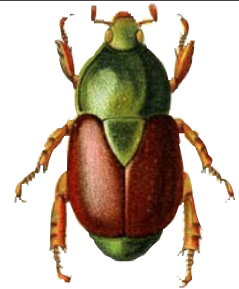


# SCARABS



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Available At These Sites:

Coleopterists Society  
[www.coleopsoc.org/nwsltrr.shtml](http://www.coleopsoc.org/nwsltrr.shtml)

University of Nebraska  
[www-museum.unl.edu/research/entomology/Scarabs-Newsletter.htm](http://www-museum.unl.edu/research/entomology/Scarabs-Newsletter.htm)

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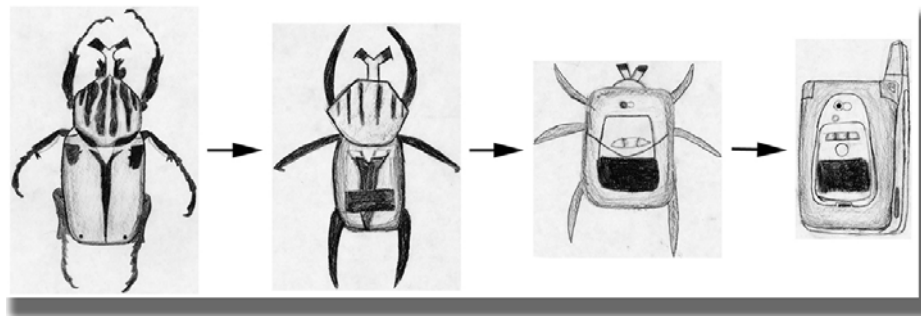
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Splendid cartoon humor from the master himself: Delbert La Rue.



"Scarab Transformer" by Matt Ezell, age 15.

# *Strategus antaeus* (Drury)

## Notes On Biology

by Henry F. Howden

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Photo 1: *Strategus antaeus* (Drury) male.



Photo 2: *Strategus* burrow.



Photo 3: *Strategus* egg.

While in North Carolina in the early 1950s near Raleigh, I often collected third instar larvae of *Strategus antaeus* by raking leaf litter, but did not find the earlier stages. Later, on the Coastal Plain near Faison, I saw piles of sand with a mouse size opening (Photo 2), which I assumed were burrows of a small mammal. One day I noticed some surface litter, mainly pine needles, being pulled into one of the holes. Having a shovel handy, I dug up the entrance to the burrow and, to my surprise, found an adult *Strategus antaeus* pushing a mass of litter into a meter deep burrow (Photo 4, my arm parallel to burrow). In one burrow packed with surface litter, I found either eggs (Photo 3) of *Strategus* or first instar larvae separated along the burrow at about six inch intervals. Apparently the first and second instars remain in the burrow until the food supply gives out, then move out to forage in the surface litter. Later I found pupae under logs, giving the impression that the species fed on wood. Some may, but they certainly are not limited to rotting wood.

Some information on other species can be found on the internet. For example, Texas *Strategus* opens Texas Beetle Information (2006) compiled by Mike Quinn. Three species are listed, with a short summary on the life cycle of *S.*

*aloeus* and mention that the larvae feed on rotting wood or decaying plant matter among other things. A picture of the larvae of this species is also included, photo by Drees. I have collected *S. aloeus* adults at night in the “palm jungle” near Brownsville by hearing them move about in dry leaf litter. Perhaps the most unusual habit is seen in *S. mormon* (L.) which may be found in areas of prairie under old piles of dung, presumably equaling decaying plant matter. All in all, there is still a great deal that we don’t know about these interesting beetles!



Photo 4: *Strategus* instar.

