

Occasional Erratics



Newsletter of the
MEDWAY FOSSIL AND MINERAL SOCIETY

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The editor of this edition of the MFMS Newsletter was Nick Baker

**Cover picture
Grand Teton, Grand Teton National Park, Wyoming, USA**

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Editor's notes.

Well, by Mid-December we will have been back to our physical meetings for three months, and mindful of the fact that we are not out of the woods. One hopes that the Omicron variant will be less potent than the predecessors, although evolution can work either way. We have been up to our old strength in numbers, less some with extra safety concerns. We are minus some among the permanent membership since coming back, but we have gained two ladies—Purdey and Bev.

During the past 20 months or so it has become apparent as to how much geology is a science that requires close social interaction, a situation that the pandemic has not allowed. And so it is always tempting to override the required restrictions in ones enthusiasm for the practicalities of the science. Thus far, we have been fortunate. I have to say, in all that we do, fortune plays a big part. Soon, we shall have the Christmas break and will be able to make calculated forward-glances at January 12th, when we hope to return for the New Year. Well, that's what I was thinking on December 7th. However, on the meeting on the 8th we decided to make the meeting of the 15th as a zoom meeting, based on The Jurassic Coast—by Bev Mason and Purdey Brown.

The meetings of this autumn have gone well, and I think we should give a big thanks to Tony for his continuous supply of a computer, at some risk to himself. And also those who carried out that important activity of washing up. But I wish to also thank everybody for their support at this uncertain time—but not forgetting those whom have more definite risks to consider. I hope, in better times we will all meet again and soon.

George Cook has taken over the role of webmaster. Fred is retiring from that task, and I'm sure we all thank Fred for his work over the years, not just as webmaster, but also other aspics, particularly in advertising our activities. The preparations for the Kent Show in 2019 comes to mind. I hope we can repeat it again in the not too distant future.

In the past editions of this letter, the frontispiece has always been of a local feature. However, this time I am acting as if going far afield, although, for Gary, Grand Teton Nation Park was a real journey—and one of his articles included here.

I will give a report of our meetings in this autumn at the end of the letter. So, far we do not have a schedule for next term—may be Jan 12th will be the start, depending on other factors, but now we are headed way out West—but first of all, we are going to visit a little museum. So, over to Gary.

Magnificent Museums Part 1, Campanian Mineralogical Museum.

by Gary Woodall

I know most of you enjoy visiting museums, especially geological ones, but probably most types. Also I presume everyone has been to the Natural History Museum and probably some of you have seen the great museums in large cities around the world, American Museum of Natural History in New York, Royal Ontario Museum in Toronto, The Hermitage in St Petersburg, the list goes on.

Much as I do really enjoy visiting these great museums I get as much pleasure seeing the small local museums, often located in a small room at a university, at the council offices or perhaps even above a shop. Some of these are specialised and deal with just one subject, hopefully given our joint interest that is geology. But around the world, in small towns and especially on small islands in the Caribbean, it is the museum with 'a bit of everything' that I find most interesting. In this series of articles I will talk about some of the smaller museums I have visited on my travels.



Appropriately, as in this newsletter is my article on the Sorrento region of Italy. I will describe the Campanian Mineralogical Museum which is in the small town of Vico Esquense a few stops on the Circumvesuvio railway north of Sorrento.



The museum is a bit difficult to find, and when we visited in 2008 it was above the council offices in the town. We had to ask directions and the man not only told us he took us to the door. I understand in 2011 it moved to the 17th century ex-convent of the Holy Trinity so is hopefully easier to locate now. Once inside it can be seen straight away how impressive the museum is. Cabinets full of mineral specimens from around the world can be seen.

The museum was started in 1992 with the donation by Pasquale Discepolo of his worldwide mineral collection of some 5000 specimens. Since then the museum has acquired more exhibits especially concentrating on Italian minerals and specifically those from Vesuvius. It has also broadened its scope to include anthropological and paleontological sections. In 2005 a large collection of seashells was donated.

