



THE DISCOVERY OF GYPSUM NEAR MOUNTFIELD

Scientific serendipity: “The unexpected discovery of something through a well-designed experiment”.

Many people in the Battle area will be aware that gypsum mining and processing are taking place locally. But, because the sites are fairly well concealed, relatively few will have seen the works close up – perhaps their only encounter being the large British Gypsum trucks on the local roads. In fact the mining of gypsum here has been fairly continuous throughout the last 150 years, but it is not readily appreciated how the deposit was actually discovered. Rather surprisingly, gypsum was not the main target at the time; it is indeed a tale of scientific serendipity.

The true architect and driving force behind the discovery of gypsum in the area was Henry Willett of Brighton. Henry Willett (1823–1905) (Figure 1) was a prominent figure in Brighton society, a

well-known brewer and also a generous patron of the arts and numerous other causes. He was in particular an avid collector of ceramics and his fine collection is now on display in the Brighton Museum. He also had keen interests in both archaeology and geology, but as he had not received any formal training in these disciplines described himself as a ‘tyro’¹ in science!



Figure 1: Henry Willett (c.1903). (Royal Pavilion & Museums, Brighton & Hove. Licence: CC BY-SA).

In 1872, the 42nd British Association for the Advancement of Science (BAAS) meeting was held in Brighton (Figure 2). These annual meetings gathered the prominent scientists of the day for a week-long conference (c.2500 attended at Brighton). Willett was one of the organisers of this meeting and wished to mark the occasion so that people would remember the Brighton event. So he and the other geologists on the organising committee developed a plan.

At the time, several geologists were particularly interested in the deeper geology of the region. The view then was that the deeper, older rocks

1 ‘Tyro’: A person who follows a pursuit without attaining professional status; a novice or amateur.



underlying the Weald (the 'Palaeozoic' strata of geologists) were covered by somewhere between 700 to 1700 feet of younger, 'cover' rocks. Their proposal was to drill down to test these ideas and determine the nature of these older rocks. And so the idea of the 'Sub-Wealden boring' was born.

The stated aim of the project was to go through the Wealden cover rocks and reach these older, Palaeozoic rocks or reach a depth of 2000 feet (which in itself would have been an achievement for the time).

It is important to stress that this was a purely scientific venture. They were not looking for coal, yet people at the time probably couldn't appreciate how so much money and effort could be expended simply on a scientific venture. And it is unfortunate that even today this view is still widely held and even repeated by such august bodies as the British Geological Survey.

Once the project was agreed, Willett was established as both Secretary and Treasurer and he enthusiastically set about promoting the idea and gaining support. A contemporary report described him as being "zealous and indefatigable", and his public pronouncements certainly bear this out:²

"There is yet one really important geological problem waiting solution in this country.....What underlies the Wealden Formation of Kent and Sussex?"

The boring would be of "....exceeding interest.....would be splendid scientific work.....surpassing value.....would attain the utmost wishes of British geologists".

But where to make such a boring? Clearly they would need to start drilling into the oldest rocks of the region, as new information would immediately be obtained. The essential geological structure of the Weald had already been established in the early 1800s by the likes of William Smith and it was appreciated that the rocks had been folded by earth movements into an arch ('anticline') with the axis trending roughly west-east (Figure 3). It was therefore appreciated that the oldest rocks