*Editor Bill's Note: I have found large Strategus cessus larvae in the Chiricahua Mountains feeding on the underside of dried cow pats.*

## Scarab Publications at University of Nebraska

### MONOGRAPHS FROM THE UNIVERSITY OF NEBRASKA STATE MUSEUM



**Revision of the *Rutela* Generic Groups** (Coleoptera: Scarabaeidae: Rutelinae: Rutelini)  
by Mary Liz Jameson. 1997.  
Bulletin 14:1-184, 134 illus.  
\$27 U.S. plus postage  
(please inquire for postage cost)



**A Monographic Revision of the Genus *Platycollis*** Dejean (Coleoptera: Scarabaeidae: Rutelinae: Anoplognathini)  
by Andrew B. T. Smith. 2003.  
Bulletin 15:1-202, 78 illus.  
\$20 U.S. plus postage  
(please inquire for postage cost)



**The Dynastine Scarab Beetles of Costa Rica and Panama** (Coleoptera: Scarabaeidae: Dynastinae)  
by Brett C. Ratcliffe. 2003.  
Bulletin 16:1-506, 927 illus.  
\$40 U.S. plus postage  
(please inquire for postage cost)



**Phylogeny of Hybosoridae and Revision of Anaidinae** (Coleoptera: Scarabaeoidea)  
by Federico C. Ocampo. 2006.  
Bulletin 19:1-210.  
\$28 U.S. plus postage  
(please inquire for postage cost)



**The Dynastine Scarab Beetles of Honduras, Nicaragua, and El Salvador** (Coleoptera: Scarabaeidae: Dynastinae)  
by Brett C. Ratcliffe and Ronald D. Cave. 2006.  
Bulletin 21:1-424, 645 illus.  
\$45 U.S. plus postage  
(please inquire for postage cost)



**The Scarabaeoid Beetles of Nebraska**  
by Brett C. Ratcliffe and M. J. Paulsen. 2007.  
Bulletin 22.  
In Prep

TO ORDER, VISIT US ONLINE AT  
[www.museum.unl.edu/pubs/bulletins.html](http://www.museum.unl.edu/pubs/bulletins.html)

# Team Scarab Adventure Apparel

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Hola y'all! Oferta limitada! Great gift idea! Impress your friends, intimidate carabidologists, make your significant other swoon. Wear Team Scarab Adventure Apparel. Adventure T-shirt \$18; great for your skin (small, medium, large, x-large). Team Scarab Adventure Patch \$7; great for your backpack, field jacket, dress blazer, or underwear. Available from: Brett Ratcliffe or Mary Liz Jameson, W-437 Nebraska Hall, University of Nebraska, Lincoln, NE 68588-0514. Cash on the barrel head, no plastic, no IOUs, no line of credit, no sob stories from poverty-stricken grad students.



Team Scarab members at typical lab meeting with Adventure Apparel.

First row seated, left to right, wearing sacred scarab pendants: Dr. Mary Liz Jameson and MS student Julia Colby. Top row standing, left to right, wearing Adventure Tees: PhD student Jesus Orozco with sacred scarab pipe and Dr. Brett Ratcliffe with Scarab Red beer.



# A Review of Helicon Focus

By Barney D. Streit

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Closeup photography of small scarabs, or parts of scarabs, presents the challenge of a narrow depth of field. If you focus on one part of the beetle, other parts will be out of focus. This problem becomes worse with increasing magnification.

Automontage systems do a very nice job of solving this problem. The system shown in Photo 1 belongs to the Florida State Collection of Arthropods in Gainesville. Typical systems consist of a dedicated Windows computer with the software installed, a digital camera with a macro lens on a stand, a light source, a specimen stage and a stepper motor to automatically move either the camera or specimen upward or downward a predetermined distance. Once activated, the system exposes a series of photos (called a "stack"), each with a different part of the beetle in crisp focus. The software then combines (montages) the stack into a single image with everything in focus.

An example taken with this system is the image of *Anomala foraminosa* (Photo 2) taken by Paul Skelley and Editor Bill. Beautiful...but there is a drawback. These systems are very expensive, up to \$50,000! For the rest of us, there is another alternative, a software product called Helicon Focus.



Photo 1: The system at the Florida State Collection of Arthropods.



