

Additional Newsletter—

Medway Fossil and Mineral Society—21st September 2020



Cliffs of Middle and Lower Chalk at Folkestone Warren, Kent

*Acanthoceras
rhotomagense*
Lower Chalk
Blue Bell Hill,
Kent



First of all—some news.

At the moment I have only one real news item—anything else you will know or will have guessed!

So, subs

My decision as treasurer is that last year's subs be rolled over into the year 2020-21. So, your membership is, if you so wish, retained into the coming year, with nothing to pay. Regarding the hall rental—we are NOT bound by any contract.

Regarding normal practices, there is no light at the end of this tunnel—not even a train! And at the time of typing, regarding the indoor meetings, the church hall is not available for the foreseeable future. And then a message came from the church office asking if we were planning to meet before Christmas. The fact is it would be a high risk operation, even if we did keep to the rules—which seem to change day on day. It all hinges on the availability of a vaccine, which would probably have to be used rather like current flu jabs, although perhaps twice a year, with people like yours truly last in the line.

I will be issuing a copy of the year's accounts in about a month's time. In the mean time, **Gary will tell us a little bit about Amber.**

Amber

Gary Woodall

As you will all know amber is fossilised tree resin and has long been prized as jewellery , indeed some of the oldest amber beads dating to 9000bc have been found in Southern England. Occasionally insects and other arthropods, are trapped in the resin before it became fossilised and thus it is a very valuable source of exquisitely preserved ancient life.

Some of you will remember when we used to hold the gem shows at Hempstead Valley. Well in the 1990's, the fall of the Berlin wall meant that eastern Europeans could travel freely to the west. A dealer turned up who specialised in Baltic amber. He had masses of it and all for sale very cheaply, 2 or 3 pieces for £1. Several of us spent hours looking through hand lenses selecting the pieces with the best inclusions, I got carried away and bought over 100 pieces!.



Some of the amber fossils I bought at the gem show

Baltic amber can be found in England, mainly in East Anglia where it has been washed across the North Sea. I have found a few small pieces in Suffolk, though none contained insects. At Southwold there is a very nice small amber shop/museum, well worth a visit if you are passing. Indeed Southwold is a charming seaside town with a nice pier, lighthouse (which is open occasionally) and most importantly several good tea-rooms.



Southwold Amber Museum.

One of the most famous, or perhaps I should say infamous uses of Baltic amber was in the Amber Room of the Catherine palace at St Petersburg. This was a room constructed in the 18th century, at the time of Catherine the Great, whose walls were covered in amber. But by the end of world war two the room had disappeared. There are many theories as to where it went, either taken to safety by the retreating Russians or stolen by the Nazis. Either way the original is now lost, though rumours persist about its current location. Deep in a bunker in the Bavarian Alps being one of the favourites. After the war the Russians restored the palace and the amber room to exactly how it looked originally. We visited the Catherine Palace on a Baltic cruise and I must say the amber room is really spectacular. Taking photos was forbidden, but with the camera hanging nonchalantly round my neck with the sound turned off, I managed to get a couple of pictures without being spotted.



Catherine Palace and Amber Room.

Now amber is found at a number of locations around the world and possibly the second most famous is in the Dominican republic. We had a holiday there in 1999 and I went hoping to buy some amber. Well there was a gift shop in the resort complex which had some amber, and after explaining to the girl serving behind the counter in my best Spanish that I would like 'ambero witho los insectos insideo' she understood what I wanted and brought out a tray with a few pieces in. She was most amazed when I produced my hand-lens so I could study the insects. The price was much more expensive than that at the gem show but I bought a couple of pieces, as a holiday souvenir.

Another place famous for amber is the Chiapas region of Mexico and when we went on a tour of Mexico in 2011 we went to see the new amber museum at San Cristobal. It took a bit of finding but with my fluent Spanish again asking for the 'museo ambero' (museo is the actual correct Spanish word) we eventually found it. I must congratulate them for it was a very modern place and very well laid out. Amongst the exhibits is a scorpion preserved in amber, this is very very rare and I believe it is actually genuine.



Chiapas amber museum in San Cristobal.

When I was looking at Ebay some time ago I saw several scorpions in amber for sale for really good prices. They were guaranteed genuine by the Chinese dealer so I couldn't resist. Anyway see if you can spot the difference?



Scorpions in amber spot the fake.

I know a few of you have an interest in amber so I thought I would share a few of my recollections of it with you. (The real scorpion is on the left)

Geological Resources and the Conduct of the War.

