustes cf. coccothraustes Linné

Loc. P. 2 (det. W. Čapek): 2 Premaxillae, Coracoideum and cranial fragm. of the same, prox. and dist. fr. of Humerus, prox. fr. of Ulna, 2 Carpometacarpus.

Fringilla cf. coelebs Linné

Loc. P. 2 (det. W. Čapek): 2 Premaxillae, cranial fr. of Coracoideum, prox. fr. of Humerus, Carpometacarpus, prox fr. of Tibiotarsus, prox. fr. of Tarsometatarsus.

Emberiza cf. calandra Linné

Loc. T. Layer 1: Premaxilla.

Emberiza cf. citrinella Linné

Loc. U. Layer 1: Premaxilla.

Emberiza sp.

Loc. V. N.: Humerus.

Pyrrhula aff. pyrrhula Linné

Loc. U. Layer 1: Premaxilla.

Pinicola sp.

Loc. V. Sz. 2: dist. fr. of Tarsometatarsus.

Fringillidarum gen. et sp. indet.

Loc. Cs. 2. Layer 3: 2 prox. fr. of Carpometacarpi.

Family: *Passeridae*
Passer cf. montanus Linné

Loc. P. 2 (det. W. Čapek): Carpometacarpus.
Loc. U. Layer 1: Premaxilla.

*

List of neospecies of orders discussed in this paper (remains not included in the lists by Lambrecht, 1933 and Brodkorb, 1964—71): Holocene remains not noted otherwise: Bökönyi—Jánossy, 1965.

Order: *Anseriformes*
Cygnus olor Gmelin

Holocene: Bronze Age: Mezőkomárom.

Anser cf. anser Linné

Prewürmian: Lambrecht Cave, Layer V.
Holocene: Early Neolithic: Kőtelek, Szajol — Felsőföld (both not published).

Anser cf. albifrons Scopoli

Holocene: Early Neolithic: Szajol—Felsőföld (not. publ.). Neolithic: Maroslele—Pana.

Anser cf. fabalis Latham

Upper Würmian: Bivak Cave, Yellow Layer.

Anas platyrhynchos Linné

Prewürmian: Lambrecht Cave, Layer V.
Lower Würmian: Curătă Cave.
Holocene: Early Neolithic: Szajol—Felsőföld, Maroslele—Pana; Roman Age: Tác—Fövénypuszta.

Anas crecca Linné

? Upper Würmian: Novi Cave; Szelim Cave, Layer B; Hóman Cave.
Holocene: Roman Age: Tác—Fövénypuszta.

Anas querquedula Linné

Holocene: Roman Age: Tác—Fövénypuszta; Middle Age, 15—16. century: Visegrád—Palota.

Anas penelope Linné

Lower Würmian: Curătă Cave.

Aythya nyroca Gueldenstaedt

Lower Würmian: Curătă Cave.

Aythya ferina Linné

Holocene: Neolithic: Maroslele—Pana; Bronze Age: Tápiószele—Tűzköves Roman Age: Tác—Fövénypuszta.

Aythya cf. fuligula Linné

"Postglacial" Mesolithic: Peténvi Cave, Layer H_4. — Holocene Roman Age: Tác—Fövénypuszta.

Bucephala clangula Linné

Upper Würmian: Hóman Cave.

Order: *Gruiformes*
Grus grus Linné

Middle Würmian: Lovas (errancously published as "Tetrao sp." in MÉSZÁROS—VÉRTES, 1955 revised by JÁNOSSY, 1976).
Holocene: Neolithic: Kőtelek, Maroslele—Pana, Folyás—Szilmag; Bronze Age: Tiszaluc—Dankadomb, Dunaújváros—Koszider, Békés—Városerdő, Füzesabony; — Roman Age: Tác—Fövénypuszta, Tokod—Erzsébetakna; Middle Age: 15—17. century: Gyula—Vár.

Crex crex Linné

Prewürmian: Lambrecht Cave, Layers IV. and V.
Upper Würmian: Hóman Cave, Szelim Cave Layer B, Bivak Cave Orange-coloured Layer, Peténvi Cave Layer P_1

Rallus aquaticus Linné

Prewürmian: Lambrecht Cave Layers IV. and V.
Upper Würmian: Jankovich Cave, Szelim Cave, Layer B.

Porzana porzana Linné

Upper Würmian: Szelim Cave Layer B.

Fulica atra Linné

Holocene: Neolithic: Maroslele—Pana; Middle Age: 14. century, Visegrád—Palota.

Charadriiformes
Vanellus vanellus Linné

Upper Würmian: Peténvi Cave, Layer P_1.

Arenaria interpres Linné

Upper Würmian: Peténvi Cave, Layer P_1.

Philomachos pugnax Linné
Upper Würmian: Szelim Cave, Layer B.

Tringa cf. totanus Linné

Upper Würmian: Peténvi Cave, Layer P_1.

Limosa limosa Linné

Holocene: Middle Age: 10—12. century: Szarvas—Rózsás.

Numenius arquata Linné

Lower Würmian: Gencsapáti.
Upper Würmian: Szelim Cave, Layer B.

Scolopax rusticola Linné

Holocene: Peténvi Cave, Layer H_5; Lambrecht Cave ("Holocene"): Hillebrand Cave (Kőlyuk II.).

Gallinago gallinago Linné

Upper Würmian: Hóman Cave.

Gallinago media Latham

Upper Würmian: Bivak Cave, Orange and Yellow-grayish layers.

