# NEWSLETTER from Ecton Hill

**from Tim Colman Chairman of EHFSA**
**November 2019**

We have had another busy year with over 20 A Level and KS4 Chemistry school visits and several General Interest groups. We have also been delighted to welcome three Geology A-level visits, two from schools new to us. We hope that we will continue to have more interest in the geology programmes that the team can offer. A few schools had difficulty fitting in a visit in the summer, but we have had more visits than ever this autumn. We also have several University Geology groups who use the complex folding and faulting in the Apes Tor quarries and the mine for structural and engineering geology studies. Their visits, in October and November, brave the colder weather and darker days.

Here are some students carrying out the A-level chemistry tasks in the outdoor classroom. Students collect tiny mineral samples on the hill and bring them back to the centre to prepare and test them for various metal ions – especially copper.

**Note on the organisation at Ecton**
The Ecton Mine Educational Trust (EMET), a registered charity, owns and manages the Geoff Cox educational centre, the Ecton mine and various other mine entrances on Ecton hill. It also maintains the centre and provides essential services such as insurance, mine management, electricity and phone access. The Ecton Hill Field Studies Association (EHFSA) is a group of around 15 volunteer 'tutors', mainly retired teachers, who lead chemistry or geology-themed days, including a mine visit, for school and other groups. It is the largest user of the centre and has provided much of the equipment and facilities. Most of the hill is owned or managed by the National Trust which also organizes monthly visits to the mine and Engine House in the summer.

There were two notable events during the year, In May EMET welcomed the EU-funded multi-national UNEXMIN flooded mine exploration project, in which it is an active partner, to Ecton. Scientists and engineers from Spain, Portugal, Slovenia, Finland, Hungary and the UK filled the centre for 3 weeks. The UNEXMIN robot made a number of dives to 130 m in the flooded shaft and pipe from 'launching sites' in the Deep Ecton adit. These provided large amounts of new data and many very clear images on the condition and archaeology of the mine. See more at www.unexmin.eu.

The UNEXMIN control room at the Centre

Left : Steaming day at *Thinktank* and
Right : Newcomen beam engine replica

**The bi-centenary of James Watt's death** occurred in August and was marked by various events, mainly in Birmingham – home of the famous Soho works. The Boulton & Watt engine at Ecton, sadly removed in 1850, was erected in 1788 and Bill Whitehead, one of the EHFSA volunteers, has produced a series of cartoons showing the year-long period of ordering and installing the engine. The cartoons were displayed in the Centre and some of these are included at the end of this newsletter. An actual Boulton & Watt pumping engine, dating from 1789, can be seen working at the Thinktank museum in Birmingham. The Ecton engine was much smaller and used for winding rather than pumping.
There is a replica of a Newcomen beam engine, an earlier and less efficient design than Boulton and Watt pioneered, at the Black Country Living Museum. Our tutors organise chemistry activities at the Black Country Living Museum fairly regularly. These are similar to the chemical activities a visit to the Centre can offer, but of course just a taster rather than a whole day of activity.

Students in the mine :
Regular visitors may notice that there is no longer a closed door at the end of the Salts level tunnel. The greater safe access allows two more shafts to be seen. Salts level has been unusually wet this autumn.

**Administration.**
A few visitors are still having difficulty filling in the booking form. If this is the case, save the form to your computer using the name of your organisation in the title. Open it again, fill it in and e-mail it to our Bookings Secretary Susan Wilkinson at MWilkin799@aol.com or phone 01732 456997.

**Tutors**
We always welcome additional volunteers to join the tutoring staff. If you are a teacher, or retired teacher, with experience of GCSE or A-Level chemistry, geology or related subjects and would like to get involved please contact Susan Wilkinson as above. If you decide you would like to join us you will have an induction period with experienced tutors to familiarize you with the activities, including the mine visit.

Peter Kennett

Peter Kennett, one of our geology tutors, here at Apes Tor in the orange hat, has just retired from being the EHFSA representative on the EMET committee and I would like to thank him for all the work he has put in.

