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ARE THERE ANY POISONOUS SPIDERS IN TRINIDAD?

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This question is one that I often hear from students, nature seekers and other eager people when a spider comes to our attention. A less abstract version in a field situation is "Is this spider poisonous?" I usually begin with the strict biological answer: All spiders are poisonous. Without exception, they feed on fresh prey, which they kill with venom injected from their chelicerae, or fangs. There are no vegetarian spiders, and to a bug or other very small creature they are all deadly poisonous.

But this answer, true and meaningful as it is, does not address the real intent of the question: Are there any spiders here that are deadly poisonous to me? Of the approximately 40,000 known species of spiders in the world, only about 50 are known whose bite is a serious health hazard to a normal human being. This makes good biological sense when you look at it from the spider's point of view. Venom and the ability to deliver it exist in the service of prey capture. Even the largest spider cannot make a meal of you, and chelicerae tend not to work very well for defensive biting of a big animal, so that no spider has even the slightest interest in biting you unless you give it no alternative. So why do some species have such toxic venom? This is almost certainly an evolutionary accident. Venom is modified through natural selection. It has to be potent enough to subdue the prey quickly, but there is no particular reason why it should not also be potent enough to damage a much larger animal than the spider is unlikely ever to have reason to bite. In other words, the deadliness of some spiders' venoms to you is quite irrelevant from the spider's point of view, although of course not from yours.

Still, to reiterate, natural selection will not favour any spider with a bite strong enough to compromise your health, and very few have. I can recall being bitten by four different species at various times. In each case, the effects were quite innocuous, really nothing beyond the mild initial pain. I have not heard of any person dying or even being hospitalized in Trinidad and Tobago from a spider bite, although I should note that bad effects from a bite could easily be misdiagnosed if the cause was not directly known.

But, to return to the essential question, does any of our native species in these islands pose a plausible health hazard to people? I regret that I have never seen a list of the 50 or so dangerous species, and the spider fauna of Trinidad and Tobago is only spottily catalogued, so an exact answer must be deferred. Still, these islands harbour about 3% of the world's land-arthropod species, so if there are 50 deadly spiders in the world we can estimate that either one or two of them will be found here.

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THIS ISSUE

Let us say that we have exactly one potentially deadly spider among us. Who is it likely to be? One of our tarantulas, perhaps? *Avicularia avicularia*, for example, is often found in country houses, where its large size, hairiness and decidedly creepy manner of walking on walls and ceilings -- I know what I'm talking about, as there is one in my bedroom most nights -- attracts attention. Could this be the culprit? Almost certainly not. All tarantulas are very mild-mannered, in my experience, although I suppose a bug would testify quite differently. I have never even come close to being bitten by one, but the testimony of those who have is unanimous: It is no worse than a bee sting. You have all heard of the widespread black widow spider, *Latrodectus mactans*, the seriousness of whose bite is well documented. The several other species of Latrodectus are all ecologically and behaviourally similar to the black widow, and some are known to have comparably toxic venom.

The brown widow, *L. geometricus*, a very elegant spider, is found in much of the Caribbean. I have often encountered it in the Grenadines, but was unaware of its presence in Trinidad until a hemispheric arachnological meeting here in 1999. Some of us were standing around during a recess between sessions, and one of the foreign delegates asked me if there were any Latrodectus in Trinidad. I said that there were not, as far as I knew. The outstanding nature photographer Bryan Reynolds (see cover of the 2002 Living World) broke in at this point with "Actually, there are brown widows under those concrete benches over there." And he was right. There were plenty of the spiders in their webs right beside where people put their legs when they sat. Yet I had never heard of anyone being rushed to the hospital on account of a brown widow bite, nor had anyone ever suggested that these unseen, unfelt spiders constituted a health hazard that should be eliminated (which would be easy enough to do). So the most likely answer to the title question is Yes, we have one potentially very poisonous spider among us. However, the brown widow is not interested in biting anything she can't eat, such as yourself. As long as you don't pick it up, we can regard this spider as just another lovely piece of our biodiversity.

As an addendum, let me note that the tarantulas (family Theraphosidae; see West 1982) and jumping spiders (Salticidae; see the 2002 Living World) are among the few spider families that appear to be fairly well known at the faunistic level for T&T. An exact list of known daddy-longlegs spiders (Pholcidae) can be extracted from Huber (2000) but there are probably several more species yet to be found here.

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To foster education and knowledge on natural history and to encourage and promote activities that would lead to the appreciation, preservation and conservation of our natural heritage.