Nick Baker

The war in this instance is the Second World War. Although, here in the UK, we often cite the First World War as The Great War, because of the death toll on the UK and Commonwealth Forces, it was the Second World War that had the greatest impact, not only on human life but on its requirement of mineral resources. It is true that the First World War had a great requirement for iron and coal, but relatively little petroleum. Although troops were often ferried to the Front in small buses, the reliance on horse-drawn vehicles was still relatively high.

In the Second World War the mineral requirement was probably at its peak. Indeed, troop movements were often ordered in the light of mineral requirement in addition to political gain. Mineral requirement was still coal and iron but now add massive requirement for petroleum—a requirement in which the Axis sometimes failed to meet. In Steel production there was also a requirement for Chromium, Nickel, Tin and Manganese (**CrNiSnMn**) in the production of armour plate and reinforced steel. Mercury became highly valued in the production as Mercury Fulminate, in use as a detonator.

Japan was perhaps worse off in resources. Volcanic Islands are often at a disadvantage as opposed to sedimentary basins. This was one reason for Japan's invasion of **Manchuria**, which had large reserves in **coal** and **iron** with lesser amounts of **petroleum**. The Japanese treatment of the Chinese forced the **USA** to mount embargoes and boycotts against Japan. Japan saw no alternative than to attack the USA, and destroy as much of the Pacific Fleet as possible. The attack on **Pearl Harbour** (Dec 41) was only partially successful—the American aircraft carriers were elsewhere. The Japanese had awakened a sleeping giant and were effectively losing the war the moment their planes were airborne. The reality is born out by the fact that the amount of oil stored on Hawaii alone, was equal to the whole of the Japanese supply!

None the less, the Japanese used the initial shock on the Americans to invade **South East Asia** and the **East Indies** and secure supplies of **Petroleum**, **Rubber** and **CrNiSnMn**. There was also a political move in seizing large island territories in the South Pacific, so that by **Feb 42** they were even able to mount air attacks on **Port Darwin**, Australia. In SE Asia they had forced the Commonwealth Forces right to the border with **India**.

The Americans counter-attacked, first by winning two sea battles (**Coral Sea, Mar 42** and **Midway, June 42**) and by re-taking island by island, starting with **Guadalcanal** (July 42) and finishing with **Okinawa (April 45)** prior to the nuclear attacks on **Hiroshima and Nagasaki (Aug 45)**. Meanwhile the British and Commonwealth armies forced the Japanese back from the border with India and recaptured much of Burma (Myanmar) by the time of the Japanese surrender.

In terms of resources, **America and Canada** seemed to have plenty of everything—even enough to supply other allies. The USA was rather short of **Uranium** when it came to the **Manhattan Project**—the development of nuclear weapons, but supplies were secured from the **Belgian Congo** (Groves 1962).

The **British** had gone into the war with remarkably little resources. Britain had moderate supplies of coal and some low-grade iron ore, plus some tin. Everything was made up from **American and Canadian imports**. Much of our oil came from the USA but there was still the **Anglo-Persian (Iranian) Oil Company**. This was a main reason for keeping a toe-hold in the **Middle East**. And one reason why we ended up fighting the **Germans / Italians** in North Africa, the other reason being that large tracts of **North Africa** had been occupied by the Italians. It is interesting to note that the presence of oil in water holes in Libya were thought to be the Germans trying to contaminate the local water supply!

After Dec 41 the UK and USA decided that Hitler was the more dangerous enemy and vast supplies were shipped into Britain, aiming to maintain a base, bristling with troops and weapons, from which to recapture the European mainland

The **USSR** started out as an ally of the Germans. The German Foreign Minister (von Ribbentrop) agreed with his Soviet counterpart (Molotov) on a trade deal in food and raw materials (**Aug 39**). It was also a ploy by which the Germans hoped to steady the nerves of the Soviets and agree a secret protocol—the partitioning of Poland. The Germans would occupy Poland as far as the line of the Vistula and San rivers. The Soviets would then have a free hand to the east. The Poles had no say in the matter. This also safeguarded the German eastern border when Hitler attacked France and the Low Countries in **May-June 40**

Trade between Germany and USSR continued from Sep 39 to June 41. Germany would ship coal eastward (which the Soviets already had plenty) and they would send grain westward. The rail lines met at **Brest-Litovsk**. The gauge of the Soviet lines was wider than the Germans, and so trains would line up side by side in a vast siding while materials were transferred between freight cars.