Probably the most interesting exhibit is that of minerals from Vesuvius. I am not a mineral expert but when a mineral is called Vesuvianite I can guess where it comes from. (though I believe it can be found elsewhere, but was first found on Vesuvius). I particularly liked the volcanic bombs on display.



The palaeontological displays have fossils from around the world, many of you will have similar ones in your own collections or will have seen them at 'gemshows'. But the pride of the collection is a faithful reproduction of "Ciro", made by palaeontologists from the Natural History Museum of Milan. *Ciro* is a baby dinosaur *Scipionyx samniticus*, found in Pietraraja, Italy, and is the only dinosaur to have been discovered complete with its internal organs.



So that ends the first of my series of articles on small but magnificent museums. In the next newsletter I will talk about one of my favourite museums that I have visited, and it doesn't contain a single original specimen. All its displays have been man-made specifically for the museum.

American Parks Part 7: Grand Teton

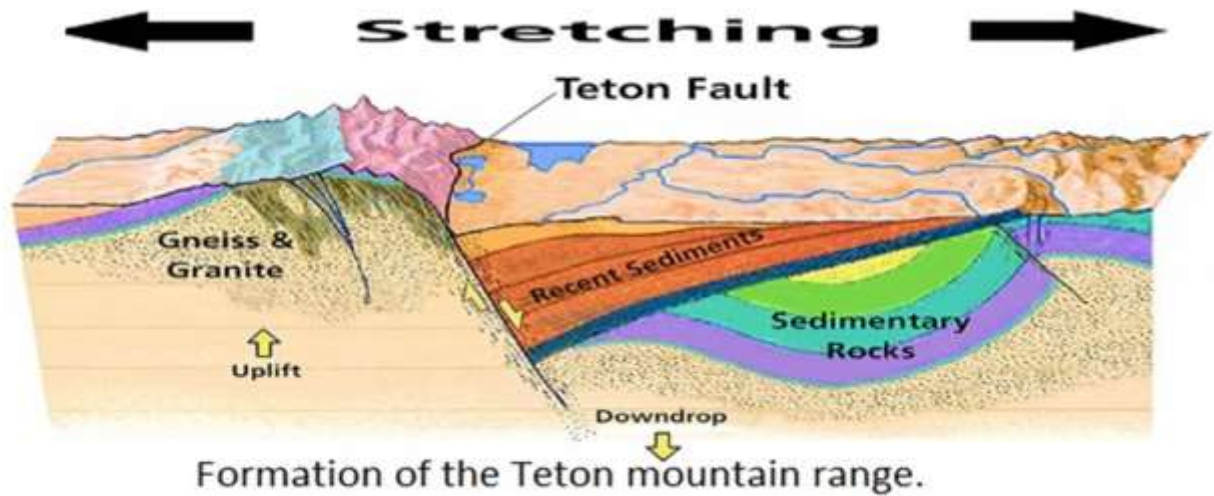
by Gary Woodall

Yet another park on the 'US national parks route' is Grand Teton National Park. Though luckily this one is usually included in the itinerary as it is immediately south of Yellowstone and has to be driven through. The park deserves more than a couple of stops as it has fantastic scenery and walking trails.



View of Tetons across Oxbow lake.

The park is only 26 miles long and has a total area of 485 square miles. It was established to protect the Teton mountain range which is an offshoot of the Rocky Mountain range. The mountains are mainly composed of Pre-Cambrian gneiss and granite. Around 10 million years ago a fault developed and eventually the western side was uplifted to form the mountains. (see next page)



The mountains are not particularly high, the highest peak Grand Teton is only 13775 feet high, has no foothills on the eastern side so the mountain range rises straight out of the valley making them look much taller. In the valley the Snake river meanders and there are several lakes, Oxbow being a classic cut off meander, and offers the iconic view of the Tetons.

Very often a strip of cloud can be seen halfway up the range. This is caused by the air rising as it hits the mountains, reaching its dew-point and condensing into clouds, but there not being enough moisture to form a large cloudbank. (Nick can explain this far better than I).

Being contiguous to Yellowstone to the north and the National Elk Refuge to the south the park contains abundant wildlife. We saw may herds of bison and pronghorn antelope but our best sighting was a moose. He was standing in a stream eating willow branches and had causes a 'Moose Jam' of cars stopping to look.



