GENERAL NOTES

Avian adipocere.—During the removal of the bodies from the Cimetière des Innocens in Paris in 1786–87, there were found masses of a wax-like substance that A. F. Fourcroy named adipocere. Numerous examples of adipocere from various animal remains have been found since that time. The original fat undergoes certain chemical changes through hydrolysis and hydration whereby it is converted to free fatty acids—largely hydroxystearic acid, with some palmitic and stearic acids. The principal conditions necessary for the formation of adipocere appear to be the submersion of the animal in cool water and so limited an access of air that normal decomposition is prevented.

The conversion of bird remains to adipocere appears to be of very rare occurrence. I know of only three recorded examples. E. Wasmund, in his monographic paper ("Die Bildung von anabituminösen Leichenwachs unter Wasser." *Schriften aus dem Gebiet der Brennstoff-Geologie,* 10, 1935:1–70), mentions receiving a Mallard (*Anas boschas* [=*platyrhynchos*]) that was found in the Grosser Plöner See, in Holstein, in the summer of 1933. He states that this is the first case known of the formation of adipocere from a bird. The feathers usually prevent sinking. J. F. Durand and P. Vièles ("Etude d'une adipocire d'oiseau." *Bull. soc. chim. biol.,* 19, 1937:336–41) obtained the bodies of two chickens (*Gallus*) found in August, 1935, during the cleaning of a well at Sorgues, Vaucluse. The well had been dug 50 years previously but had not been in use for 30 years, so that 50 years was the upper limit of time during which the fowls could have been converted to adipocere. They rested in a calcareous clay with vegetable detritus. The water, infiltering from the Rhône, had a summer temperature of approximately 16° C. at the bottom of the well.

An earlier example than either of the above is that of a Canvas-back (*Nyroca valisineria*) mentioned by Ludwig Kumlien and N. Hollister ("Birds of Wisconsin," 1903:23) who state: "In December, 1877, some farmers who were digging the decayed vegetable matter, known locally as 'muck', for fertilizer, exhumed in a small bay on Lake Koshkonong, a beautiful specimen in the condition known as adipocere. With the exception of the feathers, every part, even to the intestines, was perfectly preserved, and had the appearance of meerschaum. Several shot holes are plainly noticeable on the breast and abdomen, and one shot is imbedded in the sternum." The specimen, formerly in the collection of Milton College, Milton, Wisconsin, cannot be located now.

Recently I received from Mrs. H. A. Main some old papers of Thure Kumlien, and among them was one on the subject of adipocere. This paper, undated, was prepared for reading before some scientific organization. The account of the discovery of the Canvas-back differs in date and certain other minor details from that given by Kumlien and Hollister. His description of the discovery of the duck and his speculations have considerable historical interest and are worth recording in view of the rarity of conversion of birds to adipocere.

"To ornithologists this specimen is probably of very little account, but as chemistry undoubtedly had a hand in making it what it is, chemists and others may perhaps be interested and I justified in introducing to your notice a canvas-back duck preserved by a to me unknown method and in a somewhat out of the way place.

"What we have here was once a fine fat canvas-back duck. What was bone is bone still, though somewhat discolored. The flesh is gone, every particle of it, the head, neck, wings, legs, feet and feathers are all gone and also many of the body-bones, but we have the sternum, some vertebrae, pelvis and ossa coccyges; some

of the intestines and the skin. The fat thick skin is here in general appearance, but not in substance. The skin is now hard, a little harder perhaps than hard white soap and feels a little soapy. It has not changed any since it was found sticking up out of the mud, near a muskrat house, in one of the so-called eddies, on the northwest side of Lake Koshkonong, Jefferson county, Wisconsin, in the spring of 1884.

"If this way of preservation is the result of some chemical combination between the fat of the duck and the lime and other matter in the water, it seems to me that we should find many specimens like this and just in the same lake, where annually hundreds, if not thousands, of ducks are shot, wounded and lost, diving under the small mud islands and perish. Why do not the spring floods, which sometimes entirely change the appearance of those eddies, by sweeping away the mud for acres, once in a while at least, bring to light something like this! Perhaps it is too early yet to expect many specimens, prepared by this under water-mud taxidermist and coming generations may be able to get good collections of them.[1] If chemistry is the conservator in this case, it would be interesting to know how long it has taken to do the job. I think that the duck was shot. I can see the marks.

"Allowing that guns were used on the lake one hundred years ago, which is somewhat doubtful, and that this duck was one of the first shot, lost and mud-bound, it would not be so very old after all for a semi-geological specimen.

"There are in the Museum of the City of Milwaukee two large lumps of a somewhat hard substance, white inside, like chalk, but dirty grayish on the outside. They are somewhat roundish in shape and about 7 to 8 inches in diameter. They are labelled adipocere found at the depth of many feet in a pond near Cedarburg, Wisconsin. The opinion I have heard about those specimens is that they were entrails of animals thrown into the pond by the Indians, some time ago, and by some chemical process got transformed into such solid masses.

"The animals, furnishing materials for this, must have been large, very large, possessing fat in such large lumps, as I cannot suppose that chemistry first picked together the fat and then lumped it into 'adipocere.' To judge from the duck, it is *only* the fat that is so treated.

"The animals must have been Buffaloes[2] or Elk or Moose, but in either case the fat would be *tallow* while in the case of the duck it was *duck-oil.*"—A. W. SCHORGER, *168 N. Prospect Avenue, Madison, Wisconsin.*

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[1] It is now known that under very favorable conditions a fatty body can be converted into adipocere within a year's time.—A.W.S.

[2] C. D. Wetherill (*Trans. Amer. Philos. Soc.* n. s., 11, 1860:18) found adipocere in a metacarpal bone of *Bison b. americanus* obtained at Big Bone Lick by Dr. Leidy.—A. W. S.

An albino hummingbird.—In view of the scarcity of records of albinistic plumages in the Ruby-throated Hummingbird (*Archilochus colubris*), the following observation may be of interest. Just before noon on August 22, 1944, a pale cream-colored, almost white, hummingbird suddenly appeared over a large clump of red bergamot (*Monarda didyma*) in a corner of my garden near Niagara Falls, Ontario. I obtained excellent views from all angles as the hummingbird hovered at some length, probing the red florets of the bergamot, before darting up and away across the garden. It was evidently an adult male, for although there was little variation apparent in the all-over cream of the plumage, there was a distinct bib, or dusky, darker area, over that part of the throat which is covered in the normal adult male by ruby-red feathers.—R. W. SHEPPARD, *1805 Mouland Avenue, Niagara Falls, Ontario.*