Photo 2: Image of *Anomala foraminosa* (we think) from Baja California del Sur, Mexico, taken by the system in Photo 1.

The way Helcon Focus works is this: you take the images by manually moving the camera or specimen, convert the images to JPEG or TIFF format, and then open them in Helicon Focus for processing. As can be seen in the images here, it works pretty well.

The downside is you have to guess how far to move the camera or specimen for each shot. Often, when peering through the camera's viewfinder, it is difficult to see exactly what is in focus and what is not. If in doubt, take more photos in smaller increments.



Photo 3: A stereo microscope and digital camera ready to expose a stack of images.

Another problem is presented when using stereo microscopes. The microscope is focused on a vertical axis, but the image path is not vertical, as can be seen in Photo 4. Processing a stack of images taken through such a microscope will render a fuzzy final image.

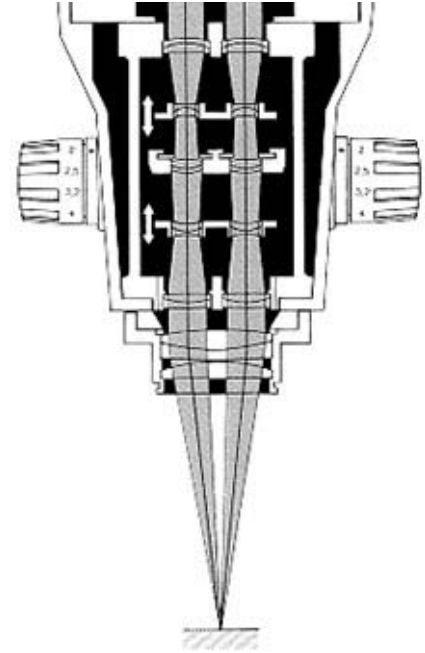


Photo 4: The image path between the microscope and specimen is not vertical.

The solution, at least for my Zeiss, is an intermediate mount that centers the objective lens over the image path, thus eliminating angular distortion in the stack of photos, because the image path and focusing path are now aligned. This mount is shown in Photo 5.

The procedure is relatively simple. Set the camera to manual exposure mode. If your camera has a spot meter, use it to adjust the shutter speed until the exposure is correct. A cable release to trigger the