Left. Moose
Below left. Pronghorn Antelope

We saw Pronghorn Antelope all over Wyoming, not just in the parks. They are not a true antelope but is a species of Artiodactyl, even-toed hoofed animal. But it was called an Antelope due to its similarity to old world antelopes. Also conveniently it enabled the lyrics of the song 'Home, home on the Range, where the deer and the antelope play' to sound better!

The visitor centre is very good and has the usual wildlife and environmental displays, but also excellent geological information as well. One interesting geological feature is a huge dolerite dyke that can be seen at the top of Mount Moran.





Mount Moran, dyke highlighted.



Most people visiting the park spend the night in Jackson Hole, a real old wild west town, every evening a **cowboy shootout** is re-enacted in the main square. At the end not a single person was left 'alive'

The square also has four Elk antler **arches made out of the shed antlers**.



These days the town is a huge winter sports centre and there are several ski resorts in the surrounding area. We were there in June so the skiing season was over but the **cable cars** can still be used to get to the top of the mountains, and we went to the top of Rendezvous Mountain 10455 feet high. Adventurous types can take a quick way down by **para-glider**, we chose to return in the cable car!.



Though not actually part of the national park the views from the top are truly spectacular with the Teton Range stretching out as far as you can see north, south and west, whilst the Jackson Hole valley is to the east. There are many easy hiking trails and we walked around for quite a time, be warned make sure you wear a coat as even in summer it is quite cold up there. There is also good cafe with a veranda overlooking the valley.

See picture next page

View looking south from the top of Rendezvous Mountain.



On an old bookshelf.

Nick Baker

Well, it's not the bookshelf that is necessarily old. It may well have come from Ikea! No, it's the books on the shelf I'm thinking of. But, first of all, a question. What was it that triggered your interest in geology? Can you remember that far? Today we value the hands-on aspects of fossil or rock-n-gem shows. There is also the vast aspect of the Internet, but there can be a problem in the amount and speed of availability of information, which can overwhelm the investigator. For me, in 1960, it was the very slow access of information that spurred me on and the format was almost entirely the printed page. No click of a key to the next answer but rather saving up for the next book listed in the bibliography of the item I already had – and it often meant just four books a year – or the occasional map. I gained knowledge of geological maps before I had even one GA guide! The (then) Geological Museum sold 1" maps at very low cost compared with today and so, I was left to my own devices at the geological rock face (or, at least, strike and dip)!

The first book I obtained was *The Observers Book of British Geology*. Yes, it was British geology back then! But the book was left unread for a year, and then a strange series of events added a sort of 'alchemical' aspect. A bonfire, casting a piece of granite into the fire, weeks later wondering what the strange black rock was in the ashes. The book is consulted before the rock is broken to reveal granite – but, too late, the bug had bitten.

The Observers Book of (British) Geology is a chatty little book, covering the basics of the science – sedimentary rocks, minerals, main groups of fossils, geological periods, and igneous and metamorphic rocks. The Permian age became a problem. The Children's Encyclopaedia discussed geological periods – The World in the Carboniferous, The World in the Triassic. And now the Observers Book listed a band of rocks assigned to something called the Permian, but with little further information.

Another enigma was the described fossil content, especially of a rock formation nearer to home – e.g. “The Chalk fossils include sea-urchins, sponges and shell-fish, fish, birds of a primitive type and the remains of evergreen trees”. Now, this is the Observers Book of *British Geology*, but as far as I am aware, the birds were in the Niobrara Chalk of *Kansas*. And those evergreen trees? In 47 years I have never found another reference to evergreen trees found in the Chalk (I stand to be corrected). The only association I can think of is the Junipers growing on it. But, substitute Chalk for Cretaceous, and thereby include the Wealden, and we are in with more than a chance!

