

# NESS INFORMATION SERVICE

## NESSLETTER 147

### JULY 2004

#### HOLIDAYS '03

Saturday July 26<sup>th</sup> '03, time 5.50, and I was back on the Old Abriachan Pier. The ladies, my wife Doris and her sister, Audrey, had been settled into a very nice caravan on the Foster's croft up the hill in Abriachan itself. Our fresh van had done the trip north, to the loch, without a hitch. Another Ford Transit ex-minibus/taxi, a bit younger than our old red Transit which had finally succumbed to the dreaded corrosion. I had been very busy for some weeks, transferring the caravan fittings from old van to new, and fitting it out ready for our holidays at the loch. I had also had it newly converted to run on LPG, as the old van had done. This, unfortunately, was somewhat more costly than I had hoped, as the fresh van has a petrol injection engine and the conversion from the old van could not be cannibalised, apart from the tank, so it took a complete conversion kit. I will get my money back, and make a profit after some time. I also feel I am doing my little bit to curb vehicle emissions and save the planet!

As I settled in the loch was a bit rough, but during the evening it calmed down quite a bit. It was good to be back and I was pleased that the strange feeling of melancholy which had come over me the previous year, did not return. About 7.30 an Osprey flew by, fairly close to the pier and turned into the trees on the Clansman side.

Early Sunday morning the loch surface was not too rough, and I was entertained by a circling Buzzard. Then as the wind strengthened it became quite rough, with foam streaks and whitecaps. Up the hill to collect the ladies, they had found everything very satisfactory with the caravan. We drove down the loch to Fort Augustus. We had a quiet stroll around, disappointed to find the Abbey gates closed and locked, with no obvious signs of life. I have since heard that it has changed hands yet again, this is about the third or fourth time, but I understand there is a better chance of development this time, and that the local community is also involved. We finished up at the canal end, with it's wonderful view up the loch, for a while. Back on the pier by early evening, watching a rough loch.

A rough loch greeted me on Monday morning. Getting the ladies we went into Inverness for some shopping and a bit look around, doing the touristy thing. Then out to Dores where we found Steve Feltham on the shore, by the Dores Inn. I was able to spend an enjoyable time discussing loch matters with him. Also there was 'Richard', I think that was his name, not sure of his surname either. He is connected with the Exeter based 'Centre for Fortean Zoology' (Animals and Men), nearing the end of his stay at the loch. We made tentative arrangements for him to call at the pier so we could spend some more time together, perhaps the reason why I did not write his name down, there and then. As it was we did not manage to get together again. One of the things we talked about was theories as to what may be in the loch, and I passed on my thoughts about 'Giant Eels'. I will return to this before too long. It was raining when I returned to the Old Pier, but the loch was calming. The rain passed and as it grew dark the loch the loch calmed right down.

Early Tuesday morning the loch was fairly calm, but it had calmed even further as I left to get the ladies. We just went along to Drumnadrochit, bit wander round, then to LN 2000. No sign of Adrian, so we sat on the lawn and had ice cream. Then it was round to Strone to see Alastair and Sue Boyd. We had a good natter, it is good to catch up with the news, and the grass in front of the chalet with it's wonderful view over Urquhart Bay is just the place to do it. A drop more rain as I returned to the pier, it did not last. Then a little later I was visited by NIS member Val Smith and son Jonathan. We had a long talk about Ness and connected things, with tea and biscuits. While Alastair's view over the bay is truly panoramic, down on the pier you can hear the water and waves on the shore.

Wednesday morning the loch was very calm, unfortunately it was a grey morning, with misty drizzle. It had dried up and the sun was trying to shine when I left. We made it a real tourist day, going to Carrbridge then to Grantown. Heading back to Inverness by Forres and Cawdor Castle. I had heard that Bob Rines was at the loch and managed to contact him by phone. I received an invitation to a presentation that was to be held in the Council Chambers, Inverness, the following evening. I got back to the pier, to a beautiful calm surface, but the wind did increase and the loch developed small waves. I had a brief visit from another NIS member, Jared Christie. Jared had recently moved North to live in Drumnadrochit.