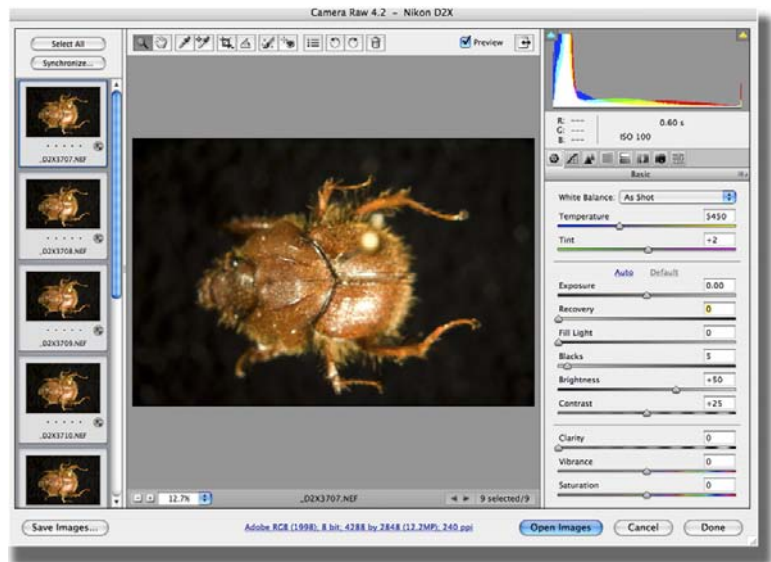


**Photo 5: The intermediate mount shifts the mage path to align with the focusing path.**

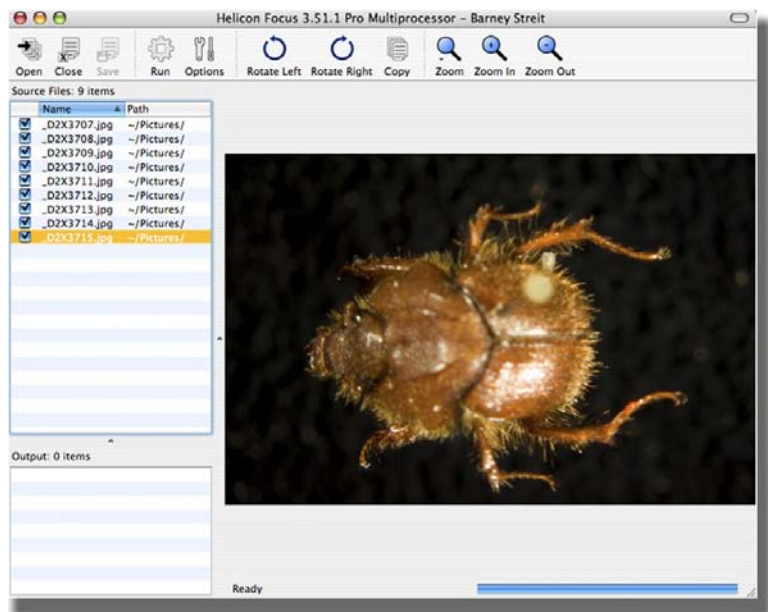
shutter is a necessity. Use mirror lockup if your camera has it in order to reduce camera vibrations. Finally, expose a series of images as you adjust the focus plane over all parts of the beetle.

If your camera saves images as JPEGs, these can be processed directly into Helicon Focus. For more control, you can use RAW images. Select the RAW images and open them in Photoshop. In the RAW Converter, you can Select All the images, then hit the Synchronize button. Make any necessary adjustments, such as Color Temperature, Exposure, Recovery, etc. Use the histogram as an aid in making these adjustments, as shown in Photo 6. Once you are satisfied, open the images, then save them as JPEG or TIFF images.

Once Helicon Focus is booted, open the stack of JPEG or TIFF images and hit the Run button. Watch in amazement as Helicon Focus takes the first image and adds sharp areas from the second image to it, and so on.



**Photo 6: Adobe's Camera Raw Converter, showing the Select All and Synchronize buttons on the upper left. The large spike on the left of the histogram shows loss of detail in the shadows. This is not a problem; it is simply the black background. The slight spike on the right side of the histogram shows a little loss of detail in the highlights. To compensate for this, move the Recovery slider to the right until the spike disappears.**



**Photo 7: Helicon Focus with the stack opened and ready to process. Notice the shallow depth of focus of the single image in the Preview Window.**



**Photo 8: A composite of 9 images.**



**Photo 9: A composite of 13 images.**

Larger objects may not require Helicon Focus. This is not to say you cannot or should not use this technique on larger specimens. To get the entire specimen in focus, you must close the aperture of the lens down to  $f/22$  or  $f/32$ . The downside to this “one shot technique” is that these settings are not using the sharpest part of the lens. For most lenses, the sharpest aperture is usually in the range of  $f/8$  or  $f/11$ .

For shots not using the microscope, some sort of focusing stage to move the camera or the specimen is required. Simply changing the focus on the lens barrel will distort the stack. The unit shown here is from Really Right Stuff, <http://www.reallyrightstuff.com/rrs/index.asp>.

Helicon Focus can be purchased off the Web at: <http://www.heliconsoft.com/heliconfocus.html>. At \$100-300, this is really inexpensive when compared to automontage systems.