The Geology of Trinidad Red Sand

Laurent de Verteuil

Every Trini kid who has ever played on a neighbourhood construction site after the workmen have knocked off for the day, and anyone who has ever needed to mix up some cement to patch a little something, knows what is Trinidad red sand. But what is this material made of and why? Where does it come from and how did it get there? Are these sand deposits geologically special, and if so, what can they tell us about the way that the Trinidad landmass came to be?

The red sand used for plastering and construction in Trinidad is typically a rosy pink but varies from creamy grey to buff brown as well. The pink and brown colours are caused by the oxidation (rusting) of finely dispersed iron sulphide minerals within the sand (mainly pyrite or fools' gold). Surface and near-surface groundwater moving through the spaces or pores between sand grains, oxidize the sulphides and coat the grains with pinkish rusty oxides. Creamy white sands are highly leached and represent the natural colour of the quartz grains that make up their bulk.

Quartz (silicon dioxide) is a hard, stable mineral that does not break down chemically to anything simpler. Rather, it tends to be what is left when the feldspars and other complex silicate minerals of the great granitic heart of the South American continent are chemically broken down (weathered) to form clay and quartz sand. Trinidad red sand is said to be texturally mature, that is, it is composed almost entirely of evenly sized and quite rounded, fine to medium quartz grains, and contains almost no clay. It is these properties of being chemically inert, well sorted and fine but not too fine, that make these red sands such an excellent construction material for mortar and plaster.

Today, the main deposits of red sand are found in the Caroni Plains in two northeast trending belts on the northern flank of the Central Range, extending from Claxton Bay to Cumuto. A major east-west trending fault, running across the island beneath the Caroni and Guaico – Cunapo – Oropuche river systems, truncates the red sand trend in the Mahaica – Arena area ("arena" means sand in Spanish). The more southeastern sand trend is called the Durham Sand and the larger, better exposed main sand trend is called the Sum Sum Sand. The largest quarries in the Sum Sum trend are at Ravine Sable near Longdenville, a French placename that means sandy ravine.

Figure 1. Sloping foresets in these Sum Sum sand channel bar deposits indicate transport from left to right (southwest to northeast) and deposition under high energy flow conditions. The figure of the author standing at left gives a sense of scale. Photo: J. Chambers

The sands are separated and overlain by silty clays that contain shells and woody fragments and were

deposited in a shallow marine embayment setting. The sands and the clays belong to the Talparo Formation. Both more or less continuous sand trends are anywhere from 200 – 1000 m (650 – 3300 ft) wide at the surface and dip gently down to the north-northwest at about 10 degrees. The true thickness of the sand, perpendicular to depositional layering, is closer to 75 m (250 ft). The gentle dip, when intersected by the nearly horizontal land surface, results in a much wider surface exposure. This tectonic dip, which coincides with the trend of the Central Range, indicates that the Durham and Sum Sum sands were tilted upwards during the uplift of the Central Range. A corollary of this is that the Central Range uplift could not have occurred before the deposition of the Talparo Formation, including the sands.

Using fossils, geologists have dated the interval of time during which the Durham and the Sum Sum sequences were deposited. Each sequence represents a cycle and consists of a lower interval of nearshore tidal and fluvial (river) sands that are overlain by more marine, silty clays, as the system flooded back over the older depositional shoreline. The Durham sequence was deposited during the late Pliocene, about 2 million years ago, while the Sum Sum sequence was deposited during the early Pleistocene, or about 1.7 million years ago.

By examining these sand bodies in the field and comparing them with modern coastal and fluvial depositional systems, geologists can estimate the size and characteristics of the Plio-Pleistocene systems that were responsible for deposition of the Durham and Sum Sum sequences. Several clues indicate that the sands of both sequences were derived from the south from a proto-Orinoco continental source. For a start, the size and scale of the sheet-like sands indicate that they were deposited near the mouth of a massive river system that must have meandered over an extensive drainage basin. The textural maturity of the sands themselves, much like the famed white sands of the Guyana shield, are consistent with a continental cratonic provenance. Finally, abundant current direction indicators throughout many outcrops show an average transport direction from southwest to northeast. Indicators of tidal influence interbedded within the sands confirm that they were deposited at or very close to a marine coastline.