Thursday, another wet morning with a calm surface. The sun did manage to shine later in the day which was as well because we went to the Drumnadrochit Highland Gathering. After taking the ladies back to the caravan, at tea time, I made my way into Inverness. I was to attend the Frank Dougherty Memorial Presentation. The invited audience was mainly members of the Inverness Field Club, Mr Dougherty had been a prominent member, with some members of the press, as well as geologists and geographers from various universities. Frank Dougherty, a keen amateur geologist, had assisted Bob and the teams from the Academy for many years, died in July '02; hence the 'Memorial'. Steve Feltham was there, as were Maralyn and Adrian Shine, Adrian presented some video, as part of the lecture. The main thrust of the evening was to present the evidence the Academy had obtained that, almost certainly, proves that at one stage Loch Ness was part of the seas. Courtesy of Bob, I have a pamphlet, reprinted from Journal of Scientific Exploration, that gives all the details. With a bit of juggling, I hope to be able to reproduce this and include it with this Nessletter.

One of the other items presented during the evening, was the video and account of their attempts to retrieve one of the 'underwater mushrooms' which had been found. Deep Sea Systems International, of Louisiana, designers and builders of ROVs for the oil industry and scientific research establishments, had put their most sophisticated vehicle and two senior personnel at the Academy's disposal. Bob was keen to continue the search of areas of the loch floor that were calculated to be likely resting places of remains. On one of these sorties, 600 feet down below the Horseshoe Scree, they had chanced upon some very strange, hereto unknown, growths. Orange in colour, mushroom shaped, ranging from four to ten inches in diameter. This ROV with cameras, sonar, lights, arms, etc., sends information to the surface where it can be recorded on CD and Video, had previously been used in polar regions to determine radiation and pollution levels by the National Geographic Magazine and National Oceanic & Atmospheric Survey. However it is not the most delicate of tools. I watched with some alarm as the video showed this articulated arm, like some knight's lance, seeming to charge at this poor little 'mushroom', which proceeded to disappear in a cloud of waterborne particles. Whatever they were, they did not have much substance, and it would take an extremely delicate touch to bring any of them to the surface. We saw an attempt with a suction tube, which did manage to collect some of the exploded particles, but then lost them on the way to the surface. A degree of success was obtained using a pair of Vaseline coated ladies tights made into what resembled a child's fishing net. This did allow some of the pieces to be brought to the surface, for analysis. We await the results. It is easy, with hindsight, to assume that it should have been considered that these 'mushroom' would be extremely fragile, they could, of course, have been as tough as pondweed.

It was late when I returned to the pier, the loch not easily visible through the rain, in the dark. It had been an enjoyable, informative evening, to use one of Adrian's expressions, very convivial.

Friday was a sunny morning with a rough loch. We did some shopping in Inverness, as we made our way to Moy for the Games Fair. A dry, but windy, day, we saw Heather Cary's booth, being looked after by someone else, as she was busy somewhere on the field, had a brief word. Back on the pier for the evening, loch very rough. Later a group of six mergansers was hunting in the large waves by the pier. I know it is nature and such birds are superbly adapted to the water, but I still watch them with admiration. Not at all bothered by the crashing waves.

Saturday was a dull morning with the loch still very rough. We just took a quiet run into Drumnadrochit, had heard there was to be a pipe band there, it did not show. A bit of light rain so I took the ladies back to the caravan, they were showing signs of tiredness, age and not the best of health taking it's toll. I returned to Drum and managed a few words with Adrian at LN2000. I then went round to Strone where I spent an enjoyable hour with Sue and Alastair. I got back onto the pier just in time to receive Dick Raynor. We had a very good hour together.