**Photo 10: A Really Right Stuff focusing slider designed for lenses with tripod collars.**



# In Past Years - IV - Australia & Argentina

by Henry F. Howden

henry.howden@rogers.com

Previously, we mentioned that Australians like their beer. It is great in the hot, dry interior, but it can be overdone. In Queensland, west of the Great Dividing Range, many roads have only a single sealed (= paved) lane: a one-car width sealed center with a wide shoulder on each side bordered with white stakes at intervals. Many of these narrow roads are straight for miles. One day Anne and I were going to Forty-Mile Scrub National Park (144° 50" E 18° 04"S) on one of these narrow roads when we got behind a fairly slow moving car. It was weaving from one shoulder to the other and often taking down a white stake before it crossed the road to the other side. An occasional empty beer bottle was tossed out. We did not dare to pass, as their driving was too erratic to take a chance at passing. After following for miles (and seeing numerous bottles ejected from the car), we came to a 10 degree bend in the road. Instead of following the road, the car in front kept going straight, mowing down small eucalyptus on the way. Small trees and scrubs slowed the car until it stopped about 100 yards from the road. We heard much laughter and saw more empty beer bottles ejected, so we thankfully drove on at a somewhat higher speed. The next day, when we drove back, the car was no longer there.

One can't mention Australia without someone asking you if you had seen Ayers Rock. In the 1970's we drove enough dirt roads without wanting to add a few thousand kilometers more just to see the "Rock". Then in 1988 - 89, on our last sabbatical, we decided to drive north through Mt. Isa to Tennant Creek and down through the "Centre" to Alice Springs and south with a side trip to Ayers Rock and the Olgas. Most of the road to Alice Springs was sealed by then, but in places where it wasn't, one still had to peer through the red "bull dust" when meeting a car going the other way. As we neared Alice Springs there were signs that there had been some unseasonable rain - lots of flowers. It had rained about three weeks before and we were told that one eight year old girl was standing in it crying; she couldn't remember what rain was! We went south and turned west at Erieldunda - a road house and several houses. We camped there for two nights and had some good collecting at lights, but during the day gave up collecting about 10 AM and stayed in the shade the rest of the day - it was HOT. The next morning we drove on to Ayers Rock to find that its proper aboriginal name was Uluru and it was indeed a city! Actually, at some times of the year it is the third largest "city" (up to 10,000 people) in the Northern Territory. There are some motels, at least one large hotel, a caravan



Is it Henry's arrival in Australia - or exit - that draws applause?



Ayers Rock.

park and a campground. The place was nearly full when we were there. Since a large area including the Olgas belonged to the aborigines, one needed permission from them to collect. We didn't bother as we intended to stay only one day. However, light collecting around the hotel and motels did not seem to be covered by the ban and we found that several shallow reflecting pools, some with lights, were very productive. The last evening there we decided to take pictures of the "Rock" at sunset. We took some of the usual tourist shots, but also took some of the dozens of tour buses lined up for their passengers to take pictures. Sadly, we realized that Ayers Rock was no longer an out-of-the-way place, but could be easily reached by plane (its own airfield), by bus or by car.

It should be mentioned that Australians have a habit of shortening many words, sometimes to the confusion of visitors. Australians are "Aussies", mosquitoes are "mosies", New Zealanders are "Kiwis". In WA a chicken was called a "choock" (spelling?) and there were lots of other equally confusing terms for other food items. In northern coastal Queensland crocodiles are "croc". To us the oddest one was "beware of locos". We finally realized that these signs and warnings referred to the small locomotive tracks that often crossed the highway that were used for hauling sugar cane.

En route to Australia we usually stopped off in Hawaii. On several

occasions we were there long enough to work in a few days of collecting. On one such occasion, we were offered a ride to one of the mountain ridges in an old, two door VW. The owner announced it was in good shape and he had just put in a new battery. We loaded our collecting equipment, food, etc. and Anne got into the rather crowded back seat. Our driver started the car, but then delayed for a minute while he checked something. Just as we started to leave, Anne yelled that the car was on fire and, since the car wasn't moving we were able to quickly evacuate, Anne scrambling over the front seat. The back seat was definitely on fire, but was quickly put out by a handy fire extinguisher that was beside the driver. We were lucky that we were still stationary; Anne had some singed blue jeans but otherwise there was no harm done. Investigation showed that the springs of the back seat touched the terminals of the new battery located under the seat. When Anne sat down; the springs then acted like a toaster, causing the plastic seat cover to burn. It turned out that the battery was not designed for a VW; it was two inches higher than it should have been. A while later we calmed down, scrounged another car and went collecting, admiring some of Hawaii's unique flora and fauna.