From all this we can envision an ancient geography during the late Pliocene and early Pleistocene in which a more-or-less east-to-west oriented, shifting shoreline was present in the central Trinidad area. This shoreline was separated from the already-present Northern Range by a narrow 20 – 40 km wide seaway. South of the shoreline, an ancient arm of the Orinoco River fed sand to the fluvio-tidal depositional shoreline, across a broad coastal plain, over what is now southern Trinidad and the Gulf of Paria/Columbus Channel. The Central Range was not a positive feature at this time.

At least one other major sequence overlies the Sum Sum sequence beneath Chaguanas. By the same reasoning, the deposition of this middle Pleistocene sequence can also be shown to predate Central Range uplift. This means that the tectonic events that resulted in the Central Range pop-up, and much deformation in southern Trinidad, occurred during the last part of the Pleistocene, probably within the last 500,000 years.

Other than the Erin Formation of the southwest peninsula, which is a Durham sequence fluvial equivalent, there are no Talparo-aged sediments over the Central Range or Southern Basin. Where did all the Pleistocene fluvial deposits over southern Trinidad go? The answer is that they have been eroded and efficiently transported out to sea as the island was being transpressively deformed and

uplifted. That's a lot of erosion. A couple of years ago an academic from overseas came here and made a documentary that claimed that the island of Trinidad is sinking and may soon be flooded in places. Trinidad is not sinking. In fact, it's popping out of the ocean like a bat out of hell.

So the popular question of when was Trinidad "joined" to South America and how did it "break away", needs to be re-framed, at least for the first half of the Pleistocene and before. Trinidad as a geologic entity is a relatively recent phenomenon that is still very much a work in progress. We might replace the idea of a "fixed" Trinidad and more fruitfully ask, "What was the (paleo) geography of the Trinidad area at any point in the past and how did that evolve through to the present?"

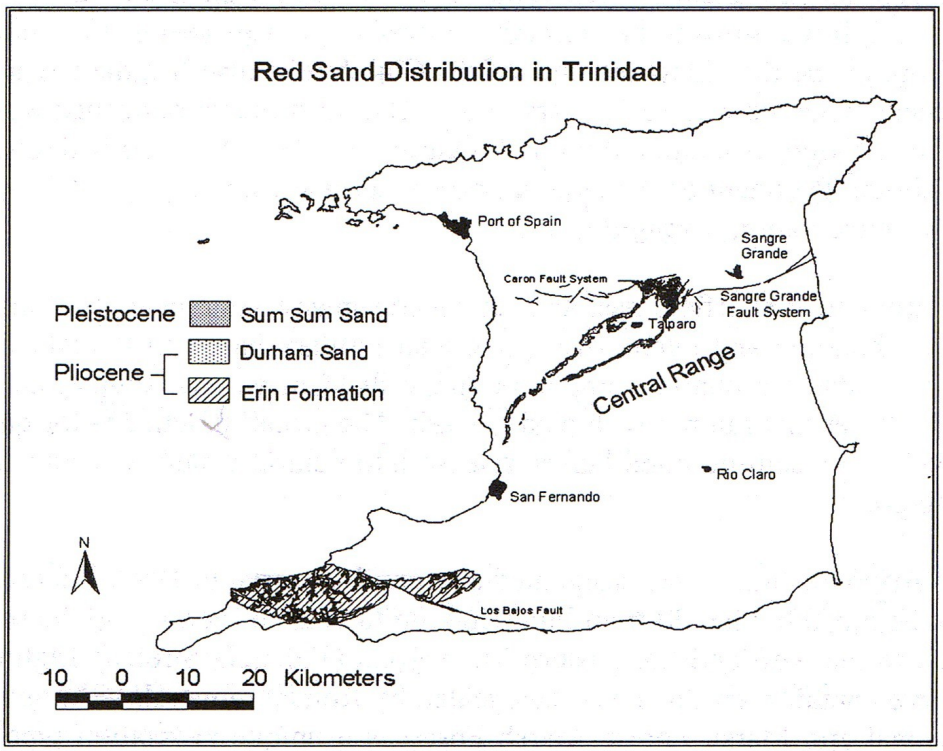

Figure 2. Distribution of main Durham and Sum Sum red sand deposits, all north of the Central Range. The Erin Formation of southwest Trinidad is related to the Durham. All three units are also excellent sedimentary aquifers and represent an important source of groundwater for the country.

We have seen that south of the northern mountains the entire northern plains were once a marine seaway with its southern shoreline in the central Trinidad area; that the Central Range was not yet there; and that about 300 m (1000 ft) of Pleistocene sediment over the southern Trinidad area that was there, is no longer there. So the larger geological question, of course, is how did we become so twisted, especially in the south? This, in a nutshell, is the question behind most geological research and oil and gas exploration in the country.

