

## **Correspondence bearing on the history of ornithologist M. A. Carriker Jr. and the use of arsenic in preparation of museum specimens**

STORRS L. OLSON

Division of Birds, Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington DC 20560, USA (e-mail: olsons@si.edu).

**ABSTRACT:** Correspondence in 1936 between the prolific ornithological collector M. A. Carriker Jr. and C. M. B. Cadwalader, director of the Academy of Natural Sciences of Philadelphia, reveals that Carriker, as well as certain other collectors, had abandoned the use of arsenic in specimen preparation by the early twentieth century and its disadvantages are detailed. The correspondence also discloses a professional rift between Carriker and other ornithological staff at the Academy that had important ramifications for Carriker's career.

**KEY WORDS:** birds – mammals – neotropical ornithology – Academy of Natural Sciences of Philadelphia – Smithsonian Institution.

### **INTRODUCTION**

Melbourne Armstrong Carriker Jr.<sup>1</sup> (known as Meb) was probably the most prolific collector of neotropical birds who ever lived, having obtained and prepared over 75,000 specimens from 1903 into the 1950s (Olson, 2007). He also made important collections of mammals and he was a well-published authority on, and collected thousands of specimens of, chewing lice (Mallophaga) (Emerson, 1967), in addition to the contributions he made to the literature of ornithology (Wiedenfeld, 1997). Thanks mostly to the efforts of his eldest son Melbourne Romaine Carriker (Mel), much of his life and times have been reviewed in a spate of recent publications (M. A. Carriker, 2006; M. R. Carricker 2001, 2006; Olson 2007; Wiedenfeld and Carricker 2007).

At the beginning of his career, Carriker was affiliated with the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, to which institution he sent specimens during the years he lived in Colombia and operated a coffee plantation (1912–1927). In 1927, he removed himself and his large family to New Jersey in the hopes of obtaining a curatorial position at the Academy of Natural Sciences of Philadelphia. This materialized in 1929 after he had supported his family in the interim on his earnings as a carpenter (M. R. Carricker, 2001; Wiedenfeld, 1997; Wiedenfeld and M. R. Carriker, 2007). Once at the Academy, he conducted four extensive collecting trips in Peru, sending back 7,020 specimens of birds. He then undertook research in Bolivia during 1934–1935, sending back 2,265 specimens from his first expedition (M. R. Carricker, 2006).

After returning home for a brief period, he embarked in 1936 on a second expedition to Bolivia and it was after he departed that a revealing exchange of correspondence took place between Carriker and Charles M. B. Cadwalader, Executive Director of the Academy. Excerpts of Cadwalader's rather shockingly negative letter<sup>2</sup> were included in Mel's account of the first Bolivian expedition (M. R. Carriker, 2006), but he had not seen his father's response<sup>3</sup>. This correspondence not only reveals previously unappreciated antagonisms among Carriker's

ornithological colleagues at the Academy that doubtless affected his future, but it is also highly informative concerning the perils, efficacy, and use of arsenic by various individuals and institutions in preserving museum specimens of birds and mammals in the first half of the twentieth century. The origins of arsenic for such purposes have been treated recently in the pages of this journal (Rookmaaker *et alii*, 2006), and should the entire history of this practice ever be assembled, the following will doubtless be of considerable significance.

## CORRESPONDENCE

April 4, 1936

Mr. M. A. Carriker, Jr.  
c/o American Consul  
La Paz, Bolivia

Yesterday I was much distressed and disturbed on hearing that some of the birds collected by you in South America were in really bad condition. I give below a list of 10 birds, some of which I have personally examined, and there is no question as to their being in exceedingly bad condition.

Atlapetes rufinuchus,	119125,	Bolivia
"	"	100753 "
"	"	119124 "
Psittacospiza riefferi boliviana,	119405,	Bolivian
"	"	119404 "
Habia rubica amabilis,	119898,	Bolivian
Atlapetes rufinuchus,	10753[ <i>sic</i> ],	Bolivian
Buarremon torquatus,	119137,	Bolivian
Cissopis l. leveriana,	119406,	Bolivian
"	"	119407, "

You know that I am not a zoologist nor am I an experienced field collector. Therefore, I do not feel that I am in a position to tell you how to do your work. However, I do not need experience to know that some of the birds collected by you are in such bad shape that it may well be that they will prove useless as museum specimens. The feathers are coming out in handfuls and I suspect that before long they may well be naked birds.