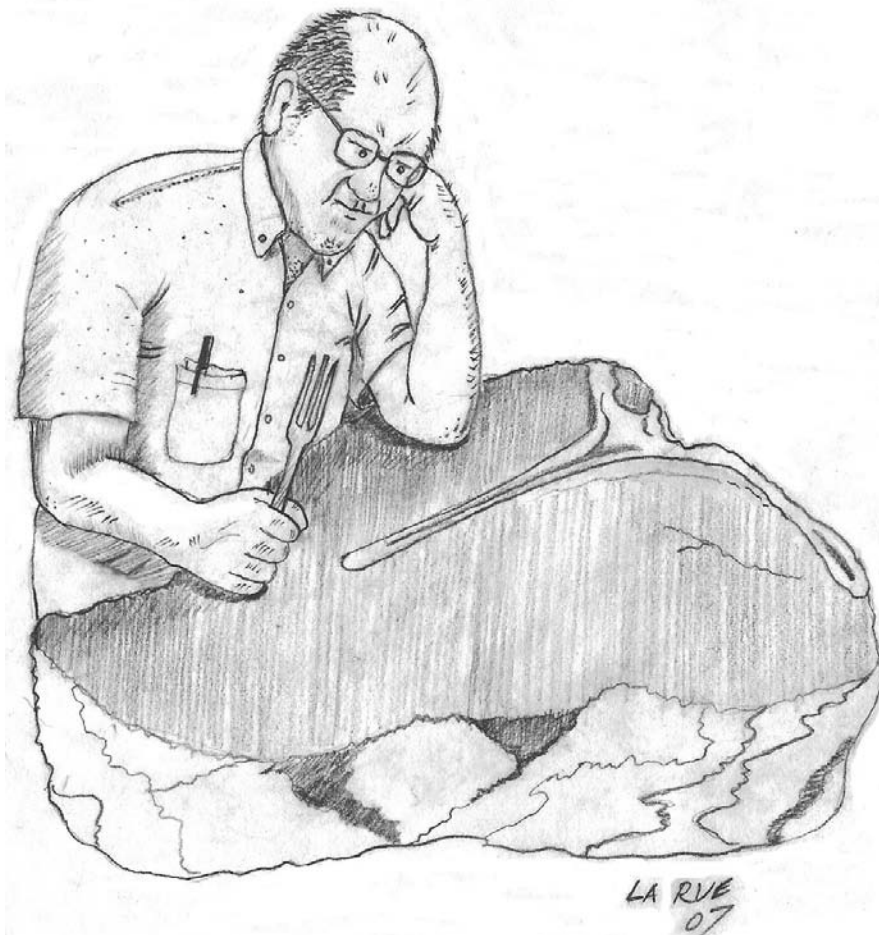
### **South America**

In the New World, Argentina provided us with some interesting experiences. We first visited there in 1982 as guests of Antonio and

Juana Martinez. On the long flight from Ottawa to Buenos Aires most of our travelers checks were stolen. Fortunately we had divided them up so we had enough for part of our stay. Three days after we landed they were replaced as we had all the necessary paper work; we were lucky! We were met at the airport by Antonio and taken to his house for "lunch". After an overnight flight and little sleep, we were not very hungry. Juana appeared with a dinner plate full of an inch thick steak, which we thought was for the four of us. Three more quickly appeared. After a great argument we finally convinced them that we couldn't eat that much, but the argument went on for days; Argentineans until 1982, at least, consumed great quantities of beef.