By the end of the 19th Century Darwin’s theories had hit relatively difficult times - and that was the problem – time, there didn’t seem to be enough. Objectors immediately saw holes in what had been a revolutionary theory. Darwin was ahead of his time and what would be supporting science had not caught up. To cite one objector – Lord Kelvin, the Earth had still too hot an interior for it to be of sufficient age to allow for the processes Darwin envisaged - knowledge of isotopic furnaces was still in the future - and Kelvin put the age of the Earth at no more than 40 million years. Darwin had called for much larger amounts of time for his gradualistic evolution to take place. Another problem was the infant stage of sedimentology, which, at first sight, seemed to match Lord Kelvin’s estimates.

These problems were carried over into the first decades of the 20th Century and can be illustrated by some books written in the period. *The World in the Past*, by B Webster-Smith, was first published in 1926. Admittedly, he has gone a way forward from Lord Kelvin, in that he places the base of the Cambrian at about 150 million years BP, this being still based on sedimentary estimates. Of the ‘Permian question’ the presence of boulder beds he ascribes to ice action, rather than desert storms, and so, even in Britain, the Permian comes over as a cold interlude between the moist heat of the coal forests and the dry heat of the Trias, this cold aspect being supported by, already well-documented, evidence from the Southern Hemisphere, suggesting a wide-spread global cooling.

In the years immediately after the Second World War, the spread of geological information seems to have had a renaissance in the form of books and museum exhibitions – I have already cited a basic introduction of this time. At, what was then called, the British Museum (Natural history), Gallery V had a series of exhibits (in the form of wall panels) illustrating the succession of life through geological time. The accompanying booklet, first published in 1948, was thus entitled – *The Succession of Life through Geological Time*. Again, it is not an item of specialist literature, but as an overview of the subject at the time, I don’t think it can be bettered – save on one glaring aspect. The matter of plate tectonics has (as stated in the introduction) been discarded when producing geographical maps of each period (which renders them of little value). Advances in the knowledge of radio-activity had helped to produce a time scale nearer to one we would recognise, rather than the sedimentary estimates of Webster-Smith two or three decades earlier. But, like the timescale, continental drift seems to have been left in the background until the supporting science had caught up in the last decades of the twentieth century. And, what of the Permian? Yes, the problem was solved. The (then estimated - 1959) 20 million year period (45 million by 1967) was one of hot deserts and declining coal forests, at least in the Northern Hemisphere. Webster-Smith’s coldness was present, but as a vast ice-age, far longer than that of the Pleistocene, in the Southern continent of Gondwanaland.



Another aspect of that same renaissance was a book series called the New Naturalist, and in 1960 Prof. H. H. Swinnerton took on the subject of palaeontology, under the title of *Fossils*. It is a study through geological time of fossils and the background, character and methods of the geologists who studied them. So, as well as a study of trilobites, ammonites, brachiopods, corals, echinoids etc, we are also introduced to Murchison, Buckland, Sedgwick, Lapworth, Miller, Anning, Lamplugh, Spath, Rowe, - to name a few.

Hugh Miller published his work under the title of *The Old Red Sandstone*. A copy of this found its way to the little town of Thurso on the north shore of Caithness, into the library of the local baker, **Robert Dick**, a born naturalist, who knew Caithness like the back of his hand.

The writer, Samuel Smiles published a biography of Dick, entitled *Robert Dick: Baker of Thurso, - Geologist and Botanist*. Dick's herbarium included examples of every species of plant growing in Caithness. To him it seemed nothing to walk 20 to 30 miles to see a rare flower blooming afresh in its secret haunts. After reading Miller's 'Old Red Sandstone' he turned his attention to hunting for fossil fish. Rising early each morning he made and baked his batch of bread for the day. Then, leaving the bread to be sold, he set out on his fossil fishing foray. With unexampled energy and endurance he walked sometimes fifty miles in the day to distant rock exposures and returned heavily laden in time for some sleep and another early baking before repeating the programme the next day. With equal generosity he placed his specimens at Miller's disposal. B. N. Peach, a member of the Geological Survey Staff, wrote of him "Dick was Hugh Miller's greatest benefactor." Miller confirmed this by saying "He robbed himself to do me service."

