GENERAL NOTES

Intramuscular Fat Store in the Pectoralis of Birds.—George (J. Univ. Bombay, 16: 3, 1947; J. M. S. Univ. Baroda, 1 (2): 25–33, 1952) studied the muscles of several representative vertebrates and noted the high fat content in the *pectoralis major* of the pigeon. George and Jyoti (J. Anim. Morph. Physiol., 2: 38–45, 1955) confirmed the high fat content in the pectoralis of the pigeon and found the same in the muscle of other birds (kite and parakeet). They also demonstrated (J. Anim. Morph. Physiol., 4: 119–123, 1957) that this fat forms the chief fuel during long and sustained contraction of this muscle. George and Scaria (J. Anim. Morph. Physiol., 3: 91–103, 1956) showed the presence of high lipase activity in the breast muscle of the pigeon and discussed its possible role in the utilization of fat as energy fuel in sustained muscular activity. In the light of these works, muscle fat assumes considerable importance. Some data collected on the percentage of fat in the *pectoralis major* of various birds are presented here.

All the birds obtained for this work were shot with an air rifle. Within 15 minutes of the death of the bird, a portion of the *pectoralis major* was cut into

FAT CONTENT OF THE *pectoralis major* OF BIRDS

Species	*Per cent of fat, fresh weight*	
	Mean ± S.D.	*Maximum*
Pied-crested Cuckoo *(Clamator jacobinus)*	6.3540(1)	
King Crow *(Dicrurus macrocercus)*	5.6422(4) ± 0.24	4.1380
Rosy Pastor *(Pastor roseus)*	4.7802(4) ± 0.34	5.2740
Hawk Cuckoo *(Hierococcyx varius)*	4.6075(2)	4.8310
House Crow *(Corvus splendens)*	4.1665(5) ± 0.63	5.2610
Blue-tailed Bee-eater *(Merops superciliosus)*	3.9850(2)	4.2570
Cattle Egret *(Bubulcus ibis)*	3.8985(4) ± 0.24	4.1380
White-breasted Kingfisher *(Halcyon smyrnensis)*	3.5537(4) ± 0.83	4.5080
Barn Owl *(Tyto alba)*	3.6900(1)	
Jungle Crow *(Corvus macrorhynchos)*	3.6130(1)	
Brahamini Myna *(Temenuchus pagodarum)*	3.4375(2)	4.2620
Golden Oriole *(Oriolus oriolus)*	2.8920(2)	3.0110
Hoopoe *(Upupa epops)*	2.7520(1)	
Mahratta Woodpecker *(Dendrocopos mahrattensis)*	2.6520(2)	2.8800
House Sparrow *(Passer domesticus)*	2.6302(4) ± 0.11	2.7660
CommonMyna *(Aeridotheris tristis)*	2.5330(2)	
Koel *(Eudynamis scolopaceus)*	2.4307(4) ± 0.42	3.0020
Red-vented Bulbul *(Molpastes cafer)*	2.1796(3)	2.2450
*Blue Rock Pigeon *(Columba livia)*	4.46	
*Pariah Kite *(Milvus migrans)*	4.80	
*Parakeet *(Psittacula krameri)*	5.33	
*Fowl *(Gallus domesticus)*	0.98	
**Batrachus* (fish) Body muscle	1,21	
**Rana* (frog) Leg muscle	0.90	
**Uromastix* (lizard) Leg muscle	1.40	
**Cavia* (guinea pig) Leg muscle	1.86	

*George and Jyoti (1955)
**George (1952)
(Figures in parentheses indicate number of estimations.)

small pieces, dehydrated in an air oven at 80°C., ground into fine powder, and transferred into a fat-extraction thimble. The fat was extracted with 1:1 ethanol-ether mixture in a soxhalet apparatus. Results obtained are presented in the table, and for the sake of comparison data on the muscle of vertebrates (adopted from George, 1952) and on the pectoralis of birds examined by George and Jyoti (1955) are also included. From these data it can be safely generalized that the *pectoralis major* of actively flying birds can be characterized by high fat content.

Fat deposition in the muscle is not only governed by the enzymatic systems in the muscle fibers but also by certain hormones in the peripheral circulatory system. Since both these factors appear to be equally important, a direct correlation between the amount of muscle fat and activity cannot be expected. Though utilization of fat in the flight muscles of birds, bats (George and Jyoti, J. Anim. Morph. Physiol., 5: 57–60, 1958), and insects (Weis-Fogh, Phil. Trans. Roy. Soc., B 237: 1–36, 1952) during long and sustained activity is now quite well established, the presence of a high percentage of fat does not mean that fat is utilized more in the muscle. But nevertheless it now appears certain that intracellular muscle fat serves as the reserve store of energy, which is mobilized and utilized when needed and continuously recharged from fat depots such as adipose tissue and liver.—J. C. George and R. M. Naik, *Department of Zoology, M. S. University of Baroda, Baroda 2, India.*

Note on the Palaearctic Robins.—In his review of Charles Vaurie's recent book, "The Birds of the Palaearctic Fauna" (Auk, 76: 442–444, 1959), my old friend, Professor Erwin Stresemann, praises the work as much as I would have myself. But he also deplores the author's use of broad genera. Although he does not name the "two enterprising authors" who started in America a "trend towards revolutionary generic consolidation," it is not difficult either to realize that I am one of them, or to guess who the other one is. He, however, admits that "proposals for drastic changes do no harm when advanced in special articles." I would like to point out that all the generic "lumping" adopted by Vaurie has been discussed before the issue of his work by himself, in his numerous papers in American Museum Novitates, and elsewhere, or by myself and other ornithologists in special published studies.

I am not proposing to discuss here the merits of wide genera. I have done so before. I will just remind the reader that generic terms are meant to point out relationship between species, not slight differences. "Time-honored" names, which tend to obscure and confuse relationship, simply should not be honored any longer when a better knowledge of the morphology and biology of the birds indicates affinities previously unnoticed.

My own criticism of Vaurie's book applies, on the contrary, to his excessive generic splitting of some of the Old World Robins. He very well understood the close relationship of the species in his paper on the systematics of the group (Am. Mus. Novitates, No. 1731, 10 June 1955), and it is a pity that he changed his mind later on, no doubt under outside pressure. It is totally inadmissible for anyone familiar with the birds in life to place in two distinct genera *(Erithacus* and *Luscinia)* the European Robin *(rubecula)* and the Japanese *(akahige).* I have often observed these birds in the wild state and in aviaries. I actually have kept them for many years in contiguous compartments for the purpose of comparison. If it is true that the voice differs, all other biological characteristics agree closely. Indeed this difference in the voice is the only possible, if not too convincing, reason not to consider the two forms conspecific. The fact that the sexes are more differ-