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Chagos News

The Periodical Newsletter of the
Chagos Conservation Trust

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EDITORIAL

Web Site

www.chagosconservationtrust.org
is our new website. Have a look. It has been produced by Dr. Frank Stewart in the USA. Frank is a long time supporter, a member of our Executive Committee and he has done a brilliant job which involved much hard work. We are most grateful to him.

The Computer Age

Our new web site is but one aspect of modern life. We sent out by email full reports on our Annual General Meeting and Extraordinary General Meeting both held on 9th September in London. These reports reached 80% of our members. Those who do not yet have computers are welcome to printed copies. We hope soon to change the format of *Chagos News* so that we can include colour pictures. This we will also be able to send by email. However we do not plan to do so until at lest 90% of our members are on line. We could run off the remaining 10% on home printer and post. Obviously there are not only financial savings to be made but the membership will be able to receive more up to date news, in a better format and more quickly. Also we can all communicate between ourselves more easily. Please, therefore, keep the Secretary up to date with your email address.

Tidal Wave

This issue contains a report of the effect of the Boxing Day tsunami on the Chagos Archipelago. We have delayed the issue of this *Chagos News* until the report was ready. This issue also includes an excellent article by our constant historical researcher Nigel Wenban-Smith.

John Havers

It is with great regret that we report the death of John Havers who for many years was Registrar to the BIOT Supreme Court and Senior Magistrate. He visited Diego Garcia several times and was known to many of us and became a valued friend. John was a gentleman of the old school, scholarly, well read, humorous and wise. A good man. May he rest in peace.

Back Page

Please see the back page for notes by the Secretary and others.

John Topp

The Tsunami, Shore Erosion and Corals in the Chagos Islands

Charles Sheppard

Effects of the recent tsunami in Chagos were mixed. Some islands have been damaged in places, but none very badly. After inspecting most of them in February 2005, it is clear that the results of the tsunami must be looked at in the context of the shoreline erosion that is taking place in these islands. If I have to write a one sentence summary I would say the tsunami accelerated coastal erosion by 1-2 years. I will explain the background briefly.

With sea level rising slowly but steadily, and with the massive coral mortality that occurred seven years ago, the erosion that has been taking place in these shores for many years is accelerating. The centres of most of these islands are close to, or even below, high tide level, and do not flood with seawater because each has a raised rim around its perimeter which, quite simply, acts as a dam to water and wave encroachment. In an earlier *Chagos News* I showed cross sectional profiles of several islands to illustrate this. The worry has always been that when these rims become broached then a lot of land would be lost. Acting as a partial counter to erosion is the large production of sand. Sand comes from corals which are broken down by boring organisms and waves, and is pumped onto these raised rims, helping to maintain the integrity of the whole system.

Figure 1. Erosion of the western arm of Diego Garcia. Nestor Guzman is standing on the high tide level, the thin rim behind him is now all that stops inundation of the road at this point.

Erosion is very evident in many places now. Around much of the northern tip of Diego Garcia it is striking; a lot of concrete shore defence has been put in place to stop further attrition. Further south, where the 'Expat Club' used to supply pizzas on the western side, there were steps leading down to the beach (this is where the reef flat was once excavated for building material). Now that shoreline is well eroded and the steps leading down to the sea have disintegrated. Further south still, the protective rim is now only about a metre wide in places and already some small plumes of beach sand are being pumped through onto the road (Figure 1). So, erosion by the sea is a continuing process, one which is not caused only by storms and tsunamis but by every high tide, especially spring tides. The process is being forced faster by rising sea levels.

What of the direct damage caused by the tsunami?

Spectacular results are fortunately few. In Diego Garcia's eastern arm, large waves clearly smashed through the vegetation along a section of a few hundred metres, but north and south of that there is no evidence of damage. Where the wave hit, the results are removal of the shoreline shrubs and of all young and intermediate-size palms, but most fully grown trees survived, leaving an untypical vista of palm canopy without undergrowth and a clear view all around. Working northwards through the islands: on Eagle island, facing east, there is a remarkable section of several hundred metres where the waves clearly punched 80 - 100 metres inland over a section of a few hundred metres, stripping away the *Scaevola* bushes and young palms (Figure 2). Now, two months later, this area has no undergrowth (Figure 3), but under the canopy of mature palms are masses of newly sprouting coconuts. This effect continued around the northern tip and down the western facing side for some hundreds of metres too, illustrating the complicated refraction patterns of the waves.