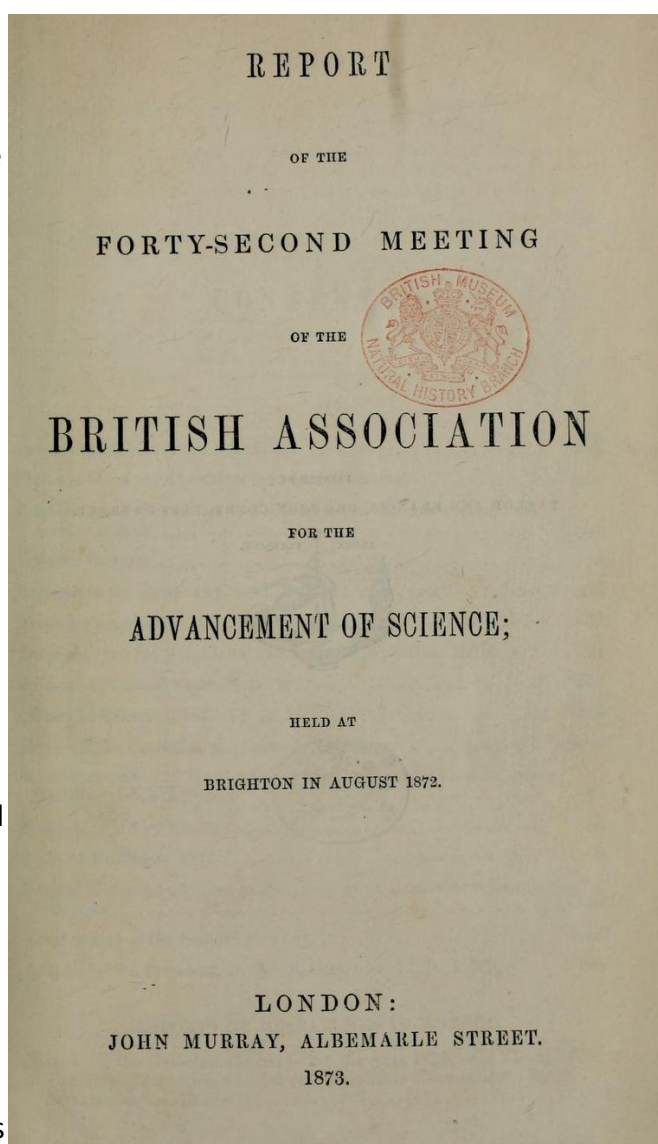


Figure 2: Report of the 1872 BAAS meeting at Brighton. (© Natural History Museum, London. License Type: <http://creativecommons.org/licenses/by-nc/3.0/>)

² Brighton Guardian, April 24th, 1872



would be brought closest to the surface in the centre of the Weald, along this axis. This axis reaches the coast at Fairlight Cove so this location was the first to be suggested. However it was soon discounted because of the cliff instability and the danger of storms and high tides.

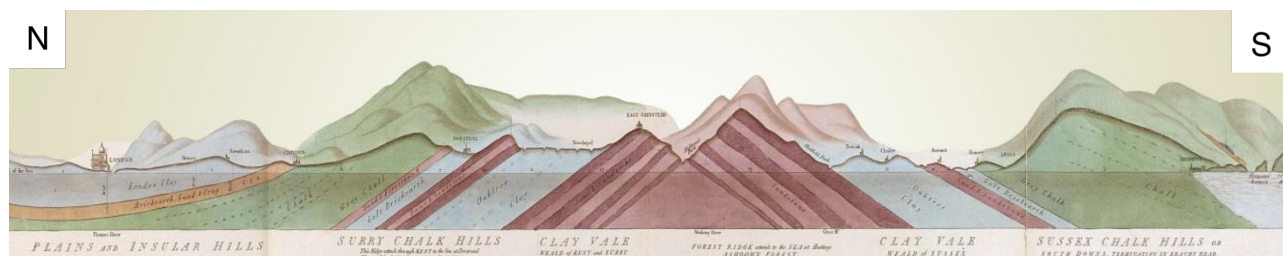


Figure 3: William Smith's (1819) geological cross-section across the Weald, going from London in the north to Beachy Head in the south. (© Oxford University Museum of Natural History. Used with permission).

Around this time, further inland, three exposures of slightly older rock had been discovered and these became the focus of attention. Now named the Purbeck Beds (as they are well exposed on the Isle of Purbeck), they come to the surface in three separate exposures: at Rounden Wood, just north of Brightling, at Limekiln and Counsellors Woods, near Netherfield, and at Archer/Orchard Wood, just north of Battle (Figure 4).

On geological grounds they first chose Rounden Wood. This was supported by the owners at the time (the Fullers) but the tenant was unhappy because he thought that the noise would affect his game shooting and he wished to be able to turn the drilling equipment off when he thought fit. This was obviously not agreeable, so they next chose Archer/Orchard Wood. This was owned by Lord Ashburnham who was a supporter of the project, but his conditions were not conducive. The third location (Limekiln and Counsellors Woods) was owned by Joseph Mappin to the south of the River Line and Charles Egerton of Mountfield Court to the north of the river. Mappin was part of the prominent silverware family and lived in 'Woodlands' (now named Netherfield Court). He was immediately agreeable to the siting of the borehole on his land and charged a nominal rent of 1 shilling a year. The exact site chosen was just south of the River Line (Figure 4).

The next task for Willett was to secure funding for the boring. Once again, he was tireless in his efforts and he successfully managed to obtain roughly 300 'subscriptions'. By far the largest contributor was the Duke of Devonshire (of the Cavendish family) who was a well known supporter of scientific ventures and also a prominent figure in the Brighton BAAS meeting. William Cavendish (the 7th Duke of Devonshire) had much property in Eastbourne. He would go on to be Chancellor of London University and then of Cambridge University (where he endowed the world famous Cavendish laboratory.)