Larus cf. argentatus Pontoppidan

Holocene: Neolithic: Maroslele—Pana.

Turdus cf. merula Linné

Middle Pleistocene: Rockshelter Tarkő, Layer 1 ("Celtis—Layer").
Holocene: Peténvi Cave, Layer H_1—H_2.

Turdus cf. pilaris Linné

Upper Würmian: Peténi Cave, Layer P_1.

Turdus cf. viscivorus Linné

Lower Würmian: Lambrecht Cave, Layers IV. and V.
Upper Würmian: Peténi Cave, Layer P_1.
Holocene: Peténi Cave, Layers H_4 and H_5.

Parus major Linné

Holocene: Rockshelter Rejtek, "Neolithic" layer.

Emberiza citrinella Linné

Holocene: Lambrecht Cave.

Pyrrhocorax graculus Linné

Upper Würmian: Bivak Cave, Grayish-yellow and yellow Layers; Hóman Cave; Peténi Cave, Layer P_1.

Coloeus monedula Linné

Middle Pleistocene: Rockshelter Uppony, Layer 1.

Upper Würmian: Baits Cave, Hóman Cave.
Holocene: Peténi Cave, Layers H_1—H_2.

Nucifraga caryocatactes Linné

Upper Würmian: Peténi Cave, Layer P_1.

Garrulus glandarius Linné

Upper Würmian: Baits Cave; Hóman Cave; Peténi Cave, Layer P_1.
Holocene: Rockshelter of Istállóskő; Lambrecht Cave; Peténi Cave, Layers H_1, H_2 and H_4.

Pica pica Linné

Upper Würmian; Bivak Cave, Yellowish Layer, Peténi Cave, Layer P_1.
Holocene: Lambrecht Cave.

Corvus cf. cornix Linné

Holocene: Lambrecht Cave.

Corvus corax Linné

Upper Würmian: Baits Cave; Bivak Cave, Yellowish-gray Layers; Jankovich Cave; Petényi Cave, Layer P_1; Szelim Cave, Layer B.
Holocene: Rockshelter Mélyvölgy.

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(Further citations see in part I—III. of this series.)

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Plio-pleisztocén madármaradványok a Kárpát-medencéből. IV. Anseriformes, Gruiformes, Charadriiformes, Passeriformes

Jánossy Dénes

A Kárpát-medence pliocén és pleisztocén ornitofaunáját revideáló sorozat (*Jánossy*, 1976a, 1976b, 1977) negyedik része — akárcsak az előző — szórvány-leletszerű adatokat szolgáltat, melyek a törzsfejlődési viszonyok megállapítására csak mozaikszerűen alkalmasak.

Egy a mai csörgőrécénél jóval kisebb termetű récefaj jelenlétét sikerült a polgárdi beszakadt barlang alsó pliocénjéből kimutatni *(Anas albae n. sp.)*. A viszonylag nagyszámú villányi alsó pleisztocén kacsamaradvány közül figyelemreméltó a tőkésréce ősének több mint 300 csontlelete *(Anas submajor n. sp.)*, és Püspökfürdőről egy már előzőleg kihalt fajként leírt bukó (*Mergus connectens* Jánossy 1972) jelenléte. Ez utóbbi nagy valószínűséggel a közép és nagy bukó (*Mergus serrator* és *merganser)* közös ősének tekinthető.

Az Osztramos 9-es lelőhely középső pliocénjéből egy a mai törpe és kis vízicsibénél kb. 20%-kal kisebb kihalt faj maradványa került napvilágra *(Porzana estramosi n. sp.)*. Ennek rendkívül kicsiny méretei egyes mai szigeti alakokéra emlékeztetnek (*Porzana palmeri*, Laysan, Hawaii szigetek).

A lile alakúak maradványai sorában a mai erdei szalonka ősének tekinthető alak *(Scolopax baranensis n. sp.)* és egy kihalt sárszalonkafaj *(Gallinago veterior n. sp.)* került leírásra a Csarnóta 2 lelőhely felső pliocénjéből. Nincs kizárva, hogy az utóbbi a két mai európai sárszalonkafaj, a közép és nagy sárszalonka (*Gallinago gallinago* és *G. media)* közös őse.

Ugyancsak a Csarnóta 2 lelőhelyről került leírásra az európai kakukk közvetlen őse *(Cuculus csarnotanus n. sp.)*.

A veréb alakúak nagyfokú csonttani hasonlósága miatt eddig még alig írtak le kihalt fajt ebből a csoportból. Az Osztramos 1-es lelőhely középső pliocénjéből mégis alkalom nyílt egy a mai óvilági szubtrópusi-trópusi száraz területek „rigószerű" alakjaihoz *(Turdoidinae)* közel álló, kihalt faj leírására *(Turdoides borealis n. sp.)*. Szerző ezzel kapcsolatban 25 mérsékelt övi, szubtrópusi és trópusi énekesmadár-család felkarcsontjának összehasonlító elemzését végezte el.

A tárgyalt rendek e dolgozatban leírt egyéb, pliocén, alsó—középső pleisztocén képviselői (9 lúd, 4 daru, 2 lile és kereken 40 veréb alakú faj) a mai utódaikból jelen ismereteink szerint csonttanilag el nem választhatók.

A dolgozat egy a ma is élő fajok felső jégkori (felső pleisztocén) és holocén leleteit magába foglaló listát is tartalmaz.

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