Figure 2. (Top). Section of Eagle Island with shoreline shrubs removed by the tsunami. (Bottom). Lee Morrison providing scale to the 1.5 m step

On North brother, the little landing beach has been drastically changed and enlarged - though it is no easier to land on! (Figure 4) and the entire eastern half was clearly affected. The rim of this island is now very thin. The ground nesting Brown Booby colony was almost certainly washed over, but the colony as a whole has survived. There are no young boobies or chicks, only mature, fully fledged adults and eggs, meaning there is a gap in the demographic pattern, as at this time of year we would expect many chicks and young too. The western side of the island (and undoubtedly the middle though we did not go there) is still filled with burrows of shearwaters, many occupied. Middle Brother is packed with uncounted numbers of terns, and although there is an indefinable change to the shoreline where we land, we can say this island is unaffected. Tiny Resurgent island obviously did not suffer a washover: it has a small but healthy colony of adult masked boobies, with young adults and chicks as well as eggs. South Brother has had areas of its shoreline shrubs removed in its south-eastern end. Nelson island is unaffected and remains packed with birds.

In Salomon, more information was obtained from visitors on yachts than could be seen in our visit of just a few hours. Sand banks were shifted, and much sand apparently was pumped into the lagoon. Sand shifts around these islands seasonally, and probably the result of the tsunami was no more than an acceleration of this process. Anybody who did not know the area very well could think that nothing was out of the ordinary - there seem to be no areas of stripped vegetation. Observations of all shores and a walk around Ile Boddam, however, showed substantial erosion of the shores with ‘steps’ everywhere of 1-2 m high, and the yacht visitors reported that several turtle nests high on the shores had their eggs exposed, to be eaten by hermit crabs and, presumably, by rats.

Figure 3. Eagle Island where all undergrowth was removed, including young palms and *Scaevola*. The ground vegetation here (2 months later) is only of newly sprouted coconuts. This is similar to the most heavily affected part of Diego Garcia.

The degree of erosion is impossible to accurately assess. If only 30 years ago we had had the foresight to establish dozens of fixed marker points! The North end of Ile de Coin, however, I measured up in a little more detail in the late 1970s. I have commented before that erosion there is proceeding markedly. The changes seen this time, three years after my last visit, have accelerated considerably. I have noted before that the rim of the island there was threatened. Now it has gone completely in places; sand and vegetation form the outer edge of the island at this point. Where our tents would have been is now part of the sand spit, which itself seems to be shrinking. That erosion is increasing here is obvious, but I can only guess how much is due to the tsunami and how much to the many storms and high tides since the last time I saw this three years ago. A bit of each, I suspect, which would support my suggestion that the main effect of the tsunami was mainly to accelerate the relentless erosion.

I have been asked many times why these huge waves did not wash over the whole archipelago. The answer lies in the physics of waves and the topography of the sea bed. Briefly a tsunami is a pressure wave which, out over deepwater, may be detected physically by a rise of only a few centimetres. To create large, surging walls of water, the seabed offshore must shoal gradually. The Chagos islands rise very steeply from several km deep so, by and large, massive pounding water was the exception rather than the rule. Where it did occur it might be explained by quirks of undersea topography, and effects of funnelling, focussing and refracting. Where a big wave was created by these factors, vegetation was stripped, and the force of water required to strip scores of hectares of all its undergrowth would have been spectacular. But, for the most part, the results are manifested by the shift of incalculable quantities of sand and a couple of year's worth of additional erosion.

It is this erosion which is a worry now. A very simple law, devised for ideal beaches (which probably don't exist!) states that for every one unit rise in sea level we can expect about 150 units horizontal erosion of shoreline. This is called Brunn's rule. It works on normal sandy beaches but is obviously modified considerably where there is a raised rim behind the beach, which slows down erosion at least until the point where the rim is breached. As noted, this breaching can now be observed in many places throughout the archipelago, from parts of Diego Garcia, to parts of the Three Brothers, and to parts of Peros Banhos as noted above.

Figure 4. North Brother's thinning rim near the landing beach.