Robert Dick is a classic example of the old style field naturalist – a species in danger of becoming extinct, even in its 21st Century variety, but we must not forget that the geologist (primarily as palaeontologist) is also a variety of that species. The difference with people such as Dick is that their canvas was spread across several sciences, something that is becoming increasingly difficult. The question arises as to whether the digital age cuts us off from Nature. Also, there is the effect of increased urbanisation of the population, and as far as the Internet goes, there is the question of the easy availability of knowledge. Robert Dick had no such means of finding out and it may be that the best ways of nurturing a new supply of naturalists must best include the old hands-on experience. Then, perhaps some unknown quality may be transferred which other methods of enquiry do not always supply.

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Return to Pompeii

by Gary Woodall

I recently did a talk about Pompeii and other sites of interest in the area. A couple of you requested that I provide information on these sites, specifically the best way to visit them. Be careful what you ask for as here it is!

Several of you have stayed in Sorrento, for those who haven't, Sorrento is a beautiful town in southern Italy, situated on the Bay of Naples. Also the Circumvesuvio railway linking it with Naples, makes travelling to the sites easy. (see map next page)

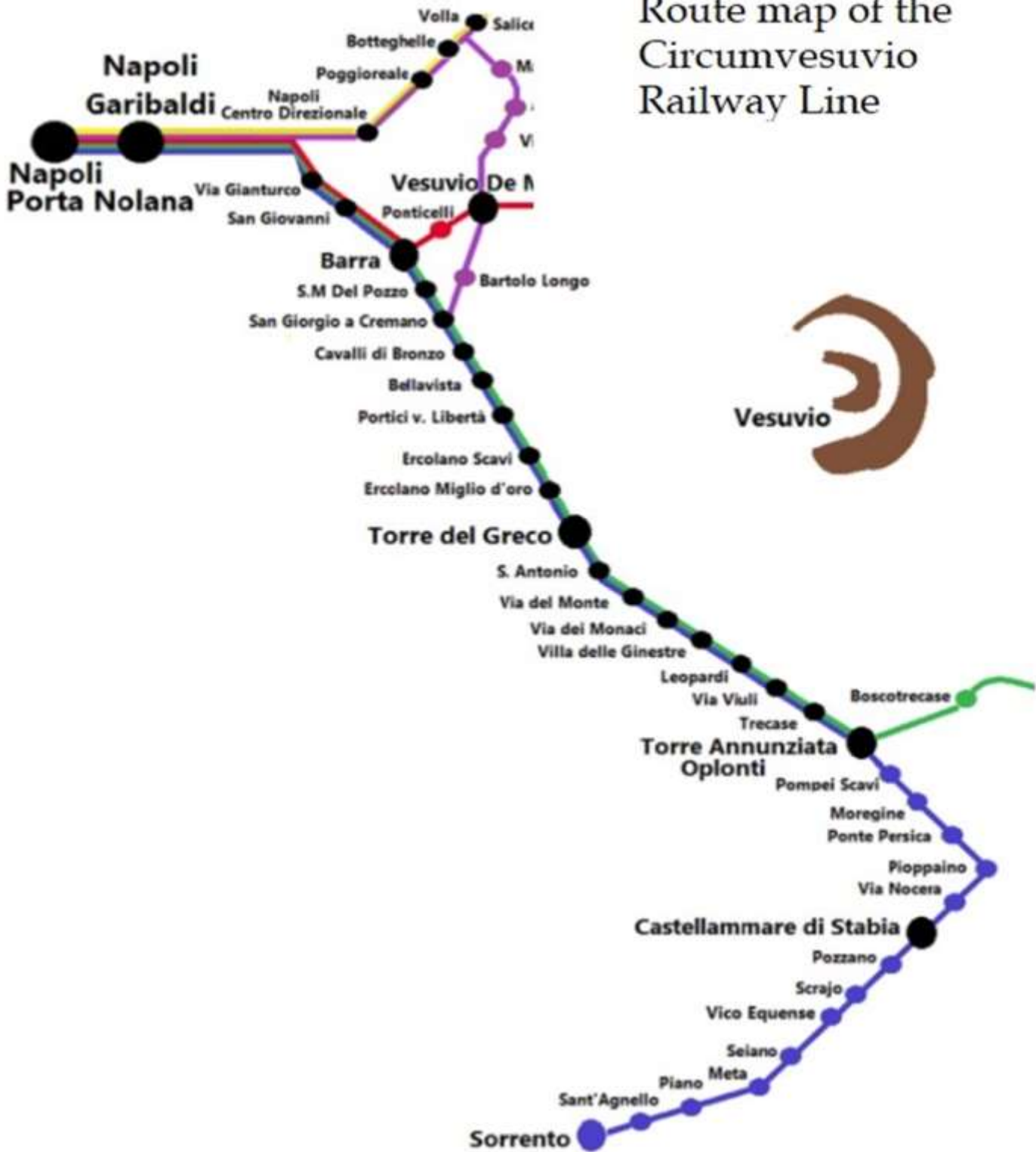
One thing I would not recommend is hiring a car, as the Italians are mad drivers. They don't double park, they treble park, not only that the car on the inside somehow manages to get out by bumping the cars front and behind. Saying that two of our ex members, Patrick and Lily managed it fine.