The love affair ended in **June 41** when Hitler attacked the USSR. The Germans were confident of a quick victory. In many respects the motivation on the part of the Germans was political. They hated communism and saw the Soviet Slavs as sub-human stock. Also the Germans had long seen the Ukraine and Belorussia as a living space for Germany's burgeoning population. It would be easy. Hitler had noticed the ease with which the Finns had beaten off the Soviets in the **Winter War (Nov 39–Mar 40)**

The German advance was fast. By November 1941 the Germans had captured **Rostov-on-Don**, in the south. Put **Leningrad** under siege, in the north, while on the Central Front, German tanks were 15 miles from the Kremlin. Molotov was in a panic. He asked the Romanian ambassador to Berlin, to plead with the Germans, that they could have Ukraine, Belorussia, the Baltic States, if they would call off the attack. The Ambassador retorted, "What are you thinking? - you have enough resources to retreat behind the Urals, and still win"

General Zhukov had five million troops in Siberia. He received a message from 'Lucy' in Tokyo—that the Japanese were going another way. Zhukov brought the five million troops westward. The Soviet counter attack was devastating. The Germans fell back 200 miles, with heavy losses.

The Soviets had good supplies of coal and iron. They built the largest steel works in the World, at **Magnitogorsk**. They also had good supplies of heavy metals in the **Urals** and oil in the **Caucasus**. But the German attack had caused heavy losses in equipment. The Western Allies tried to resupply the Soviets by convoys operating from the USA and Canada to **Murmansk** and **Archangel**. Between 1942 and 45 **The Murmansk Run** supplied 14,700 aircraft, 7,000 tanks and 375,000 trucks. On many Soviet fronts after 1942, American trucks amounted to 30% of the Soviet transport strength (Carell 1967)

For the Soviets, after the German counter-attacks of 1942 towards **Stalingrad** and **The Caucasus**, and the pivotal battle at **Kursk (Jul 43)**, the story for Russia was one of continual advances. For the Germans and the rest of the Axis, the story was one of continuous shortages. They had good supplies of coal. There were deposits of heavy metals in **Carpathia**, as well as oil in **Romania**, but there were frequent problems of supply. In 1940 Germany attempted to import iron ore from **Sweden**. This had to be shipped from **Narvik, (Norway)** and then southward to German ports. After the British began to lay mines in the North Sea, Hitler no other option than to occupy Norway (Apr 40).

After the Soviet counter –attack of Dec 41, Hitler decided to confine his attacks to Southern Russia. His objective was The Caucasus, and the oil fields of **Meykop and Grosny**. But first he captured **Kharkov** and the **Donets** Industrial Area. The German generals wanted to concentrate on Moscow and Leningrad but Hitler wanted to concentrate on the 'material rather than the symbolic'. But, then Hitler was beguiled by the symbolic. Stalingrad, the city on the Volga, and it had the name of his enemy. So, the German 6th Army was ordered to take Stalingrad. The 300,000 man army was encircled (Nov 42) and ground down. 91,000 troops remained alive to surrender in Feb 43. Of those, only 6000 ever returned to Germany. Heavy fighting continued in The Caucasus and **The Keban**. There was a greater plan. The troops in The Caucasus would drive south and meet up in **Iran**, with Rommel's troops driving north-east. The British would have lost their oil. Stalingrad and **El Alamein** put paid to the whole idea. The troops in The Caucasus retreated back to Rostov. Those in the Keban retreated to Crimea.

For the Germans, the whole war was one of oil shortage and so they commenced the manufacture of synthetic oil from coal. There were also attempts to manufacture synthetic rubber, mainly by **I.G. Farben**, at **Morowitz**, Poland, with slave workers supplied from a concentration camp at a place called **Auschwitz**. The largest oil facility was at **Politz**, on the Baltic Coast. The process had been known for some time. To coal dust, add hydrogen at high pressure. Then cook at 400C. The process is wasteful. Four tons of coal is required to make one ton of oil. The works at Politz employed 60,000 workers of whom 13,000 died of poor working conditions, starvation and accidents.

The lack of petroleum explains a puzzle. The German's heavy reliance on horses. In the TV series, *Band of Brothers*, Easy Company are driving east on an autobahn. 300,000 surrendered Germans are marching the other way. One of the company harangues the Germans—"Welcome to General Motors, you Krauts. You had horses. What were

you thinking? Well, you can feed a horse on grass, which is plentiful on the Russian Stepp. Petroleum was needed for tanks and planes, which was not plentiful, certainly not for trucks and cars.