You must use arsenic in the preparation of your specimens and you must use sufficient arsenic to do the job right. Otherwise there is no use in continuing this work.

I have examined the records of purchases made for your field work and find that until this year no arsenic has been included in your supplies. According to our records this year's supplies included 2 lbs. arsenic. I have consulted with members of our staff and they advise me that in their opinion 2 lbs. arsenic is not sufficient quantity to last for the entire trip, and see that it is used liberally.

I am informed that alum and arsenic should be on a fifty-fifty basis, and that this is said to be the minimum. I know that experienced men vary the amount of alum according to climate, that is, dry or humid [*sic*]. I cannot comment on this phase of preparation. I have had no experience myself, as you know.

Will you write me a letter going into full detail and giving me as much information on this matter as you can, and at the same time assure me that you will use a sufficient quantity of arsenic to avoid any trouble in your coming field work.

We must bear in mind that we want to do work which will be looked upon with pride by our successors one hundred years from now. The amount of energy and money which we are putting into this South American work is all wasted if the collections are not properly prepared so that they will stand up for ever more.

I want you to be very, very sure that your assistant understands the use of arsenic and that there will be no question but that he will use it and use it liberally, otherwise we cannot afford to have him collect and send specimens to the Academy.

Now you think all of this over and be sure and write me as soon as possible. I cannot afford to take any chances on either your collection or the collections already in the Academy being damaged in the slightest way, if it is possible to avoid it. This matter has been a big shock to me and we cannot afford to have anything like this happen again. It would ruin the Academy and everybody associated with it.

With best wishes and assuring you of my cooperation just as long as the work is sound, I am

Sincerely yours,

CMBC:BR

Charles M. B. Cadwalader

P. S. – I am sending this letter to La Paz, Bolivia, and am also sending a copy of same to the Panama Agencies Company, Balboa, Canal Zone. – Passenger “Santa Rita”, arriving April 10, Please Deliver. – Both letters are sent via Air Mail through. <sup>2</sup>

---

MS. Sta Rita, April 13, 1936  
Chas. M. B. Cadwalader,  
Managing Director Acad. Nat. Sciences,  
Philadelphia, Pa.

Dear Mr. Cadwalader:

I beg to acknowledge the receipt of your communication under date of April 4<sup>th</sup>., received on April 10<sup>th</sup>. at Cristobal, Panama.

I fail to understand the sudden foror [*sic* = furor] which has been raised in regard to the fact that I have used no arsenic in the preparation of my bird-skins, since it has always been known at the Academy that I have never used arsenic over a long period of years. It has been thoroughly proven, years ago, that the application of arsenic to the inside of a bird skin does not prevent in the slightest degree the attacks of moth larvae on the feathers of the bird, which is clearly what has taken place on the skins of mine which you report as being damaged. The moth larvae eat the feathers almost invariably before attack[ing] the skin, cutting off the feathers in patches near the skin itself, when of necessity they fall [*sic*] away when disturbed. The use of arsenic however, does prevent, to a certain extent only, the attacks of Dermestes, the beetle which burrows through the skin and destroys the skin, flesh and sinews left on the bones, especially on the wings, head, legs etc. A skin may be filled with arsenic and yet, if exposed to the attacks of the moth, will be completely denuded of feathers. Nin[e]ty percent of the birds collected by me now in the Carnegie Museum and most of the small mammals in the American Museum prepared by me were made up without the use of arsenic, and I never have had a single complaint from those institutions. The late Outram Bangs, whose large collection is now in the M. C. Z. [Museum of Comparative Zoology, Harvard University], had all his collections made without the use of arsenic, and it was due primarily to his advice that I discontinued its use.

The use of arsenic, especially in the tropics, is attended with considerable discomfort and at times actual danger to the collector, when working constantly with it over long periods (several months). The slightest abrasion [*sic*] of the skin on the hands soon becomes a painfull [*sic*], suppurating sore, very slow to heal. Small ulcers form under the finger nails in spite of every precaution, and which I need not tell you, are exceedingly painful and greatly retard the work of the collector. Unless a rubber apron is worn over the lap while skinning and stuffing, the arsenic will invariably fall on the clothing, sift through and form ulcers on the scrotum. I have been affected in this way so badly that I was scarcely able to walk for days at a time.

Doubtless your over-zealous “advisers” have failed to make you acquainted with the above facts, or perhaps were ignorant of them. Thus you may easily see that the disadvantages caused by the use of arsenic far outweigh any small advantage there may be.