What of the corals themselves? These are critical for many reasons, one of which is that they grow, die and are turned into essential sand. The whole point of corals in this respect is to generate sand. I can end on good news. Underwater, no areas were found (yet) which were in any way stripped by the tsunami. This should not be surprising – after all, corals easily accommodate pounding storms and cyclones which last for days. In many areas, coral recovery is continuing very well following the massive mortality that took place in 1998. Many areas that were so depressingly devoid of live coral in the past few years now have 20, 30, even 50% of their substrate covered with young corals. This is not true everywhere yet, and many areas seem not to have recovered at all. But the corals are coming back slowly from their devastation of 1998. We can hope that those clones and clades that are returning are better warm-adapted than their predecessors were. They will need to be if they are going to survive far into the future given the general warning trends forecast for all tropical seas. The whole issue of the genetics and heat resistance of different corals is complex and alarmingly biochemical. It is one of the issues we will be researching in the 2006 expedition to Chagos, which will be focussing on many aspects of the longer term conservation and management of this extraordinary archipelago of reefs and islands.

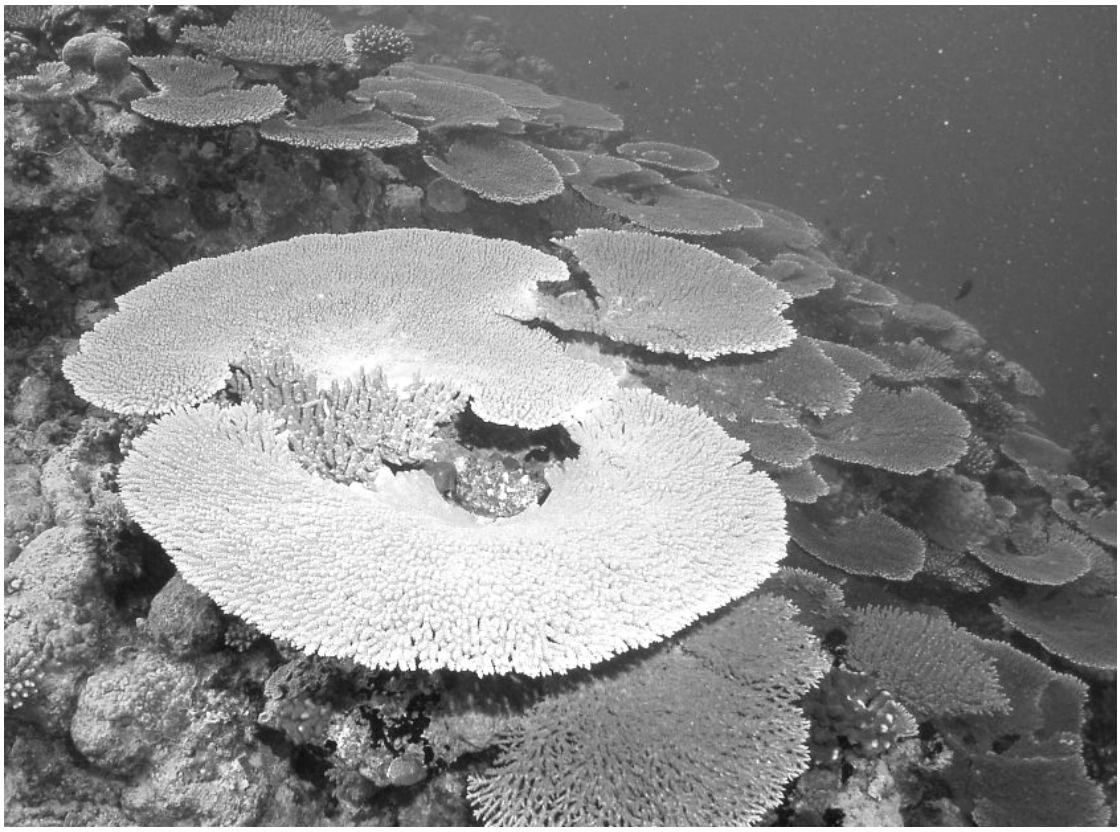

Figure 5. Underwater off Salomon (Ile Anglais) showing young and vigorous growth of table corals.

Acknowledgements: This visit was made possible by the staff of the British Party on Diego Garcia and of the *Pacific Marlin*, led by Chris Davies and Bob Goodwin, whose help, friendship, and hard work made the visit a success. I would mention in particular Paul Maynard, Lee Morrison and Nick Mynard, who assisted with my inspections of many miles of shore and many of the reefs, and Nestor Guzman who assisted me in Diego Garcia. My grateful thanks to them all.