As mentioned earlier, the end of the war involved another resource. **Uranium**. The American—**Manhattan Project**, secured its supplies largely from the **Belgian Congo**. But the subject of Uranium had become known, though restricted, here in Britain, as well as the United States. It is interesting to note that a search for Uranium, here in Surrey involved **phosphate nodules** in the Gault Clay as a possible source. It was known that the nodules were often radioactive but it was not always certain as to the origin of the radiation. Plans were put forward to mine the nodules at **Cheriton**, but it turned out to be cheaper, and more certain, to rely on a Canadian supply. And the radiation was more likely originating from minute amounts of Thorium.

With the onset of the **Cold War**, the Americans kept their research under wraps, even to the British. Britain wanted its own nuclear program, and so continued to import Uranium from Canada, and Australia, via the **Uranium Mining Company**. Even at an early stage, attention was drawn to **Plutonium**—the supply coming from the embryo domestic nuclear industry. The British wanted to ‘improve’ on the ‘Nagasaki’ plutonium weapon, but by the 1950s Plutonium was used in the trigger process in the vastly more powerful **thermo-nuclear Hydrogen devices**.

Carell, Paul. *Unternehmen Barbarossa im Bild*. P226-227. (1967)

Groves, Gen L. M. *Now it can be told*. The story of the Manhattan Project. Da Capo Press. 1962

The Copt Point Enigma

Nick Baker

The mention of phosphatic nodules, in the former article, reminded me of a find in the Gault Clay in October 1980. For some reason the origin of the item became linked to the Sulphur Bed—perhaps I thought the yellow incrustation was sulphur, which it is not, and I still don’t know what the contained minerals are. But I do remember climbing up the scree and pulling the item out of the clay, right at the top—far above the Sulphur Bed. The specimen consists of fossil wood encrusted with a mix of rock type—some pyrite, also a bright yellow mineral, as well as calcium phosphate. See photo to the right. There are also trace minerals present. And with the trace minerals hangs a tale.

Don Searle speculated that the specimen might have more than usual radiation. A week later he came in with one of his many Geiger Counters. The specimen had three times the normal background radiation.

This situation is more common than one might suppose. Often, the decay process in itself will trigger the deposition of other compounds, usually of elements with higher atomic weights. These can, in turn, attract ‘heavy’ trace elements. It can also do this where the mineral lattice will attract rare or heavy elements. One example is the clay mineral montmorillonite, where the lattice often attracts rare-earth elements, such as Europium. Such items may be ever present in the water column, but can be an indicator of events such as volcanic eruptions



A Mineral Gallery—Quartz



Left.
Above

West Quantoxhead, Somerset
Rhendyrwlyn Gold Mine, Dyfed



Wanlockhead, Lanarkshire



Quartz and Pyrite. Minas Gerais, Brazil



Quartz and Pyrite. Minas Gerais, Brazil



Greystone Quarry, Launceston, Cornwall



St Ive, Cornwall



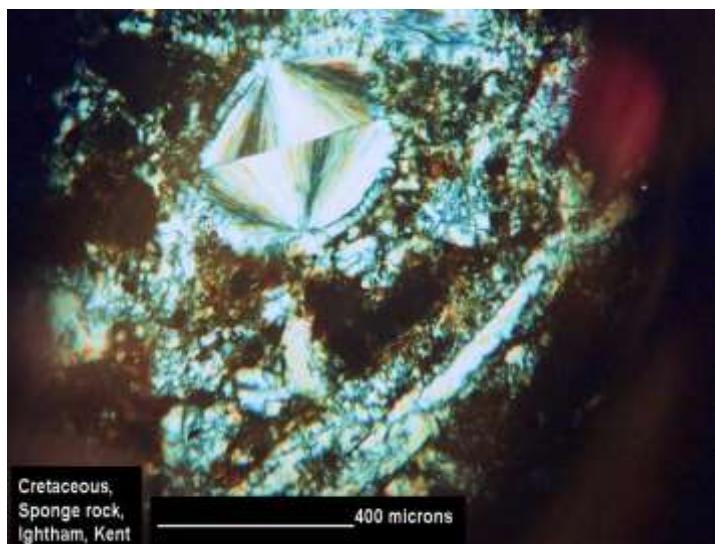
Wanlockhead, Lanarkshire



Quartz on Manganese Oxide, Wanlockhead



Vug in Jasper, Papa Stour, Shetland



Sponge rock, Oldbury, Ightham, Kent
The top of the picture shows a section through a sponge spicule infilled with chalcedony, surrounded by a lining of normal quartz.

Sarsen, Blue Bell Hill, This is a silcrete. The quartz has undergone solution and recrystallization. The linings of the new crystals can be seen between the grains.

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