Finally greetings to all our visitors, the old favourites and those new to the Ecton experience. We hope you enjoyed this year's visit and hope to see you all next year.

Tim Colman - Chair EHFSA.
timcolman@tiscali.co.uk

Students setting off their black powder

**Cartoons by William Whitehead celebrating the bicentenary of the death of James Watt in 1819**

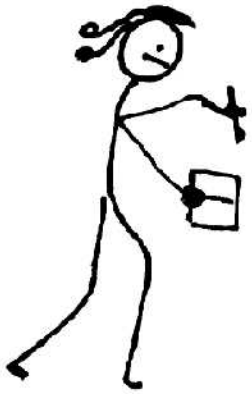
**with text from documents in the Birmingham Library archives**

## *Introduction*

*This is a pictorial record of significant events in the planning and construction of the Ecton Winding Engine between 1787 and 1789. Each character is usually seen talking to someone, in the actual words of the letters they write or receive. Very little alteration is made to the original text. To identify each character, the speech/text is printed in an individual style.*

**John Southern,**
**Assistant to James Watt -**
**Birmingham**

*Shall be glad to hear from you respecting the iron shaft and acknowledgement of the receipt of this & former letter of mine.*



**Cornelius Flint,**
**Mine Agent - Ecton**

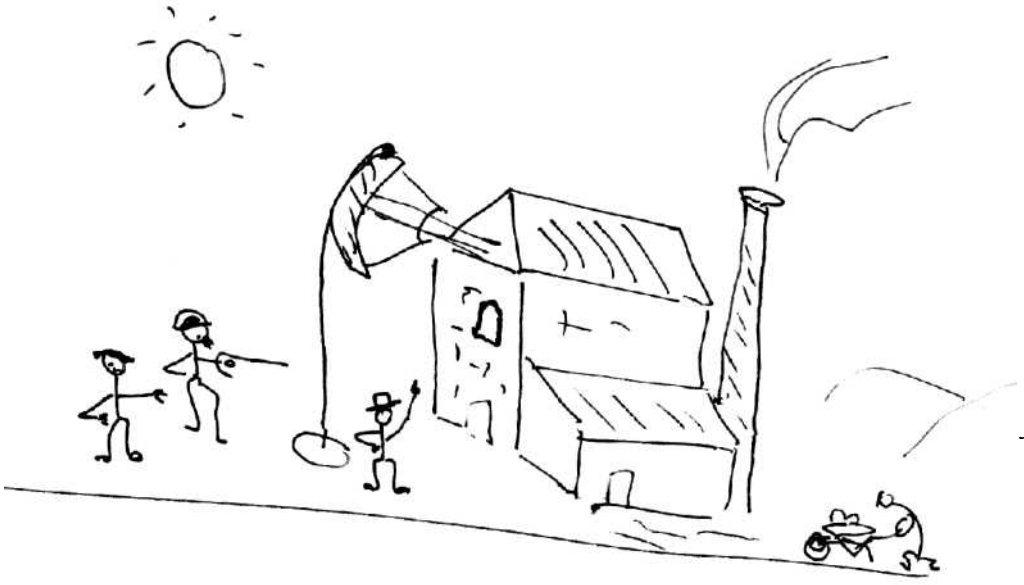
*Your Letters arrived bear in due course, my being abroad from home has been the principle reason of my not writing to you.*

**James Watt,**
**Engineer - Birmingham**

Your queries should have answered sooner but we have been very much engaged.