The loch was still very rough on Sunday morning, and dull with it. Along to the Clansman, they have a very nice shop there and Doris always gets bits and pieces to take home for family and friends. Along to Drumnadrochit to get a paper, bumped into Adrian and Maralyn in the shop, they asked when I would be back on the pier. We drove up the Glen, to Bearnock for lunch, a very nice little restaurant which we use. Then on to Inverness, the scenic way via Cannich and through the hills. We had a look round the Floral Hall before returning to the caravan. I was back on the pier just after five, followed down the track by Adrian and Maralyn. This was unusual, if not a first, as Adrian is usually tearing about doing things connected to his position at LN2000. It turned out there was an ulterior motive, they wanted a photograph of me with the loch in the background. It was to go on the LN2000 website, they have section about the 'strange' people that are still 'monster hunters' and will have pictures of them, Alastair Boyd, Steve Feltham, myself among others. They stayed for an hour and we had a good chat, along with tea and biscuits. I always enjoy time spent with Adrian, we differ on a number of aspects

concerning the loch and what may be in there, but can always have a sensible discussion. With Maralyn there our conversation broadened to other topics. It rounded off a very nice day.

Monday, a dull morning, but a calm surface. A patch of rain moved through and over the hills behind Dores. Another day round the shops in Inverness. We usually take our lunch up to a parking place by the river, overlooking the Ness Islands, on days like this. Small waves on the loch when I returned to the pier.

Low cloud with some mist on a calm surface, when I first looked out on Tuesday morning. The surface remained very calm, but thicker mist had rolled in from Lochend when I left the pier. We drove along to Nairn, we have a walk up and down the main street, before taking the van down to the sea front, which we always enjoy. Have I included this in a previous Nessletter? Just to explain, when I say 'take a walk' or any activity with Doris and Audrey, it is a little more complicated. Doris has her electric 'trike', unloaded from the back of the van, as is Audrey's wheelchair, which I push. On the front we could see we were just on the edge of a bank of fog/mist, which filled the firth. On the way back we went to Fort George, finding it was in the mist, with a cool breeze, which was too chilly for the ladies, so did not stay long. Back on the pier, the loch was still very calm. Jared Christie dropped in again, we sat and talked and watched as it turned dark, very pleasant.

After some overnight rain, Wednesday dawned, with a calm loch and thick mist. The sun was trying to get through it, so it looked promising. We had nothing planned, until later, so I went up to see if the ladies would like to spend the morning on the pier, by the loch. As I reached the top of the hill I ran out of the mist, into brilliant sunshine. A little further along the narrow road I came across an extraordinary sight. For nearly 100 yards the long tussocky grass, of the 3 to 4 yard wide verge, was almost completely covered in cobwebs. These were flat, horizontal, across the tops of the grass. They were covered in moisture, from the retreating mist, and glinting in the sunshine. Really breath-taking. A little later as we as we returned to the pier, the sun had moved round and the effect had been lost, as had some of the webs as they broke up. How many little spiders did it take to produce that amount of silk?

We spent a very nice morning, by a flat calm loch, in glorious sunshine. Later we returned to the caravan for lunch. I left the ladies there, and went along to see Alastair and Sue at Strone. When I got there I found Adrian there, getting another photograph for the website. Later I went back for the ladies and we went up to Tychat, as we had been invited to by Bob Rines. We had a good hour or so with Bob and his wife Joanne. It had been some time since he had seen Doris. Many years ago we always seemed able to spend time together, as families, with Bob and his late wife Carol and their son Justice. Our daughter, Heather, and their Justice are just months apart in age. Late back onto pier, to a loch that was still calm.

Another perfect surface, with some light mist for Thursday morning. This was the Black Isle show day, a large agricultural show we usually attend. If anything it was too hot with unrelenting sunshine most of the day. It was a good thing that Audrey had arranged for an electric trike, from 'Shopmobility', I doubt if I would have managed the wheelchair too far. We were there most of the day, having an enjoyable time. Back to Abriachan via Lewiston, West End Garage, to say good-bye to Christine and George, and fill up with gas for the journey home. Bit late back on to pier, not too late to miss Val and Jonathan Smith, thank goodness. They had been seeking me the night before, without luck. They stayed for over an hour, leaving in the dark.