Do not think that I question for a moment your right to have the work of the Academy carried out as you may see fit, and as I told you over phone from New York, I am always ready and willing to follow your orders, and co-operate with you fully in every possible manner (which you must admit not everyone on the Academy staff has done), but I cannot let the matter pass without defending my own position. If your “advisers”, who were certainly aware of my method of preparation, for I never made the slightest effort to conceal it, had seen fit to bring up the matter before my

departure, everything could have been very easily straightened out. The fact that moths were found in some of my Bolivian material is due entirely to the fact that they entered the cases at some time when they were left open during the day, while the collection was being studied last summer, and for this I am entirely to blame. It is a fact well known to several members of our department that there are many moths in the building and that care must be taken to not leave the cases open for any length of time. In this matter I frankly admit I have at times been careless. One moth may easily deposit more than enough eggs to cause all the damage which you have reported done to my Bolivian skins. Perhaps you were not informed that a large box of mammal skins in Mr. Greene's room (presumably prepared with arsenic) were completely destroyed by moths and the box and all its contents was carried out and burned without even making a list of the catalogue numbers of the skins destroyed.

Under the circumstances you were fully justified in the stand which you have taken, and I appreciate the fact that you have given me an opportunity to defend my own position.

I do not need to tell you that since my association with you and with the Academy in 1929, that I have always done everything in my power for the advancement of the interests of the Academy and have always tried my best to co-operate fully with you in all matters, and furthermore, I think that you must admit that there is not a single man on the Academy staff who has worked harder, or accomplished more than I have during the past six years. I have undergone great hardship and privation, month after month, willingly and cheerfully, taking it all in the day's work. I have never been ill or lost time. I have had no accidents, have never lost equipment, supplies or specimens in the field or in transit. I am not saying this to brag about my ability or success, but merely stating a fact. You know there is such a thing a jealousy even among scientists.

I shall follow your instructions to the letter until I shall have received orders from you to the contrary, as I have always done in the past. However I trust that you will give the matter your careful consideration and secure unbiased information before condemning [*sic*] my methods, which have never been questioned heretofore. I may also add that Dr. [Harold E.] Anthony, Curator of mammals at the American Museum [of Natural History, New York], informed me only last summer, that some years ago they had a plague of moths in the Museum which caused great destruction and they were several years in conquering them, which was only accomplished by the most drastic fumigation of the building and cases. The greater portion of the skins destroyed by the moths has [*sic*] been prepared with arsenic.

We have had a very pleasant voyage, a bit rough between New York and Panama, but delightful in the Pacific. We have just entered the Humboldt Current in the extreme northern part of Peru, and the temperature has changed very rapidly from the enervating humidity of the tropics to the cool, bracing air of the South Temperate Zone. We shall reach Callao the day after tomorrow, and have the whole day in Lima, where I shall call at the American Embassy and at the offices of Grace and Co. and look up a few old friends.

The lateness of our arrival at Mollendo, due to the slowness of these cheaper steamers, will cause a delay of several day[s] in Arequipa, where we shall have to wait for the weekly international steamer across Lake Titicaca. I do not think we have gained much by using this cheaper boat, when one considers the time lost and expense of waiting idly in Arequipa.

With best wishes, I am,  
Yours most sincerely,

M. A. Carriker, Jr. <sup>3</sup>

## DISCUSSION

This interchange could be regarded as a tempest in a teapot, involving only a handful of specimens out of thousands collected by Carriker, were it not for the patent underlying malevolence on the part of someone on the Academy staff who contrived the whole issue precisely at a time when Carriker would not have to be confronted directly. Cadwalader would never have been aware of any supposed problem nor written such a forceful, fretful letter had he not been put up to it by someone who had taken particular pains to agitate against Carriker. This was clear to Carriker as evidenced by his references to "overzealous advisers" and professional jealousy. Carriker completed his second expedition to Bolivia, and a third in 1937–1938, and was very shortly thereafter dismissed from the Academy, supposedly because of the exigencies of the Great Depression (M. R. Carriker, 2001; Wiedenfeld and Carriker, 2007). This was most likely a pretext, because the Depression had been in effect during all seven of his expeditions for the Academy. His dismissal could have been made to seem

expedient to the Academy's administration at the time because the other two ornithological curators, James Bond and Rodolphe Meyer de Schauensee, were men of means and drew no salaries, whereas Carriker had to be paid. After Carriker's departure, they proceeded to reap the rewards of his extensive labors (Bond and Meyer de Schauensee, 1941, 1943), though with no particular distinction (Olson, 2007).