EIGHTEENTH CENTURY COLLABORATION AND COMPETITION IN THE CHAGOS ARCHIPELAGO

Important new information on the exploration of the Indian Ocean is contained in the doctoral thesis[i] of **Manonmani Restif** on the mapping of the sea routes to India. Her work examines the activities of navigators and cartographers, particularly those working on behalf of the great French, Dutch and British trading companies. Its scope is wide, but includes detailed material on the discovery and mapping of the Chagos Archipelago, as well as on the key personalities involved. Two of the most important of these were Jean-Baptiste Après de Mannevillette and Alexander Dalrymple. *Chagos News* is deeply grateful to Madame Restif for permission to translate and print this extract from her still-unpublished thesis.

"The task of mapping the Chagos was altogether more difficult, since the existing nomenclature was even more haphazard than in the Seychelles group of islands and the number of islands oversimplified. One part of the mapmakers' work was to sort out which islands were real and which imaginary and also to identify the islands which bore different names on French and English charts. The fact was that the French, like the English, had it in mind during the 1770s to establish a post in the Archipelago and on the island of Diego Garcia in particular. This rivalry did not however prevent Jean-Baptiste d'Après de Mannevillette (1707-1780) from exchanging information and plans with Alexander Dalrymple (1737-1808), hydrographer of the East India Company, a good example of international scientific collaboration even in time of war.

"In fact, the two hydrographers kept up an important correspondence from 1767 until 1780 (the year of de Mannevillette's death). Admittedly the correspondence slowed down somewhat during Dalrymple's sojourn in India between 1775 and 1777 and became more difficult when the war with America broke out in 1778. But despite everything, it continued via intermediaries. Furthermore, the two hydrographers each distributed in their own countries the works published on the other side of the Channel. Dalrymple obtained several subscribers in England for the second edition (1775) of *Neptune Oriental* [the French cartographer's seminal achievement], while d'Après de Mannevillette spread knowledge in France of *A collection of plans of ports in the East Indies with introductory explanations*, which his correspondent published in the same year. The letters show Dalrymple, notwithstanding the respect in which he held the aging French hydrographer, to have been a demanding and persistent questioner, who did not give up until he had secured the information he wanted; but, in return, he provided extracts from the journals and plans made during the voyages of English ships passing islands to the north-east of Madagascar. The correspondence indeed allows us to follow both the pre-occupations and the intellectual progress of the two men as they developed their charts.

French Exploration

"The first French chart of the islands of the Chagos Archipelago is certainly that of Lazare Picaut in the *Elizabeth*, who reached Peros Banhos on 16 April 1744. He depicted on a summary chart the islets, surrounded by reefs, together with indicated tracks to show the route to take, soundings and the two places where he had anchored. Jacques-Raymond Grenier and the Abbé Rochon fixed the position of Diego Garcia in 1769. Two years later, Lafontaine was given orders by the Mauritius administration to map the island. Next, it was the turn of Joseph-Marie Du Roslan to produce a plan of the islands he spotted in 1771. This information was put together for the first time in 1775 by d'Après de Mannevillette in his *Carte réduit de l'océan oriental* and in Plate 22 of the *Neptune Oriental*. On this chart were shown the Three Brothers, Cornish Island, Diego Garcia, Chagos Island, the Peros Banhos group and Speaker's Bank. The first two of these islands had their respective positions transposed, compared with his earlier charts. The undiscoverable islands of Adu and Candu were still shown as well.

"In 1776, Pierre-Jacques Bourdé de la Villehuette, commander of the *Salomon*, had observed new islands to the west-south-west of Speaker's Bank. The first group, situated between 5° 14'' and 5°21" South and 69°51" to 70°12" East (of Paris), he named as the Bourdé Islands, and the second group, situated between 5° 24" and 5° 30" South and 70°25" and 70° 30" East (of Paris), the Salomon Islands. Also in 1776, some of d'Après de Mannevillette's charts were overtaken, with the publication by Grenier of new information, following a search aboard the *Vert-Galant.* His chart showed the islands and dangerous shoals between the north-west point of Madagascar and the south-east coast of India, taking into account both his own observations and the courses taken by 23 ships, including the *Elisabeth* in 1743-44, the *Cerf* in 1756, the *Diligente* in September 1757 and others between 1769 and 1775. An important commentary enabled him to correct the positions given in *Neptune Oriental* for certain points, including Mauritius and Nazareth Bank, and provide explanations for the route taken by Admiral Boscawen in 1748, by Marc-Joseph Marion-Dufresne, commanding the *Diligente* for the return voyage from Pondicherry in September 1757, and by himself aboard the *Heure-du-Berger* in 1768. This chart was engraved by Lattré and included by the Dépôt de la Marine in the *Hydrographie française*, together with a larger scale chart of the Chagos Archipelago. This last was a French translation from an English chart; Grenier had got hold of a copy, which he communicated to the Dépôt and to d'Après de Mannevillette, taking into account also the observations made by French navigators. Some islands, previously shown in two locations after being observed twice, were eliminated, for example the Three Brothers, which had been sighted both from the *Griffin* and by Du Roslan. According to the inscription on the chart, the positions of Diego Garcia, Chagos Island, the Six-Iles and Speaker's Bank had been confirmed by astronomical observations.