My last morning, Friday, was a calm surface, ripples, over the bit of the loch I could see, the rest was mist. Up the hill to load the van and leave the key for gate on the track to the pier with the Borlands (the Old Pier owners). Away for home, we went round to Dores, but there was no sign of Steve. There is a new road from the Dores side of the city, to the A9, so it was not necessary to back into Inverness.

Another good visit to the loch, and a nice holiday. One thing I did miss out on was visiting Bob's Academy team, they were using the area by the lighthouse at loch-end, Bonar Narrows. Here they were preparing their equipment ready to get it into the water. I did not learn of this until Wednesday evening, a bit late to organise myself. One more thing that was missing was, of course, any sign of my quarry!!

As we left I wondered if, perhaps, that was the last time. Whilst Doris and Audrey enjoyed themselves, it is obvious that the travelling, and just going round places, is getting a bit too much for them. However early in the year Doris was keen for me to get the caravan booked for this year (04). I did but could not get our usual time, so we will be back at the loch from 7<sup>th</sup> August to 20<sup>th</sup> August, all being well!

#### GIANT EELS

Let us begin with a question. Are there Giant Eels in Loch Ness? There is no proof of this, no one has caught one. Over the years there are a number of accounts, said to come from divers, that large eels have been seen, even an instance of 'hairy eels'. I believe there is a good case to support the idea that there may be large

eels in the loch. It was these, long held, thoughts that I was sharing with Steve Feltham and his visitor on Monday 28<sup>th</sup> July. There is a large population of eels in Loch Ness. In 1970/71, I was with the LNI and we had an eel catching programme, where ever we put traps or lines into the loch, at various depths, we caught eels. They were measured, weighed, some were dissected for further study by zoologists and biologists. They were the average eel. I do not remember numbers, but it must have been into a few dozen. There were one or two that did show slight anomalies. We did try our hand at catching something larger. I constructed a trap, some 12ft x 4ft x 4ft, with a spring loaded door, from timber and chicken wire. This we used to deploy off the shore below Achnahannet, baited with fish or kipper, without success. The bait used to go, without triggering the rat-trap activated mechanism, eaten by smaller eels. We did have one strange episode. We had been donated some stainless steel hooks, on braided wire traces, by Eustice Maxwell, brother of Gavin 'Ring of Bright Water' Maxwell. These two inch hooks we used singly, baited and anchored beneath a buoy. We had one taken!! The wire trace had been twisted and snapped (NIS 82 July '87). Some years ago one of the locals at Abriachan did some commercial eel fishing, he kept his boat on the shore by the Old Pier. His catches were sent, by over-night train, to London, Billingsgate fish market. Whether it was really viable I do not know but he did it for a few summers. Large eels were also mentioned in NIS 116 Jan '94, as well as earlier numbers.

So there are significant numbers of eels in the loch. We are told they come in as elvers and reach maturity in about eight years, this averages some 3lbs weight. Instinct then urges them to return to the sea and make their way to the Sargasso Sea to breed. My thoughts are. What if from time to time an eel, does not get this urge? It just stays in the loch, and grows. It may need to make a change from being mainly a scavenging feeder, to being more of a predator, similar to the Ferrox Trout. Then it begins to eat smaller eels and has a food source that enables it to grow to a very large size. Vast volume of water, no predators, large food supplies, what more could a 'giant eel' wish for. Consider if this phenomena happens from time to time, every few years, there could be a rolling population of large eels in the loch, as the very old ones die.

Imagine my surprise to see a copy of Sun, dated, Sept 22 '03, with an article with the large headline, 'Nessie is a 100 year old Eunuch Eel'. This article set out my thoughts exactly as I had expressed them that afternoon by the loch. My 'eel without the urge' had become an 'Eunuch', makes a better headline I suppose. By Will Barker, exclusive, he had the story from Richard Freeman of the Centre For Fortean Zoology!!