The Trinidad red sand story is a good illustration of how geologists, like detectives, working with a few key principles and a limited number of observations or measurements, can deduce some profound conclusions about the geologic history of an area. So the next time you mix it up in the TCL shuffle to cast out a quantity of floor, remember the spectacular origin of common Trinidad red sand and give thanks for living in a blessed land.

FIELD TRIP REPORT

Aripo Savannas—February 24, 2002

John Lum Young

The February 2002 outing was to the Aripo Savannas, the last undisturbed flat savannas remaining in Trinidad. It was great to have Frankie Farrell, who was born in 1907, accompany us on the field trip. Not only is he the oldest member of the Club but he also has the enviable distinction of climbing El Tucuche when he was 85 ¾ years of age. His most recent published work was *Native Trees of Trinidad & Tobago*, co-authored with V. Quesnel in 2000. We also benefited from the experiences of C. McMillan, President of the Orchid Society and the Club's G. Lee Kin, Chairman of the Orchid Society's Conservation Committee.

We drove to Wallerfield past an abandoned runway. (Interestingly Wallerfield was part of a network of two hundred and twenty-five American military bases on the island during World War II). We parked outside a quarry compound and walked in an east southeasterly direction. We crossed the Aripo River that ran red with quarry wash. The proper practice is for quarry runoff water to be channelled into a settling pond before release into natural waterways. But in Trinidad it seems that anything goes.

The Aripo Savannas was designated a scientific reserve in 1989. This scientific reserve is a triangular area bounded by the old train line (Cumuto to Guaico section) on the south, the Aripo River/Cumuto Road to the west and the Eastern Main Road (Valencia Stretch) angling north west/south east. The reserve contains ten savannas (designated by Roman numerals – Anon. 1980) that are surrounded by Seasonal and Marsh Forest. Marsh Forest is a unique vegetation type dominated by palms (Beard 1946) and is only found at the Aripo Savannas.

Palms seen as we proceeded to Savanna VII included *Oenocarpus batua* (palma real), *Bactris campestris*, *Manicaria saccifera* (timite), *Roystonea oleracea* (royal palm or palmiste), *Attalea maripa* (cocorite), *Euterpe precatoria* and *E. oleracea*. The dominant palm was *Maurita flexuosa* (moriche). *M. flexuosa*, although it can be found on private holdings such as at the Wild Fowl Trust, is an uncommon palm and is only found growing naturally in four other areas in Trinidad namely Nariva, Los Blanquizales Lagoon, Erin Savannas and the Valencia Wildlife Sanctuary.

Messrs McMillan and Lee Kin pointed out a number of orchids on trees along the way. These included the *Scaphyglottis cuneata*, *Encyclia bradfordii*, *Maxillaria conferta*, *Notylia augustifolia*, *Rodriquezia segunda*, *Epidendrum strobiliferum* and *Polystachya foliosa*. The trained eyes of the orchid experts spotted a seedling of the *Maxillaria camaradii*. Also seen was the *Epidendrum nocturnum* that gives off a scent at night to attract moths, the plant's main pollinator.

Another orchid was the *Catasetum macrocarpum*, pollinated by the male bumblebee (*Euglosine sp.*). Observed too was the jack spaniard orchid (*Gongora maculatum*) so called because its open flowers resemble a cluster of jack spaniards. The bucket orchid (*Coryanthes macrantha*) was noted too. It is also called monkey throat orchid because looking into the flower was like peering into the throat of a howling monkey. As a matter of interest this was the orchid Charles Darwin used for his experiments on genetics. The *Hexisea reflexa* (five-leaf orchid) was also identified.

The savannas are treeless, dominated by grasses and sedges and clearly demarcated from the forest. The annual rainfall of 260 cm would normally be sufficient to support trees, however, modified soil conditions enable edaphic factors to override climate in determining vegetation type. The area is about 45m above sea level and is very flat with an absence of streams and natural channels for water runoff. The drainage therefore is poor and the savannas are very often flooded in the rainy season.