Other notable contributors included:

Earl of Ashburnham

Thomas Brassey

Charles Egerton

Charles Darwin

Several Dukes (Norfolk, Richmond, Argyll)

Baron Leconfield

and even Her Majesty's Treasury.



In total, c. £6000 was raised, equivalent to somewhere between 0.5 and 1 million £ today.

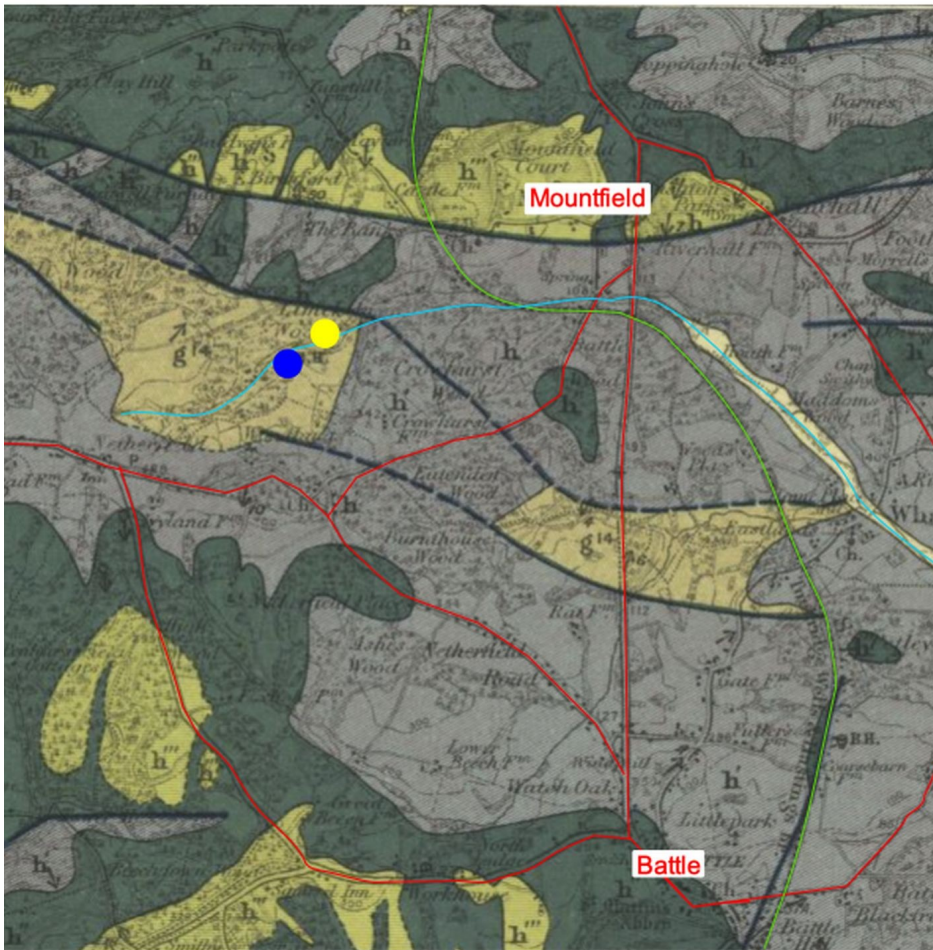


Figure 4: 1928 Geological map of the Battle area showing the main geological features; the two yellow-green outcrops labelled g14 are the Purbeck Beds in Orchard/Archer Wood in the central area and Limekiln/Counsellors Woods to the west. (The Rounden Wood unit lies off the map to the northwest). Also shown are roads (red), railway (green) and the River Line (blue). The site of the boring is a blue circle, the first mine shaft a yellow circle. (Contains British Geological Survey materials © UKRI [2025] and Open Government Licence v3.0)

In 1872 John Alleyne Bosworth, a mining engineer from Leicestershire, was taken on to undertake the boring. He utilised the standard method of boring for the time, that of a Chisel and Auger - the screw action of the auger could pick up rock fragments as it penetrated deeper, whilst more resistant layers could be broken up by the release of a heavy chisel (Figure 5). During 1872 and 1873 the boring managed to penetrate to a depth of 300 feet. But progress was slow and problematic (there were several stoppages due to breakages).

To compound these difficulties, in 1873 Bosworth was also exploring in Orchard/Archer Wood. Consequently the relationship between Willett and Bosworth steadily deteriorated, so much so that in December 1873 Bosworth stated:



“My search elsewhere seems to have given grievous offence and between Mr Willett and myself there is mutual want of confidence which promises to end in an action”³.