Then in the April '04 Fortean Times, 'In search of monsters' Jon Downes director of the Centre for Fortean Zoology has an article, in which he says that he has a somewhat ambivalent outlook about Nessie. He has never been able to come to terms with a viable population of prehistoric reptiles, primitive whales or long necked seals in the loch; or floating vegetable mats or misidentifications of normal things. So for the last 15 years of his professional career he has done his best to ignore the whole subject. Rather a strange outlook for a 'professional Cryptozoologist'. The article then goes through various aspects of the mystery, and what do you know, finishes up by presenting the 'Eunuch Eel' as a possible solution to this mystery. To be fair he does say that it does not cover everything.

Why this interest in 'Giant Eels'? Is it an attempt to provide an ordinary explanation to the question of what is in Loch Ness? Over the decades from the '30s, even before, there has been the accumulation of so many reports of something larger, stranger, than normal being seen in the loch.. Explanations were sought. The first major attempt, perhaps, being the Loch Ness Investigation, in the '60s/70s. Back then, I think many were looking for Plesiosaurs. The small head on a long neck, the upturned boat shaped back, occasionally appendages or flippers, all from eye-witness accounts. The answers were there, Loch Ness had been connected to the sea, there was an adequate food supply, there was even the Coelacanth, the 'living fossil' to support the idea that Plesiosaurs could have survived to the present day. To digress a moment, Marjorie Courtenay-Latimer the discoverer of the 'extinct' Coelacanth in 1938, died aged 97, on 17<sup>th</sup> May 2004, a remarkable lady. Over the ensuing years closer appraisal has been made of what was 'known' in the '60s. A number of expeditions have probed the depths and more has been learned about the loch and it's history, food supplies, timings of ice ages and so on. With this more careful approach it has become extremely doubtful that creatures such as Plesiosaurs could still exist. However, there is still the question what is in Loch Ness? If we do not wish to replace one unexplainable mystery with another, we do not turn to the paranormal. The requirement is for something natural and fairly normal, that could almost be expected to be there, that was the Plesiosaur!! Do we turn to the 'Giant Eel' or perhaps Adrian's 'Sturgeon'. That is another contender. It can be argued that there is a possibility that sometimes these fish do enter the loch. I think a large eel lying at the surface, head and tail drooping, back protruding, would give a passable imitation of 'an upturned boat'. But as soon as it began to move, the

sinuous side to side movement would not fit in very well with accounts of 'a back surging along' that we have heard about. This argument would also hold good in the case of the Sturgeon. Also how are 'head and neck' reports to be explained? Are we to ignore them or belittle the witness, make light of what they report. I have held the 'Giant Eel' theory for the best part of thirty years and while it does suggest there could be something very large living in Loch Ness, I feel it falls far short of providing us with satisfactory answers to much of what is reported.

I will have to make do with that. I have an account, questionable, of a large eel on the Dores shores. Reports of awards for various services and work connected to the loch., along with other news. If I go over the page, it means I have to fill two, and it takes an inordinate amount of time to do so. Thank you all for your continued support and tolerance. The more mundane aspects of everyday life seem to occupy so much of my days. My attention span seems much shorter, as well. Anyway thank you all, your news and views are always needed and welcome, even if they do sometimes seem to disappear. My address remains:-R.R.Hepple, 7 Huntshieldford, St John's Chapel, Weardale, Co Durham. DL13 1RQ Subs UK £3.00 USA \$10.00 Tel. 01388 537359. Now to test my juggling skills. Rip.

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## FIELD RESEARCH REPORT

### Proof Positive—Loch Ness Was an Ancient Arm of the Sea

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**Abstract**—For the first time, indisputable marine deposits have been recovered from Loch Ness. Recovered clam shells have been reproducibly dated by the radio-carbon (<sup>14</sup>C) method to about 12,800 years before present (BP), which corresponds to the end of the last glaciation. Hitherto, this oceanic incursion has been doubted or denied by many observers. Such a period of marine incursion is crucially demanded by the hypothesis that the Loch Ness "monsters" are or were a reproducing population of creatures too large to move in and out of the loch under current conditions. Even more remarkably, aminoacid racemization indicates an age of about 125,000 years for some of the deposits, corresponding to the previous interglacial period. If the latter dating withstands further investigation, current beliefs about the chronology of glaciation and land-and-sea-level changes at and around Loch Ness will have to be modified.