The soils at the Aripo Savannas consist of fine sand over silty clay. The clay is high in kaolinite. Intense leaching removes iron and aluminium from the upper soil horizons. In the Dry Season drought conditions persist. Full exposure to the sun causes cementation, with iron oxides producing a plinthite material that changes irreversibly to hardpan (Schwab 1988). Intense mottling (red blotches) owing to iron and aluminium oxides occurs beneath the upper horizons but above the hardpan. In addition there is the almost complete absence of humus. In order to thrive in these harsh conditions some of the savannas' plants made interesting adaptations that included being parasitic and insectivorous. The moriche palm also found a way to survive where the ground is waterlogged. Short roots extend along the trunk from the base to the top.

We entered the savannas and noted that the ground in the vicinity of the forest border was uneven and one had to tread carefully in order not to twist an ankle. One may think that the bumpy ground was the result of cow hoof prints but earthworms caused this uneven surface. Actually the worms produced numerous closely packed mounds of earth on the savanna floor. The mounds were actually soil material that passed through the earthworms' digestive tract. These worms (about 10cm in length) produce a hump of earth, free of cemented soil. They therefore play an important role in soil development in this harsh environment. With respect to plants growing in this type of terrain, the humps provided better habitat conditions than the depressions. In fact, the orchids in the savannas, which were terrestrial rather than epiphytic, grew on the mounds. There was also a variety of sphagnum moss (*Sphagnum perichaetiale*) on the mounds. The *S. perichaetiale* is unique to the Aripo Savannas. Sphagnum moss is an interesting plant. The dried moss is extremely absorbent and it is also antiseptic. During World War II Europeans used the moss to dress wounds and to line babies' cloth diapers.

Ground orchids noted included the *Otostylis brachystalix* (seen in spike) and *Epistephium paviflorum*. These are found only in the Aripo Savannas. Another rare ground orchid was the *Cyrtopodium broadwayi*. The last record of this plant outside of the Savannas was at Mt. Harris in 1922, 80 years ago. Sadly we saw evidence of this orchid being dug up.

Strung over the other savanna plants was an orange, artificial-looking vine. This was the love vine (*Cassytha filiformis*). The *C. filiformis* is parasitic and feeds off the grasses and sedges. Also seen was the *Drosera capillaris* (sundew) a very small plant that is less than 5cm in height. It has club shaped leaves covered with tiny glandular hairs that secrete sticky droplets to trap small insects. The droplets contain enzymes necessary for digestion and absorption. Once a small insect touches the leaves the hairs grow quickly and fold around the insect. This increased leaf surface in contact with the insect speeds up the rate of digestion (Johnson 1985).

Other insectivorous plants at the Aripo Savannas number 13 species of bladderworts (12 *Utricularia* and the *Genlisea pygmaea* of which the *Utricularia adpressa, U. benjaminiana* and *G. pygmaea* are very rare).

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FIELD TRIP REPORT

"Eastern" Savanna—Erin Forest Reserve—May 12, 2002

John Lum Young

We are pleased to report the existence of the "eastern" savanna at the Erin Forest Reserve. In 1990 Paul Comeau after scrutinizing topographical maps of the Reserve stated that there was another savanna in addition to the "western" and "middle" known to the Club. Local guides questioned over the years were not aware of another savanna. So, finally, Paul Comeau, Clayton Hull, Gillian Kirby and the writer set out to verify the existence of this other savanna.

We entered the Erin Forest Reserve via Spring Trace in Buenos Ayres. Due to the rapidly deteriorating condition of Spring Trace we almost did not make it to the usual parking spot two miles in from the main road. For the last ½ mile there were shrubs growing in the middle of the road (some taller than the vehicle) and a canal carved by surface runoff about 20 inches deep and 40 inches wide around which the car just managed to manoeuvre. Without maintenance, this section of Spring Trace would become a forest trail similar to the route to the "western" savanna that was driveable 15 years ago.

First we made our way to the "middle" savanna. On the trail was fresh cow dung. These droppings were left by the wild cows of the Erin Reserve. About 30 years ago some cows strayed into the Reserve and they multiplied and survived. They usually stay quietly in the bush and you hardly see them. If provoked though they attack and one must climb a tree to escape as it is not possible to outrun them. Recently some forest rangers shot one and some of the herd charged at the foresters who had to quickly climb into the nearest tree where the men remained for a few hours.

Working with an aerial photograph of the Reserve that Clayton superimposed on a contour map, we followed a ridge from the "middle" savanna holding a northeast course. The "eastern" savanna was ½ mile away as the crow flies. We cut through the undergrowth, descended the ridge, crossed a permanent stream via a fallen tree, climbed another ridge and arrived at the southern end of the savanna. Howler monkeys (*Alouatta seniculus*) were heard in the distance.