"Meanwhile, in the same year, Michel Sirandré, the hydrographer in charge of the Mauritius chart depository, put out a synthesis of the results of voyages undertaken by the French. He sent to d'Après de Mannevillette several charts, based on those in *Neptune Oriental*, but with corrections. These included general charts as well as those confined to specific areas. In this way, he produced a complete chart of the part of the Indian Ocean

extending form the Horn of Africa to the north-west, the northern tip of Madagascar to the south-west and the south of India to the north-east. This chart showed all the islands and dangers to be encountered on the route to India and included the tracks taken by three ships in 1776: the *Salomon* and the *Printemps* in January-February, and the *Bretagne* in February. Also included was a commentary on the positions given for islands and danger points. For example, the double representation of Diego Garcia, resulting from the separate sightings from the *Griffin* in 1749 and by Grenier in 1768, was eliminated as was that of Roquepire Island, shown in two locations in d'Après de Mannevillette's charts; and Cargados bank was shown singly rather than in triplicate. And so on. The result was that Sirandré provided a good synthesis of both the knowledge available in 1776 and, especially, the remaining uncertainties. He had had access to some English sources which he had cross-checked with his own. He too produced a large-scale chart of the Chagos Archipelago, showing the courses taken by several ships – the *Heure-du-Berger* in 1771, the *Cheval-Marin*, commanded by Deschiens de Kerulvay in 1775, those of Grenier and also those taken by an Englishman called Stevens [captain of the *Pitt*] in 1763. He suggested that the Chagos Bank might be identified with the mysterious Candu islands, and that Speaker's Bank (also known as Grantham Bank), could be a part of the Salomon group sighted by Bourdé de la Villehuette.

"At the start of 1777, d'Après de Mannevillette had produced a chart of the north-east archipelago, i.e., the Seychelles, of which he sent a first proof copy to Dalrymple for his advice. Dalrymple, for his part, had sent several extracts from the diaries and sketch plans made by English voyagers, as well as plans produced by Portuguese and Dutchmen, including some by Van Keulen, drawn from his personal collection. Essentially, Dalrymple thought, contrary to the French cartographer's view, that the older plans, where they dealt with detailed observations, should not be rejected *en bloc*, because they could still provide an outline of the layout of individual places, or provide information about localities mentioned in ships' logs. In the absence of more up-to-date information, an old plan could still serve a useful purpose. He made copies of several such, relating to Diego Garcia, which he sent to d'Après de Mannevillette.

English Exploration

"The first English encounters with the Chagos were fortuitous: by the *Stringer* in 1712, the *Grantham* in 1728, the *Griffin* in 1749, the *Egmont in 1760*, the *Cornish* in 1762, the *Speaker*, the *Pitt* and the *Admiral Pocock* in 1763. Beginning in the 1770s, however, they began taking a greater interest, perhaps as a counter to French efforts to establish themselves in the Seychelles. In 1771, the *Eagle* and the *Drake*, with two marine engineers aboard, W. Robinson and D. Thomas, were despatched by the Governor of Bombay to explore the Archipelago. They began by investigating the Seychelles, the Amirantes and other small archipelagos nearby, producing maps of, in particular, Eagle Island and Bird Island in the Amirantes. They then continued on their course towards the Chagos, where they observed a group of islands, probably the Egmont group, but did not reconnoitre them. This first expedition was followed by a second in 1772, by the *Terrible* and the *Eagle*, which had time to reconnoitre several islands before being subjected to a violent storm. The *Eagle* alone was able to continue the cruise and reconnoitre the

Egmont islands, the Chagos Bank and Peros Banhos. However, a dispute between her captain and the hydrographer brought the undertaking to a halt and ended in tragedy with a duel in Bombay, in which the hydrographer was killed. This resulted also in the disappearance of the charts made during the voyage, although Dalrymple obtained two – mutually contradictory – maps constructed by William Skynner, captain of the *Terrible*, before the latter's return to India.