**Keywords:** Loch Ness (marine incursions)—Ice Ages (Scotland)

## Introduction

This report addresses the latest findings of the Academy of Applied Science (AAS) Loch Ness research team ([www.aas-world.org](http://www.aas-world.org)), supplementary to the results of previous forays. Particularly in the early and mid-1970s, sonar and underwater photographic evidence was adduced of large, possibly once-marine animals in the loch (Rines & Scott, 1975; Rines et al., 1976; Ellis, 1977; NOVA, 1998; CBS, 2001). This evidence has been recently reviewed and analyzed by Bauer (2002).

As Bauer recounts, there have been disbelievers and skeptics and even some who just dismiss the possible validity of this evidence out-of-hand, and, in particular, that school which doubts the entry of the ancient sea into the Great Glen Fault or Rift that might, indeed, have enabled large sea animals to enter the rift now occupied by the totally fresh water of Loch Ness, whose surface is some fifty feet above current sea level.

According to established geological theories as to the formation and glaciations of Scotland and England, the periods of their glacial overrun during Europe's Great Ice Age more than a hundred thousand years ago were followed by a long interglacial period until the most recent glacial period, which is generally believed to have ameliorated about ten to fifteen thousand years ago

(Kirk & Godwin, 1963; Ruddiman & McIntyre, 1973; Sissons, 1974; Peacock et al., 1980; Sutherland, 1986; Overpeck, et al., 1989; Bauer, 2002). Some of these theories entail the total absence of the sea from the Great Glen Rift.

Startlingly, in August of 2001, and fortuitously again in June of 2002, the AAS team found and unequivocally verified the presence of ancient sea beds, ancient marine clam shells, and colonies of former ancient sea life buried under the silty bottom in about 325 feet of fresh water in Urquhart Bay, midway between Inverness in the north and Fort Augustus at the south end of Loch Ness.

### Proof Positive—The Sea Was in the Great Glen Fault

Loch Ness has now electrifyingly revealed the secret of its ancient, though perhaps periodic connection to the sea, and at long last has given up physical remnants of the smaller sea animals and sea life that once occupied that portion of the Great Glen Rift and that we have now positively dated by both radio-carbon (<sup>14</sup>C) and aminoacid reaction-rate procedures.

It was the serendipitous recovery of such remnants while the AAS team was pursuing its July-August, 2001, underwater search for further evidence of large animals earlier reported in the loch, that provided the breakthrough about which this paper reports.

We were then exploring the mouth of Urquhart Bay with our underwater video camera sled, a "remotely operated vehicle" (ROV) (Figure 1) controlled by a seven-hundred-foot tether cable from our fishing-vessel tender, the *Boy David*. A strong southwest wind rather suddenly came up and started a serious dragging of the tender's Danforth anchor that signaled to us that it was time to terminate our experiment and recover the ROV. While it was not a great problem to bring in the ROV despite the wind and waves, and to secure it to our stern, the anchor, on the other hand, had become lodged from its wind-driven deep dragging in the ridges of the somewhat rocky bottom. For some time, it stubbornly resisted disengaging, even under powerful electric winching and the expert seamanship of Ken and David Skea, our crew. Luckily, however, the hinged blades of the anchor suddenly released their hold on the deep sub-bottom and the anchor was retrieved and it rested on the gunnel of the vessel.