A hunters' trail from the east petered out in the savanna and Clayton noticed other faint trails at the savanna's northwestern margin. The savanna was on a hillside and almost rectangular, about 60 yards by 120 yards and surrounded by undisturbed evergreen forest.

A bush fire (most probably set by hunters) had razed the grassland earlier in the Dry Season. The *Scleria bracteata* (razor grass), rejuvenated after the recent rains, was not too thick to hide the numerous mounds of the ground termite (*Nasutitermes sp.*) dotting the landscape. The savanna floor was littered with fragments of the hard iron pan that forms on and beneath the surface as a result of oxidation. There were good examples of erosion cover where slabs of hardpan protected the ground underneath while the nearby soil was eroded. It starkly demonstrated that covered ground prevented erosion from water runoff whether the covering be grass, tree or other material. In some cases, the hardpan was as much as 15 inches above the surrounding areas.

The popular shrub was the savanna serrette (*Byrsonima crassifolia*) in bloom with loads of attractive yellow inflorescence. There was a scattering of *Curatella americana* and the odd cuchape (*Coccoloba latifolia*). The cuchape is a 50 foot tree but on the dry, nutrient poor savanna it was

only 4 feet tall. Like the other shrubs it was resistant to fire damage. Noted were a small plant (*Sauvagesia rubiginosa*) with its white 4-petal flower and a plant belonging to the Rubiaceae family, *Sitanea pretensis,* with a pink 4-petal flower.

At the forest edge the bois mulatre (*Pentaclethra macroloba*) with its small white flowers crowded together on long upright inflorescences seemed enchanting, swaying in the gentle afternoon breeze. In a gully that dug into part of the savanna was a timite (*Manicaria saccifera*). *Euterpe precatoria* was by far the dominant palm in the surrounding forest. *Precatoria* means "praying" and describes the pinnae ("palm leaflets") that droop from the rachis ("palm axis") as if pressed together in prayer. Other palms in the forest included cocorite (*Attalea maripa*).

Hopefully, this savanna was too isolated to suffer the fate of the more accessible "western" savanna that was destroyed by the planting of *Pinus caribaea*. Retracing our steps we got back to the "middle" savanna in 35 minutes.

FIELD TRIP REPORT

Tamana Hills—May 26, 2002

Nicholas See Wai

On Sunday May 26, 2002, the TTFNC headed up to Tamana for its May 2002 outing. After arriving at our starting point, we changed into our hiking gear and then gathered for a briefing from our leader, Dan Jaggernauth. After the briefing we started off. Our main destination was the Tamana Cave. It is an underground cave that is known for its albino cockroaches, bats and frogs. The decision was made to return to the cave after we had hiked to the top of Tamana Hill.

Upon reaching the top of Tamana Hill, we were greeted by a spectacular view of the Central Range with its low-lying hills and dense rainforest. It really was a beautiful sight. We also got a chance to see the many "corbeaus" (Black Vulture, *Coragyps atratus*) hovering over us. Every now and then we got clear views of the "King Corbeau" (Turkey Vulture, *Cathartes aura*). The abundance of vultures at the top of the hill made me wonder why the peak should not be re-named "Corbeau Point."

After leaving the top, we headed back to the caves. Some members decided to go in, while others rested and chatted at the top. It was at that point when a few bats started to fly out of the cave. Instead of feeling scared and intimidated, some members quietly watched the bats as they circled in front of the cave. For me, it was a rare chance to see bats flying in broad daylight. I also got a chance to see one forest bird, a White-tailed Trogon (*Trogon viridis*). Its blue and yellow coloration, along with its white tail, made it unmistakable.

On the way to and from the caves, we passed two giant silk cotton trees. These immense trees made me feel so small. I judged that they may have been well over one hundred feet tall. To stand under these massive things had a very humbling effect on me.

At the end of the hike, the tired members headed back to their cars and changed into dry clothes before leaving to go back home. For me, it was a very successful outing and one that I will never forget.

From Page 7

Bladderworts (*Lentibulariaceae*) thrive in aquatic or semi aquatic conditions and therefore are more prevalent in the rainy season when the savannas are under water. In the dry season they can be found in ditches where water has collected. When the savannas dry out, the plant dies and its seeds wait on the next wet cycle to germinate. The plants have tiny bladders, the size of pinheads, attached to an elaborate root system. The wall of each bladder is thin, usually only two cells thick. The bladders function on the basis of a pressure differential. Once the valve opening into the bladder is sealed, the hairs lining the interior wall absorb the water within the bladder. This creates a negative pressure inside the bladder. Four sensory hairs located on the valve's exterior cause the valve to open when touched by a small unsuspecting insect. As a result of the negative internal pressure there is a sudden influx of water into the bladder and the flow carries the insect with it. Chemical secretions within the bladder then aid digestion (Withycombe 1924).