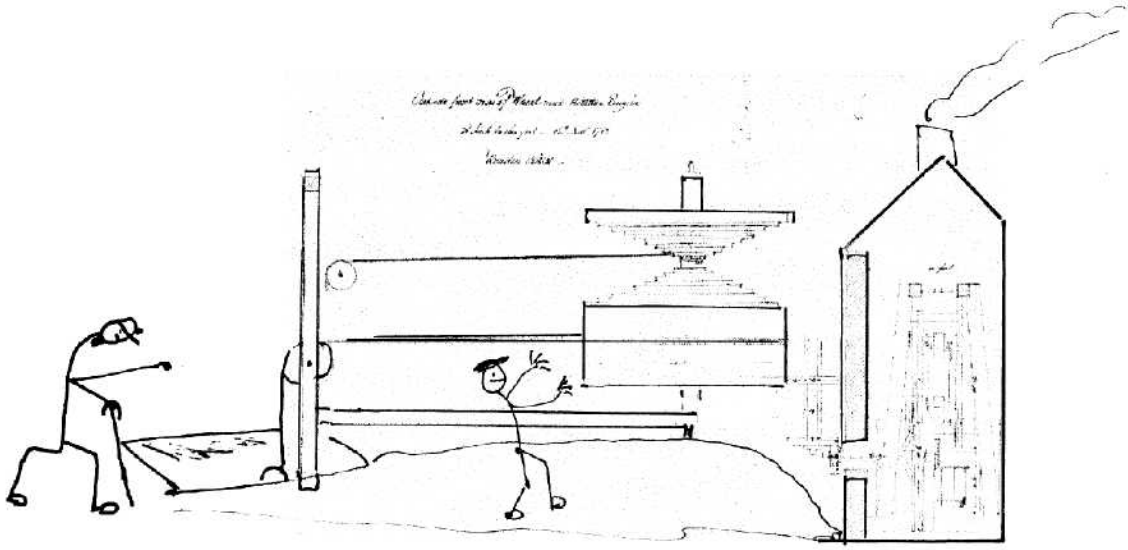
## *July 1787 – Cornwall*

*Cornelius Flint and his millwright James Newbold are on a fact finding mission – cost £40. Two rotative winding engines are visited.*



*Nice hat you have William!.....this engine is for pumping water - we are in need of a rotative one for windeing copper ores.*

*The Chacewater engine is twice the power we propose - But this Wheal Maid engine is about the size of it for the Duke - Keep your fingers out of the coggs James!*