Frank "Doc" Dougherty, our recently departed beloved geological expert from Inverness, and Ken Skea were among the first to notice a much darker collection of bottom "mud" or "clay" stuck on one of the anchor blades than we had ever seen on many earlier bottom dredgings and video inspections of the loch. In the mud were buried two 3-cm clamshells—certainly not indigenous to what freshwater Loch Ness had earlier yielded—and other broken shell and fragmentary ocean bottom matrix material as well (Figure 2). While the usual procedure was to throw a bucket of water over the anchor to clean off the debris, we fortunately had the presence of mind carefully to recover and retain these materials, and we now address the secret that they ultimately revealed.

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Fig. 1. The "remotely operated vehicle" (ROV), which was controlled from an anchored tender at the surface; tether cable visible from mid-ROV and stretching to upper left; lights visible at lower right.

The obviously de-calcined and old state of the clamshells raised the immediate suspicion—even in those of us acquainted with, though not expert in, marine life—that we were dealing with ancient sea deposits, and probably not just kitchen wastes dumped into the loch by early castle dwellers in mediaeval times who may have discarded sea clams obtained from the coast, or even earlier "middens," or from passing boats in recent centuries. Despite being de-calcined and old in appearance, the two complete shells—which incidentally were not a matching pair—once cleaned, turned out to be in exceptional condition (Figure 3).

Careful scientific analysis carried out by our colleagues, naturalist Adrian Shine and marine biologist David Martin of the Drumnadrochit Loch Ness Research Project, who enlisted the further expertise of Professor Ian Bomber of Newcastle University, yielded positive identification of these clam shells as sea "blunt gapers" (*Mya truncata*), and identification of the material in the matrix clay deposit as totally of marine origin, containing, specifically, fragments of echinoid (sea-urchin) spines, foraminifera (*Elphidium carlandi*, *Elphidium excavatum* [sensulate], and *Lamarckina* halotoides), ostracods (*Semicytheria nigrescens*, *Hirschmannia viridis*, *Cythere lutea*, and *Sarsi-cytheridea biadii*), and other sea mollusk bits (Shine et al., 2001).

Were old marine deposits buried in the bottom of this part of Loch Ness? Definitely yes, but how old?



Fig. 2. (a) The anchor with relatively small sample of clay matrix and already washed clam shells. (b) Frank Dougherty with photos of recovered marine deposits and clam shells.

Our Academy enlisted the assistance of three sets of world-class  $^{14}\text{C}$  and amino-acid-ratio marine-biology dating institutions and experts to answer this question. First, they all unanimously verified the total marine-origin character of our materials.<sup>1</sup>

Geochron Laboratories of Cambridge, Massachusetts, using the Livermore Laboratories Van der Graff high-energy accelerator, provided  $^{14}\text{C}$  dating technology; similarly and independently, Woods Hole Oceanographic Institution,

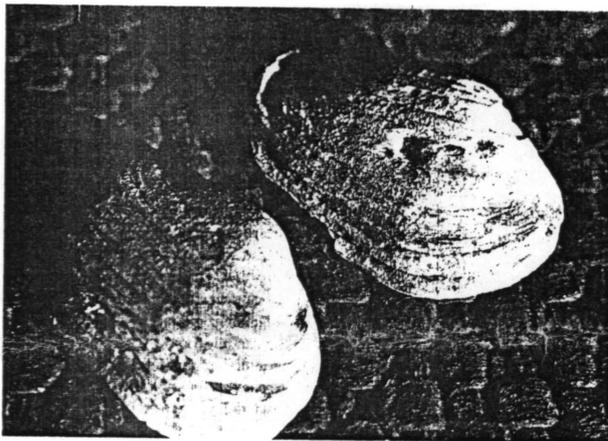


Fig. 3. The cleaned clam shells, two bi-valve halves.

Massachusetts, through Dr. Ann Nichols and Kathryn Elder, applied their  $^{14}\text{C}$  electron-beam-accelerator dating technology; and Newcastle University, through Dr. Ian Boomer, dated deposits by the aminoacid reaction-rate or ratio measurements (Miller & Brigham-Grette, 1989).