There are 28 species of plants that do not grow elsewhere in Trinidad but are unique to the Aripo Savannas and the list includes a sedge, *Rhynchospora aripoensis*, not found in any other part of the world.

As noted, the Aripo Savannas and Scientific Reserve contain a number of rare and unique plants and forest types not found elsewhere in this country. It is important for the flora not to be destroyed. One of the threats is fire and the savannas have been burnt repeatedly. All bush fires in Trinidad and Tobago are started carelessly or deliberately. Fire alters the specie composition of the savannas by allowing plants that can survive repeated burnings to thrive. The burnt soil also increases moisture loss and produces drier and more difficult growing conditions. Plants that are sensitive to fire therefore may eventually disappear thus reducing the biodiversity that makes the savannas unique.

Other threats are illegal collecting of rare plants and "development", the sophisticated term for officially sanctioned destruction. The Member of Parliament for Toco / Manzanilla, Mr. Roger Boynes, as part of his infrastructure development plans for his constituency, is keen to extend the Churchill Roosevelt Highway to Sangre Grande. If the proposed Highway extension does not overlay the Valencia Stretch it must pass through the Scientific Reserve. Mr. Boynes must be advised that he too must use his influence in protecting this natural heritage for future generations.

A vanilla vine orchid (about 12 metres in length), from which vanilla essence is extracted, was seen along the trunk of a moriche palm. Also identified were the mini vanilla and the slipper orchid (*Selenipedium palmifolium*) so called because its flower resembled a Dutch clog.

Birds seen on the trip included the channel-billed toucan (*Ramphastos vitellinus*) and red bellied macaw (*Ara manilata*). A pair of black tailed tityra (*Tityra cayana*) kept returning to a nest in a dried moriche palm, probably taking turns at feeding the hatchlings.

Some of the group made a quick visit to the abandoned KP Quarry. The open pit mining method was used there. The land was never restored by refilling and replanting and so the open pit remains a stagnant pool. Two orchids were seen at this location, the *Epidendrum nocturnum* and the *E. schomburgkii*. The *E. schomburgkii* is used in Hawaii as a stock plant for orchid breeding.

Other members went to the "Depthless Pool" (actually 22 feet deep) of Wallerfield to relax. This ended another interesting and very educational field trip.

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MANAGEMENT NOTICES

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Omar Mahomed
Daphne Pierre
Stuart Millar (Life)

TTFNC AT THE ANNUAL FLOWER SHOW

TTFNC members built, mounted and manned a display at the 83rd Annual Flower Show of the Horticultural Society. Thanks to Juanita Henry, Shane Ballah, Francis Castillo, Luisa Zuniaga, Dan Jaggernauth, Clare Smith, Michael Green, Hazra Maraj, Daphne Pierre, Anthony James, Richard Lee Kim, Clare O'Connor. Special thanks to Hema Seeramsingh, coordinator and Maureen Ottier for painting the two murals.

OFNC Badges

Our sister organization, the Ottawa Field Naturalists' Club, has donated badges to the TTFNC. The cost is TT$5.00 each. A limited supply is still available.

Publications

THE PALM BOOK OF TRINIDAD AND TOBAGO INCL. THE LESSER ANTILLES
by Paul L. Comeau, Yasmin S. Comeau and Winston Johnston

The TTFNC is accepting pre-publication orders for the above named book at the discounted price (25%) of TT$200.00. The final cost (exclusive of shipping and handling) will be US$40.00. This offer has been extended to November 30, 2002. For additional information visit the website at http://www.wow.net/ttfnc.

Members are also asked to note that copies of the ***Native Trees of Trinidad and Tobago*** are still available for purchase at TT$80.00 per copy.

Issues of the *Living World Journal* from 1892—1896 are now available on 2 CD volumes. The Management Committee expresses its deepest appreciation to Deo Maharaj and his son, Ravi, for the time and effort they spent scanning the journals. For copies contact Selwyn Gomes, Treasurer.