First getting to Pompeii, catch an early train on the Circumvesuvio to Pompei Scavi, aim to arrive before it opens which is around 9 am on weekdays. That way you can be one of the first to enter the site and keep ahead of the crowds. There is a lot to see there but be sure to visit the Forum, Baths, Large and Small Theatres, Gladiator Barracks, Amphitheatre, Large Palestra. Not forgetting the numerous villas and just outside the walls the Villa of Mysteries that has fine wall paintings. But it is the walking along the empty Roman roads of the city that I found most memorable, this can only be done before the place fills up with thousands of tourists. (yes I realise that you will be a tourist!)

To get to Pompeii's sister city Herculaneum take the train to Ercolano Scavi (Scavi means excavations). A short walk south west from the station down the Via 4 Novembre, brings you to the ruins. It is not as critical to arrive first thing as there are far less visitors here.

Herculaneum is much smaller than Pompeii and lacks the large structures such as an amphitheatre, but the houses are taller and give a much better feel of what a Roman town was like. I especially liked the Thermo-poleum, a Roman fast food joint, basically a Roman Mc Donalds.

Route map of the Circumvesuvio Railway Line



From the same railway station walking in the opposite direction (North east) out of the station there are numerous mini-busses that operate a service up Vesuvius. Apart from the fact that the drivers are mad, overtaking on hairpin bends, it is a good quick way to reach the top. You get around an hour at the top before the bus goes even faster back down to Ercolano station. We easily visited both Vesuvius and Herculaneum on the same day.



Between Pompeii and Herculaneum are the ruins of the Oplontis villa. This was a very large Roman villa which is famous for its' spectacular wall paintings. Again easily accessible from the Torre Annunziata Oplonti railway station and walking down the Via Seproicri.

Now you have become used to the Circumvesuvio time for a more adventurous journey. Take the train all the way to the Naples Garibaldi station. (why they would name a railway station after a biscuit I never found out). Take the metro (line 2) to Pozzuoli Solfataria, it is quite a long way but worth it. Two sites can be visited here, walking north east up the Via Solfataria eventually brings you to the Solfataria caldera. This is a volcanic field whose magma chamber is larger than Vesuvius, the Romans called it the Phlegrean Fields and believed it was the entrance to the underworld.



Walking a short way down the Via Solfataria brings you to the little visited Roman amphitheatre of Pozzuoli. This is spectacular, in many ways nicer to visit than the Colosseum as there are no crowds. In fact we were the only people there which was great.

Naples itself has several interesting things to see but beware, pickpockets are endemic and you really need to be very careful. The main thing to see is the Naples archaeological museum which houses many of the treasures found at Pompeii. It can also be reached on the metro Line 2 Museo stop only 2 stations from Garibaldi. We went there on our way back from Solfataria.