Before announcing the results, it is significant to report that others have earlier determined by various approaches the date of the last or most-recent glacial retreat and ice-free condition of the environs of the Great Glen Rift. One such study by  $^{14}\text{C}$  dating of nearby lake-floor sediments yielded an age of 12,810 BP  $\pm$  155 years (Kirk & Godwin, 1963). Another, by measuring Atlantic warming and the return of normal air temperatures as polar water withdrew from Scotland, gave a date of 13,000 BP (Ruddiman & McIntyre, 1973). Yet another, by  $^{14}\text{C}$  dating of marine shells from the Clyde Estuary, determined that deglaciation had been completed by 12,600 BP (Sutherland, 1986).

Clamshell fragments broken off one of the 3 cm clams and from other shell bits in the bottom material matrix that we recovered in Loch Ness, were, as before mentioned, submitted for  $^{14}\text{C}$  dating. This yielded indistinguishably the very same dates as the end of the last glaciation: 12,840  $\pm$  50 years BP ( $^{13}\text{C}$ ; Geochron, 2002) and 12,800  $\pm$  55 years (Nichols & Elder, 2002).

The sea was thus in the Great Glen Rift for centuries after the last glacier had receded and before the loch became land-locked by the relative change of land and sea levels. This fact must now be considered to modify earlier theories of the

geological formation of Scotland and the effects of the last glacier in the Great Glen Rift—not to speak of the Academy's particular interest in the centuries of exchange of sea animals with the basin now known as Loch Ness.

In June of 2002, we returned to the loch and repeated our experiments—fortuitously re-locating this former seabed under Loch Ness and again recovering further samples of precisely the same type of ancient shells and sea-bottom matrix.

Yet this is not the full story.

As a setting for the reporting of our additional findings, we first call attention to the earlier-mentioned evidence of others that the previous Great Ice Age of Europe had receded over a hundred thousand years ago and left a long interglacial period until the development of the most recent glacier. This may be highly significant to our further disclosure that, by aminoacid reaction-rate dating, Boomer et al. (2002) have reported,<sup>2</sup> and verified under different temperature hypotheses, that the ancient sea-bed-matrix material we recovered appears, indeed, also to be coincidentally in the range of about 125,000 years old!

In trying to reconcile the order-of-magnitude difference in this dating from the  $^{14}\text{C}$  dating, we observe that while the aminoacid results are known to be beyond the range of  $^{14}\text{C}$  dating, is it conceivable that the younger dating could result from some phenomenon such as the re-precipitation of shell carbonates?

Or could it perhaps, and more probably, be that some of the ancient sea bed we stumbled upon actually was formed by the ocean entering the rift after the melting of the Great Ice Age of Europe 125,000 years ago? And again, after the interglacial period and the forming and then the melting of the last glacier about 12,800 years ago, did the sea once more enter for thousands of years until Loch Ness became land-locked? And might there be ocean and shell deposits from both incursions of the sea, tens of thousands of years apart, in our recovery?

In such an event, for over a hundred thousand years or more (over a thousand centuries), whatever animal life was in the sea, both between and after successive glaciations, could have freely entered and left and lived in the Great Glen Rift in the very volume now occupied by pure fresh-water Loch Ness.

Our presently incomplete but continuing studies and analysis in the area off the Urquhart Castle peninsula, which overlooks the ancient-sea-bed site of our discovery, and which somehow miraculously was protected from the glacial erosion and destruction suffered by the rest of the Loch Ness region (several experts agree it should not still be there), appears to have some other surprises in store on which, upon further verification, we hope to report in the near future.

#### Notes

<sup>1</sup> Deceased

<sup>2</sup> "Loch Ness clams—Age 12840  $\pm$  50  $^{14}\text{C}$  years BP ( $^{13}\text{C}$  corrected) ... The age is referenced to the year A.D. 1950" (1950 is defined by convention as "0 BP")—Geochron (2002).

<sup>2</sup> "Our kinetic analysis would suggest that a late Devensian age for shells in this region is too young ... the DMK values would still put the shells beyond the limit of radio carbon"—Boomer et al. (2002) on amino-acid-ratio measurements of the matrix materials.

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