A considerable amount of wine diluted with soda water was consumed both at the large midday meals, and at the 9PM evening meal. Antonio showed me his soda water bottle which he pressurized himself . One adds the soda water to the wine (not a good vintage) to the required dilution. I tried the wine without the dilution and quickly agreed that it needed diluting. The first time I tried this using the pressurized soda I blew the wine out of the glass; fortunately most went on to the tile floor, but it was some time before I was allowed to try again.

We spent a few days in Buenos Aires visiting the Museum and collecting locally. We then left with





Antonio Martinez.

Antonio and I drove southwest to a ranch owned by a lawyer cousin of his. Antonio, unfortunately, was a nervous driver and we became mired on the dirt road leading to his cousin's house. We were quickly pulled out (they were expecting us) and ushered into a very large old house (12 bedrooms!) that had been beautifully restored. That evening we sat down to dinner at a large table with about a dozen other guests or relatives (never could figure it out). Towards the end of the meal, I made the mistake of asking "what is a Peronista?". The question nearly started a riot. It turned out that there were as many kinds of Peronistas as there were guests and everyone thought their kind was the only correct one. After that we avoided politics the rest of the trip.

We left a day later for Arizona, the name of the area at the northern edge of the pampa where Antonio's cousin owned another "ranch" which seemed to be used mainly as a hunting lodge. It was fairly primitive, with a wood stove and a water tank on the roof filled by a windmill that was manually turned on and off. We know because we forgot to turn it off once and nearly flooded the place. The locality lived up to its name - it was hot; mostly a grass and Acacia habitat with lots of parrots that built communal nests. The nice part was that there were masses of beetles; one night there were so many insects on our horizontal sheet (using a 15 watt BL) that at midnight we sprayed the sheet with an insecticide and folded it up for the night. It took

most of the next day for us just to sort through the mass. Just before we left, Antonio and some of his friends decided to treat us to a goat roast (a "chivori"). A fresh killed goat was roasted over an open fire (the air was still hot - we guessed about 100° F at 11PM) and was pronounced ready to eat about midnight starting with the not-so-good parts. Anne and I gave up shortly thereafter, but the party went on until the entire goat was eaten - about dawn!

A day later we left and in two days reached Rosario de Lerma, a small town near Salta. There Antonio and four other entomologists had received a government grant to set up an entomological institute and had purchased an old building which they were busy renovating. The idea was to get the institute established and then donate their personal collections as a basis for entomological research in northwestern Argentina. Antonio and at least one other of the five bought houses near the institute and all had given some of their unwanted specimens to form a nucleus of the planned major collection. Our transport, a small pickup truck was sequestered to carry material for the renovation, so Anne and I walked out of town and collected locally most of the two weeks spent in the area. At the evening meal (about 9PM) we ate in a yard beside the institute where we were lodged. During the meal there were often violent arguments about how to do this or that, often with someone threatening to quit the institute. None of the five figured that our "spanglish" was good enough to follow what was going on, but after a month in Argentina, we understood

more than they realized! Anne and I wondered just how long the institute would last. We did have some very good local collecting and on week ends we were taken by some of the group to favorite locals. These expeditions were not simple day collecting trips, they involved much shopping and the truck was loaded with coolers full of food and drink (wine) chairs and much else. We drove to a forested area north of Salta where there was a picnic table, arriving about noon. A table cloth was spread on the table and a very elaborate meal was set out along with the usual wine and soda water. Anne and I did some collecting on the steep, forested slopes, but were frequently called back to have some more food. After "lunch" which lasted well over an hour there was a quiescent period lasting over an hour (siesta time), allowing us to do some more collecting. We were then informed that it was time to head back; we found we did our best collecting when left to our own devices. We did have lots of good collecting; Anne had a great time not only collecting *Pandeleiteius*, but getting host data, while flight intercept traps collected many scarabs, including *Neothyreus*, for me. When we left Salta, we collected along the way going back to Buenos Aires and found much of interest along the way. Our return to Ottawa was uneventful - we didn't have many travelers checks left to be stolen!