Harder to find are the Bourbon Tunnels, these are near The Royal Palace of Naples and are located up an alley. Rather than me attempt to give you directions it is probably better you google it or visit the tourist information who directed us. I first became aware of the tunnels when I saw Alexander Armstrong's series Italy's Invisible Cities. The tunnels were originally dug by the Romans as a stone quarry. But later were enlarged and served as an escape route from the Royal Palace when the peasants were revolting. (which they frequently were). We visited the tunnels when we docked in Naples on a cruise and we also visited the nearby Castle Nuovo and Castle Dell Ovo on the waterfront.



Castle Nuovo



Castle Dell'Ovo

There are several options for other trips from Sorrento, the isle of Capri is a short ferry ride away. We also went on organised coach trips along the famous Amalfi Drive and to the ruins of Paestum where three very well preserved Greek (yes Greek, they were here before the Romans) temples can be seen.

But as I said in my talk one of the most enjoyable places we visited was the ruins of the Roman villa at the Capo di Sorrento. It can be reached by catching the local bus to Punta Capo then walk down the Traversa Punto Capo (a Roman Road) reaching the sea in about 20 minutes, where the ruins can be found. Not large but so beautifully situated. (See next page)



Dinosaur Statues 3 : Tyranosaurus

by Gary Woodall

Perhaps most people's favourite dinosaur is the mighty Tyranosaurus Rex, and it's near cousins. So appropriately there are numerous statues of them around the world, but mostly of course in America.



Crystal Palace Megalosaurus



Rapid City T-Rex

The oldest one can be seen at Crystal Palace where a reconstruction of Megalosaurus was put up in the 19th century. As with the previously discussed Iguanodon, it is modelled on all-fours, lumbering lizard style. The next major reconstruction can be seen at the previously discussed Rapid City Skyline Drive, where the 1934 reconstruction is dubious but at least walking on two legs.



If you remember the Sinclair Petroleum Company Brontosaurus, the Tyrannosaurus from the 1964 Chicago Worlds Fair is also on display at Glen-Rose in Texas. They are posed confronting one another. In reality there is about 50 million years between the time the two dinosaurs lived!



Many towns in the 'Dinosaur Diamond' region of Utah and Colorado are very proud of their connection with the prehistoric and many statues can be seen. The small town of Fruita has dozens of them including a huge T-Rex on a roundabout. But the town of Vernal wins for humour with their spectacular cowboy T-Rex, complete with cowboy hat and lasso.



T-Rex on a roundabout, Fruita.



Cowboy T-Rex, Vernal.

Lastly, the world famous Museum of the Rockies at Bozeman Montana, has a fantastic highly accurate skeletal T-Rex statue outside.