BOOK REVIEW

EXPLORING

Review of:

Bright Paradise: Victorian Scientific Travellers. Peter Raby 1996. Princeton: Princeton Univ. Press 276 pp. ISBN 0-691-04843-6

Footsteps in the Jungle. Jonathan Maslow 1996. Chicago: Ivan R. Dee 308 pp. ISBN 1-56663--137-8

The exploration of wild places is a subject dear to our hearts. I expect that many readers of these pages grew up on the books of Gerald Durrell and perhaps Ivan Sanderson or Ernest Thompson Seton, before graduation to the earlier hardcore of the likes of Charles Darwin, Alfred Russel Wallace, Henry Walter Bates and possibly Oswaldo Beccari. If you followed this standard trajectory, you will want to approach the two books under review selectively, having outgrown much of what they have to say.

On the other hand, if you came late to natural history and are still struggling to catch up with the classics, they proffer a convenient way to familiarize yourself with some major explorers.

Raby's is the more scholarly treatment, as it is quickly seen where the two overlap. It also has a tighter theme, scientific exploration from Mungo Park to Marianne North, a period of a little under a century, and is much more concerned with the long-term meaning and impact of all this exploration. Its thesis, stated almost in passing, seems to be the simple one that exploration in this period formed a critical underpinning to the theory of evolution and thus to modern biology.

Maslow's book is restricted to the New World tropics, but it covers a longer span, from Alexander von Humboldt about two centuries ago to Daniel H. Janzen today. In structure it is a simple series of 13 narrative chapters about 14 explorers. These are popular accounts, accessible to any literate person, and the attention to scientific results and significance is decidedly thin. Still, if you have often heard the name of Charles Waterton, for example, or Archie Carr, but never quite found out what they were all about, this book serves a very useful function. As he passes from the early explorers to modern times, Maslow's style shifts. Expecially with respect to Alexander Skutch and Dan Janzen, the two living explorers whom he interviewed for the book, the treatment is sometimes quirky, little better than journalism.

If Maslow's book has a thesis, it is an unstated yet important one: The world of the early explorers is gone forever and with it their way of exploring; but there are new ways open to those intent on exploring wild nature today.

It is hoped that any naturalist reading either of these books will be stimulated to go back to the original accounts that the explorers themselves have left us. For this, each book has a bibliography.

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OPINION

LOOKING BACK

By Nicholas See Wai

An outing with the TTFNC is not an ordinary school outing. Nor is it a walk in the park. It is an experience that brings you into the heart of this country's flora and fauna. For me, every outing has been an unforgettable, life-changing experience. It seems as if the TTFNC knows how to mix hiking with adventure. Take my word for it : one outing with the TTFNC and I guarantee you will never be the same again.

July 12, 2002 will mark one year since I joined the TTFNC. And what a year it has been! Already I have been to Morne Bleu in the north, Chaguaramas in the northwest, Point Radix in the south and Aripo Savannas and Oropuche Cumuca Cave in the east. I am yet to hike to the top of El Cerro del Aripo and El Tucuche. I just hope I have the guts to do it.

Apart from joining the general group on their outings, I have also gone on the birding hikes which have allowed me to see such birds like the Grey Hawk (*Buteo nitidus)*, Black-Tailed Tityra (*Tityra cayana*), Squirrel Cuckoo, (*Piaya Cayana*) and Boat-billed Flycatcher (*Megarhynchus pitangua*). In the future, I hope to see the Bearded Bellbird (*Procinas averano*), Zone-tailed Hawk (*Buteo albonotatus*), Blue-Crowned Motmot (*Momotus momota*), the Speckled Tanager (*Tangara guttata*) and many more. It would be a dream to see these birds in their natural habitat. What an experience that will be.

With the TTFNC I have had the privilege of walking under giant forest trees, on grassland and rugged coastline. It is experiences like these that make me wonder why was I blind to all of this for nearly twenty years!! However, I am glad my eyes were opened before it was too late. I have already promised myself that I will stay in the Club for as long as I can. In other words, I am anxious to see what the future holds for me. A trip down the islands? A birding hike in Santa Cruz? Who knows? I will just have to wait and see. In the meantime, I will continue to participate in more exciting outings with the Trinidad and Tobago Field Naturalists' Club.

Trinidad and Tobago Field Naturalists' Club
P.O. Box 642, Port of Spain, Trinidad and Tobago

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Acknowledgement:
The writer thanks Carla Smith for the use of her field trip notes.

Reference:
Comeau, P.L. Savannas in Trinidad - *Living World Journal of TTFNC 1989 – 1990*