Eventually (in 1873) Bosworth was removed from the venture and replaced by Frederick Beaumont of the Diamond Rock boring Company. The novel application of drill bits tipped with diamonds allowed the drilling to be much more rapid. By 1876 the borehole had reached a depth of 1900 feet when a breakage necessitated a pause in drilling. No old (‘Palaeozoic’) rocks had been found and, even though Beaumont stated that he could continue, it was decided to terminate the project. (This was fortunate, as a later borehole by BP at Brightling went through about 5000 feet of cover rocks before reaching the Palaeozoic strata).

At the time there were some general suggestions that the project was a failure – they had not found the Palaeozoic rocks and they had not found coal. Willett and the group emphasised however that the geologists were content as they had obtained a wealth of completely new information regarding the deeper geology of the Weald.

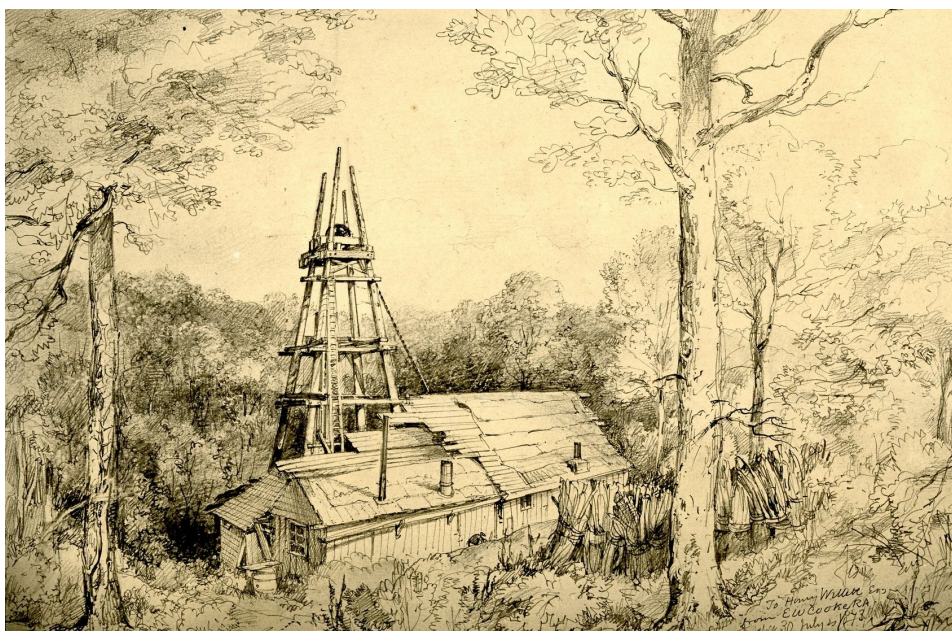


Figure 5: Sketch of the Sub-Wealden boring in 1873, by EW Cooke. (Royal Pavilion & Museums, Brighton & Hove. Licence: CC BY-SA)

But Bosworth’s drilling had discovered rich beds of gypsum at the relatively shallow depth of 40 metres (130 feet) below the surface. It was obviously this discovery which had prompted him to initiate exploration in adjacent areas. Willett and his colleagues did not appear to be too interested in any of the commercial possibilities of this

occurrence of gypsum. However, Charles Egerton of Mountfield Court, who owned the land directly on the other side of the River Line, could see a commercial opportunity. (He was a director of the Dorking Grey Stone Lime Company which needed gypsum in its products). He invited Bosworth to construct a shaft on his land to exploit the gypsum for his company. The initial shaft digging was accomplished by local individuals, presumably because well-digging skills must have been available locally. However, experienced personnel to carry out the subsequent underground mining were not available locally so miners from Cornwall had to be brought in. (It is interesting to note that most of these (including the 6 Collins brothers) came from the small village of Lanivet near Bodmin). An interesting scenario can be imagined – scientists on one bank of the river with

³ Letter from Bosworth to Robert Hodgson 6th December, 1873 (East Sussex Record Office ASH 2080)



their boring and the (sacked) Bosworth just a few tens of metres away on the other bank, digging a shaft.

Although not without problems, the commercial venture was successfully developed into the Mountfield mine. Production increased to a major scale during the 20th Century but eventually the deposit was exhausted. However, production was successfully transferred from Mountfield to Brightling and mining still continues today (2026), 150 years after the initial discovery. And it is ironic that today's mining is taking place at the location where they had originally wanted to site their borehole.

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