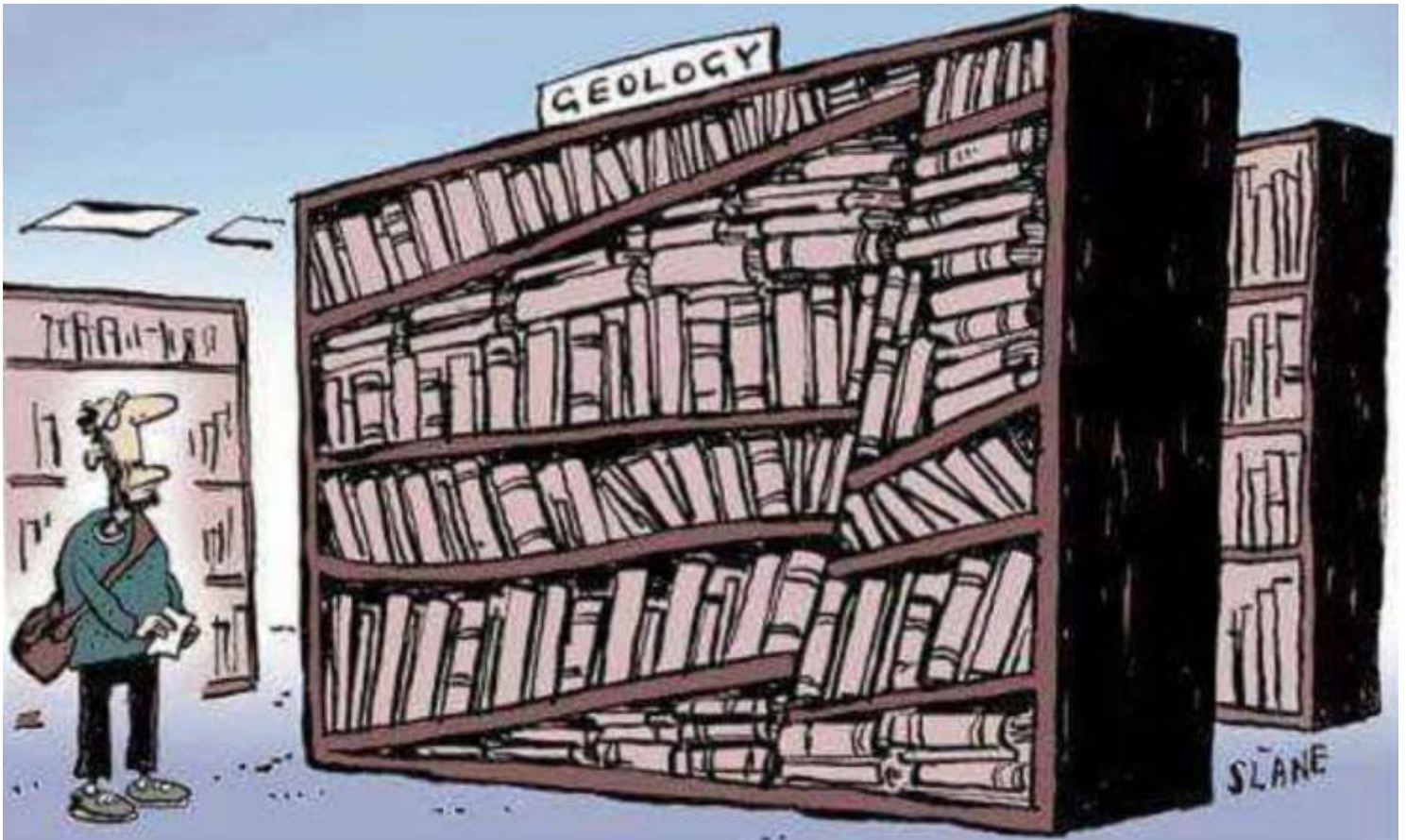


And finally, Gary has contributed this picture of a planetary model (Mars) from the Natural History Museum.



The picture was omitted from a previous article by Gary, on Planetary Models (see on Website, Additional letters vol number 05— February 2021)

And almost finally, Gary sent thisno comment (Ed)



And definitely finally

Autumn Roundup

September 15

We met for the first time in 18 months. I was not present, but the meeting was on the Ordovician period.

September 22

Brian gave a talk on *Corundum* – the talk advertised as Carborundum. Anyway, Corundum – so Sapphires. Rubies, Emeralds. How they occur naturally and on how they are manufactured artificially. The latter can be good but be careful when you buy!

September 29

This evening's meeting was – '*The first fossil I ever found*'. For me that was the '*Pecten*' fragment I found in the sample of sandstone, while bike riding across Oldbury Common in 1961.

October 6

the subject was *Gastropods*. A lot on display and we had some good discussions

October 13

Specimens with name beginning with letter 'M'.

October 20

Brian gave a talk to the group on the production of rock *thin sections*. Also on the optics involved. How to identify the minerals present.

October 27

This was our first AGM for two years. Afterwards we had several presentations of *20 pictures on a (memory) stick*.

November 3

The subject was the *Silurian Age*.

November 10

The subject was *Brachiopods*

November 17

Yours Truly gave an illustrated talk—*From Sediments to Micro-fossils*. Processes on breaking down the rock, recovering the microfossils, mounting them on slides and identifying them, where possible.

November 24

Brian gave a talk on the *Northwest Scotland Geopark*.

December 1

The subject was on the *Devonian Age*

December 8

There was a table-top demonstration of specimens from *The Jurassic Coast*.

There is to be a zoom presentation on this subject, by Bev Mason and Purdey Brown, to form the meeting of December 15th,