**Ecton Reckoning for 7 Weeks ending 4th Aug.**

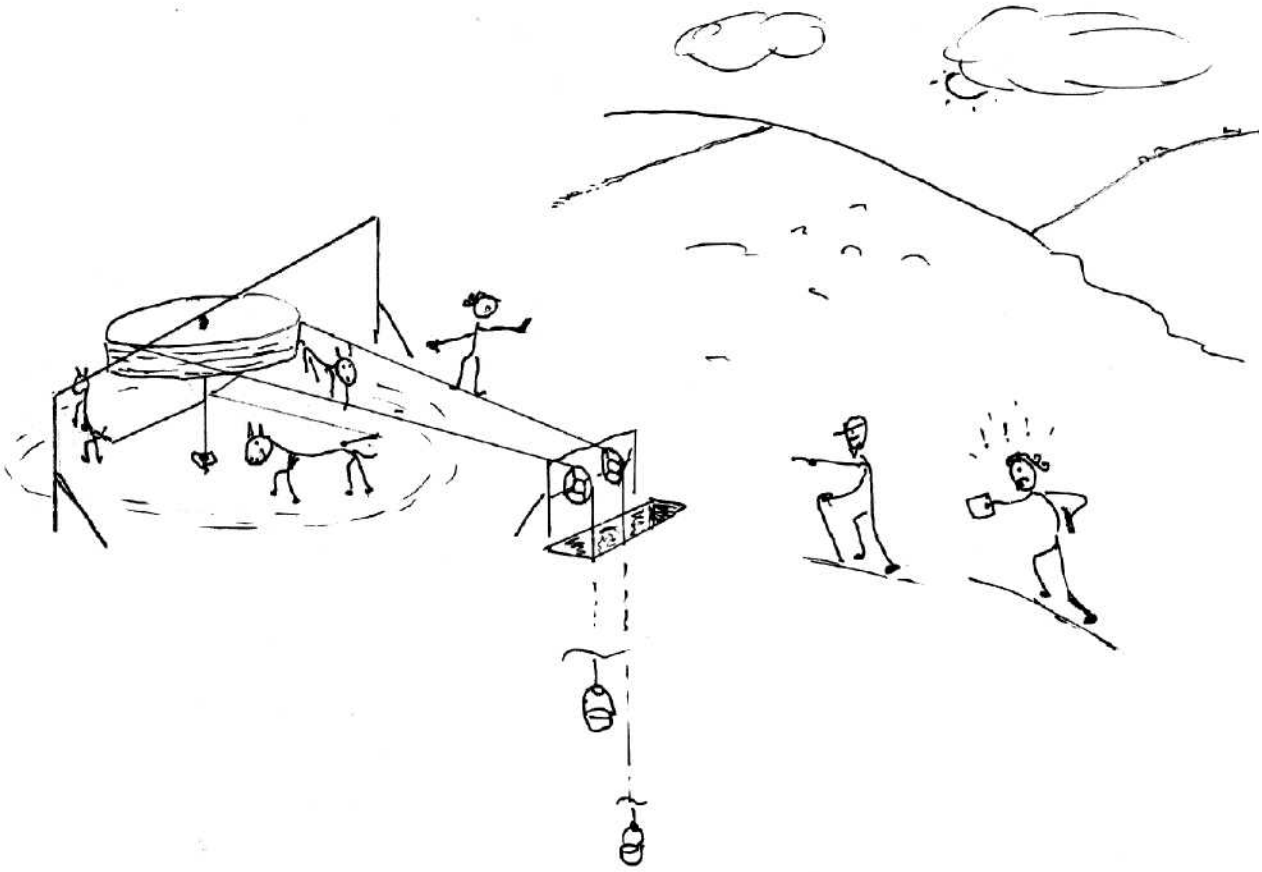
**3/86/237+8, 25th Aug. 1785.**

**5/1326 Outside front view, 16th Nov.**

## *Wednesday 16 th January 1788*

*CF is walking over Ecton Hill with JS to explain how the horse whim works. JS takes notes of the performance of the horses.*

On the hill we have a winding drum 16ft diam worked by 3 horses going on a 52 ft diam. and raise a kibble 46 fath. in 3 min.



The horses work 500 lbs 103 feet per min
= 17166 lbs for each horse [0.5 h.p].
The velocity of the horses must be as 16:103::52: 335 feet per'
=3.8 mph ( mmm.....slow.. Wilks's horses go 5mph).

**MS 3147/4/4 p. 23(a) 16th Jan. 1788, 39(b), 40(a).**

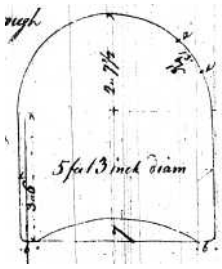
**MS 3147/4/4: pp. 40(b), 23(b) 7th Dec. 1787.**

## *Friday 8 th February 1788*

*Cornelius is trying to sort out several major problems.*

- *Who will make the boiler?*
- *Who will construct tapered ropes?*
- *How to reply to JS?*

*….I fancy there can be no difficulty in comprehending the drawing as it is simple..*