The Academy's loss was the Smithsonian Institution's gain, as Carriker then went on to collect some 25,000 specimens in Mexico and Colombia for the museum in Washington, including many new species and subspecies. He never mentioned his interchange with Cadwalader or made any allusion to problems with the Academy in the account of his Bolivian expeditions (M. A. Carriker, 2006), which was written while he engaged in carpentry work again to support his family before he returned permanently to Colombia and resumed his collecting (M. R. Carriker, 2001; Wiedenfeld and Carriker, 2007).

I have not attempted to trace subsequent correspondence, if it exists, so it is not certain whether Carriker temporarily used arsenic following Cadwalader's orders, but it is clear from his dislike of it that he would certainly have discontinued the practice when on his own after leaving the Academy. Carriker's specimens are renowned for their superb quality and they have held up just as well as contemporaneous specimens that were prepared with arsenic, such as those of Smithsonian ornithologist Alexander Wetmore. Few, if any, modern field zoologists now use arsenic in the preparation of specimens of birds and mammals and the ravages of insects are held off by tight cases, repellants, and fumigants.

## ACKNOWLEDGEMENTS

At the Academy of Natural Sciences of Philadelphia, I thank Nate Rice for forwarding copies of the correspondence reproduced above and Aileen Mathias for permission to use same.

## NOTES

<sup>1</sup> The "junior" suffix was Meb's choice for designating himself but technically inadmissible by convention, as his father's name was Malachi Armstrong Carriker.

<sup>2</sup> C. M. B. Cadwalader to M. A. Carriker Jr., 4 April 1936: transcribed from a carbon copy in the Archives of the Academy of Natural Sciences of Philadelphia.

<sup>3</sup> M. A. Carriker Jr. to C. M. B. Cadwalader, 13 April 1936; typewritten on letterhead of "Grace Line 110 Hanover Square, New York": original in the Archives of the Academy of Natural Sciences of Philadelphia.

## REFERENCES

- BOND, J. and MEYER DE SCHAUENSEE, R., 1941 The birds of Bolivia. Part I. *Proceedings of the Academy of Natural Sciences of Philadelphia* **94**: 307-391.
- BOND, J. and MEYER DE SCHAUENSEE, R., 1943 The birds of Bolivia. Part II. *Proceedings of the Academy of Natural Sciences of Philadelphia* **95**: 167-221.
- CARRIKER, M. A., Jr., 2006 *Experiences of an ornithologist along the highways and byways of Bolivia. Collecting birds in an isolated, magnificent land in the nineteen thirties*. Bloomington, Indiana: AuthorHouse. Pp 452.
- CARRIKER, M. R., 2001 *Vista Nieve. The remarkable, true adventures of an early twentieth-century naturalist and his family in Colombia, South America*. Rio Hondo, Texas: Blue Mantle Press. Pp 313.
- CARRIKER, M. R., 2006 *The bird call of the Río Beni. Adventures of father and son on an ornithological expedition in the jungles of western Bolivia, South America in 1934-1935. A diary with commentary*. Crabtree, Oregon: Narrative Press. Pp. 225.

- EMERSON, K. C. (editor), 1967 Carriker on Mallophaga. Posthumous papers, catalog of forms described as new, and bibliography. Melbourne A. Carriker, Jr. *United States National Museum bulletin* **248**: 1-150.
- OLSON, S. L., 2007 A Carriker trilogy. Chapters in a saga of neotropical ornithology. *Auk* **124**: 357-361.
- ROOKMAAKER, L. C., MORRIS, P. A., GLENN, I. E., and MUNDY, P. J., 2006 The ornithological cabinet of Jean-Baptiste Bécour and the secret of the arsenical soap. *Archives of natural history* **33**: 146-158.
- WIEDENFELD, D. A., 1997 Land of magnificent isolation: M. A. Carriker's explorations in Bolivia, pp. 821-848 in REMSEN, J. V. (editor), *Studies in neotropical ornithology honoring Ted Parker. Ornithological monographs* **48**.
- WIEDENFELD, D. A. & CARRIKER, M. R., 2007 In memoriam: Melbourne Armstrong Carriker, Jr., 1879-1965. *Auk* **124**: 342-343.

Received 24 July 2006. Accepted 18 February 2007.