"In 1772, the government in Bombay instructed Captain Thomas Neale in the *Swift* to reconnoitre several islands in the Sunda Strait, but also to establish the positions of the island groups shown on the charts as the Three Brothers and Seven Brothers, the latter possibly being identical with the Egmonts. After leaving Bencoolen in Sumatra, Neale transited the whole of the Chagos Archipelago, reached the Three Brothers and, most importantly, explored the lagoon of Diego Garcia. It was his report that that led the English in Bombay to decide to set up a small post on that island. In 1774, Adam Sheriff, captain of the *Drake*, was instructed to have the surveyor Dickinson make a plan of the lagoon. Although the idea of a settlement came to nothing as a result of the Indian wars, explorations by the English continued, with visits by the *Drake* in July 1774 and the *Success* in 1776, resulting in a map by Lt. Ringrose, which Dalrymple had published. Investigation of Diego Garcia resumed in 1786, when the English once more decided to establish a settlement there and instructed Lieutenant Archibald Blair to produce a map of the whole Archipelago.

Cartographic Co-operation

"Thanks to Dalrymple, d'Après de Mannevillette came to possess the charts and extracts from the log of the *Egmont* produced during her voyage from England to Bombay in 1760, similar documents from the *Grantham*, the *Stringer* and the *Admiral Pocock* in 1763, the *Pelham* and many other ships. At the end of October 1775, Dalrymple sent him the explanatory notes relating to maps made by the *Calcutta* in 1775 and extracts from the log of the *Swift*. Besides various detailed maps, for example that of Speaker Bank, made in 1763 by the vessel of the same name, that showing the route taken by the *Cornish* over the Chagos Bank or that produced by Captain Stevens in the *Pitt*, who, while crossing the Bank in 1763, made observations of the angle between the sun and moon to determine his longitude as 73° 25" East (of Greenwich), Dalrymple provided a composite map showing, like Grenier's, the courses taken by several vessels. In July 1777, Dalrymple drew to d'Après de Mannevillette's attention the errors made in the new French chart, resulting from his having confused the route taken by the *Kerkwik* with that of the *Pelham*, with the result that he had assigned the wrong position to the Kerkwik islands, which he had assumed to be the same as the Egmonts. In June 1778, d'Après de Mannevillette sent him a fresh version of the chart, which the English hydrographer judged wholly correct."

This was not the end of Anglo-French collaboration in map-making. Although d'Après de Mannevillette died in 1780, Dalrymple found it sensible to use the former's charts as the basis for continuing the task of achieving a complete and accurate map of the Archipelago. If one of the French cartographer's many achievements was to establish the Diego Garcia and

Chagos were one and the same island, it was Dalrymple's, with the assistance of Lt. Archibald Blair, to do the same with Six Iles and the Egmonts, and with Peros Banhos and the Iles Bourdé. He also disposed at last of the non-existent islands of Adu and Candu, which represented sightings of various of the Chagos islands by ships capable only of vague estimations of longitude.

[1]Manonmani RESTIF-FILLIOZAT, *L'Océan Oriental : connaissances hydrographiques françaises aux XVIIe et XVIIIe siècles*, thèse de doctorat, Paris, Ecole pratique des Hautes-Etudes, 2002.

Notes from the Secretary

By now most of you will have renewed your subscriptions, but if you have not, then consider the bargain of buying six years for the price of five, ie £50 or $100 until the end of 2010. Also, I would be glad to send you a banker's order form should you prefer that method.

If ever you need to refresh your knowledge about the price of subscriptions and publications, go to www.chagosconservationtrust.org where it is all laid out. This site also has a joining form which you can use when signing up your friends. We will in future be making greater use of electronic means of communicating with members and the web site, run by Frank Stewart, Executive Committee Member for the United States, is a beginning.

I am always pleased to receive comments and suggestions—even complaints—as is Frank, so let us know how you feel. My email address is simonhughes@hughes-mccormack.co.uk.

Some copies of ***Chagos News*** back numbers are available from johntopp@btopenworld.com price 50 pence each plus p&p.