*The top a hemisphere, the sides a cylinder & the bottom a circle*

*With respect to the Boiler we well understand the Figure of it.*

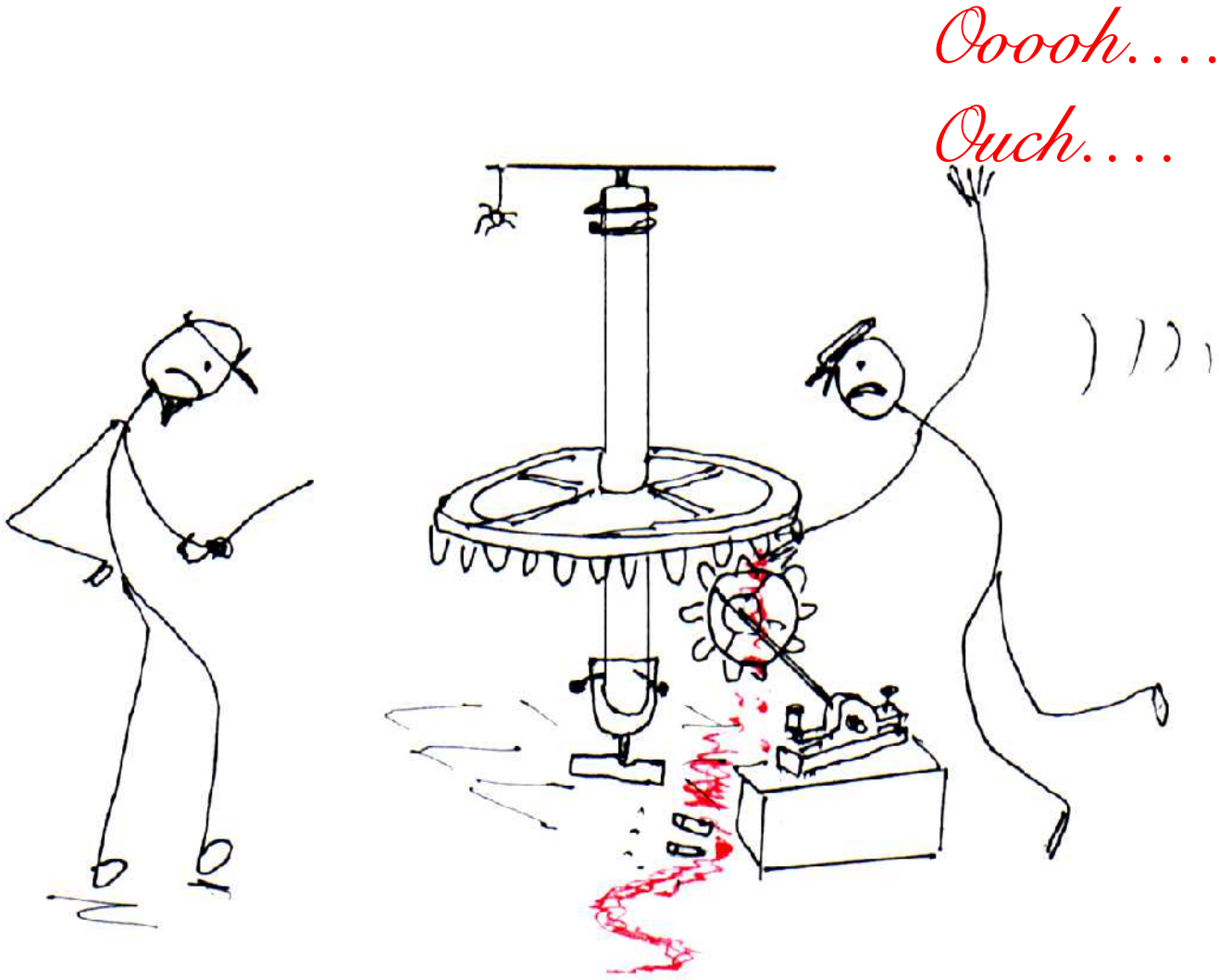
*Your letter of 26th of last Month gives the proper dimensions of one roap for 220 fathm. Indeed two roaps (instead of one as you observed) will be absolutely necessary to be employed & in use at the same time, tapered or otherwise.*

*There… that should be also well understood!*

**3/170/59 JS to CF, 21st Jan.**
**3/429/26 CF to JS, 8th Feb.**

## *Monday 28 th April 1788 – Ecton*

*After weeks of discussion, it is settled that a 20ft. spiral and winding barrel ARE to be used. The shaft, arms and gears are soon to be cast. But tragedy strikes ….!*




*I warned you James…*

*I am sorry to inform you that you have had part of 2 Fingers of your left hand totally severed by the coggs of a wheel at the Workes.*

**MS 3147/3/429/33 CF to JS, 29th April &**
**CF to JN (verbal communication), July 1787.**