Our return to Argentina in 1995 was sad in a way; Antonio and his wife had been killed in a car

accident while going to collect in Bolivia. Anne and I and two friends flew down to pick up his scarab collection and take it back to Ottawa (it was not given to the institute). We knew approximately the size of the collection, but little else except that it was in the Martinez home in Rosario de Lerma. Looking back, I consider it the most hectic trip ever, full of uncertainties and surprises. We took a quantity of packing material, including extra suitcases, folded cardboard cartons and tape. We knew that Argentina had tied their currency to the US dollar to stop their runaway inflation, but what we didn't realize was how much things now cost compared to 1982. We quickly found out. A taxi from the airport to downtown Buenos Aires cost \$40 US and all cabs were so small that only two of us plus luggage would fit in one cab. We had two rooms booked at a Best Western, but "best" it wasn't. Rooms were minute and parts, including the air conditioner, were "under construction" which equaled "it doesn't work". It seemed expensive at \$80 US per night until we learned that the better hotels charged \$200-300 US per night; shades of Paris! We had to get to the domestic airport at 6 AM the next morning to go to Salta where we were to be met by one of Antonio's sons. We asked for a 4 AM wake up. Fortunately one of us had an alarm which went off at 4:15; we quickly dressed, packed and went to leave, only to find all the doors to the outside locked and no one at the desk. The night man was finally stirred up after we found him asleep on a cot. There was a mad dash to the airport - we made it with 10 minutes to spare. All went well for



The Martinez home.



At the airport.

the rest of the day; we were met and taken to Rosario de Lerma. Anne and I were housed in the Martinez home and our friends had a room in the institute (almost defunct - no hot water, etc., just beds). The next day we had a shock. Antonio had carded most of his specimens to avoid pins rusting in the specimens or for other reasons?? Sometime after Antonio's death, the roof of the house leaked above the collection room and many specimens were getting moldy. Someone had said that spraying the specimens with acetone would get rid of the mold, so that was done. The mold was stopped, but the glue holding the specimens on the cards was dissolved, the result being that perhaps 10,000 specimens were just sitting on the cards and each one had to be reglued and all had to be checked and braced before they were packed for shipping. The result was that the four of us worked from 8 AM to 11 PM for two weeks to get the specimens ready to take back to Ottawa. We then tried to find out the best way to ship the four large cartons, plus 4 suit cases full of beetles (Holotypes went to Buenos Aires). It was finally decided that we had to take them as excess baggage, cost unknown! When ready to leave, we hired a pickup truck to take the cartons and luggage from Rosario to the Salta airport; we then were to take the local flight to Buenos Aires. The time to leave went past and no truck, we finally got desperate and started to look for any alternative. Fortunately we had to go to a nearby store for advice and found our pickup truck parked on the next street with the driver asleep. We made it to the airport

and found it unusually crowded. It turned out that it was the last flight for the pilot who was retiring when he arrived in Buenos Aires. No one paid any attention to our excess baggage; it was tagged and loaded and shortly thereafter we boarded and the plane took off. We reached cruising altitude and the party began. It seemed that we were the only ones on board that didn't know the pilot. The party hats appeared, wine, etc., flowed and a little later the pilot joined the fun including a drink! An hour or so later we were happy to land safely at the domestic airport to be met by a large crowd welcoming the pilot. We finally got through the crowd and rescued our luggage. Rather than try to transport everything to our hotel (yes - the same one) we decided to store it at the airport and pick it up the next day to take to the international airport. There was quite an argument - they only stored suitcases! It took \$150 US to change their minds. The next day we rented a truck and arrived well ahead of our flight's departure to Toronto. All of our luggage was checked in with no extra cost, the only argument was that we had too much cabin luggage. We won that argument, probably because they didn't know that it was all full of the rarer beetles. We arrived in Toronto, cleared customs, and only for the trip to Ottawa were we then charged for excess baggage - \$250 Canadian! We had done a good job; only two beetles came off of the cards and there was almost no damage. So ended our Argentine travels.