Girls Visit CERN

At the start of November seven girls from Benenden and seven boys from The John Wallis Church of England Academy travelled to Geneva to visit CERN, one of the world's largest and most respected centres for scientific research.

Here one of the group, tells The Term all about it.

After an early start on Friday, we all travelled to Gatwick airport and flew to Switzerland - all of us excited for what lay ahead.

Once we had dropped off our bags, we got on a tram to CERN to take part in our first activity - making our own cloud chamber.

A cloud chamber, made by soaking the bottom of a fish tank in alcohol and placing this on dry ice, is used to observe particles such as muons, alphas and electrons. The super saturated alcohol vapour is ionised as particles move through it and so tracks form as the charged particles move through it. Ironically, the best cloud chamber was made by a group of non-Physics students from The John Wallis Church of England Academy.

After seeing our chambers in action, we were then taught about the physics behind them in more detail. After a quick walk through the particle garden, we headed off to dinner at a traditional Swiss restaurant, and then back to the hotel for an early night - ready for the early wake-up on Saturday.

On Saturday, we started the day off with a Q&A session with a data analyser and particle physicist to find out a bit more about how CERN works and to explain some of the physics behind working theories on the origin and expansion of the universe (such as foam theory).

Afterwards, we were taken to the Synchrocyclotron where we found out how protons are accelerated (using electric fields - a topic we had just covered at Benenden). We were then driven to the CMS (Compact Muon Solenoid) and were taken on a tour of the machinery 100 metres underground - the tour was only possible because of the CMS being upgraded so we were really lucky to get that close to such an important part of the Large Hadron Collider.

We then had lunch with our tour guide so we could gain a further insight into what he does at CERN. After this we went to the Antimatter Factory and for most of us, this was the highlight of the trip.

Using Professor Parker's connections, we were given a tour of the Antimatter Factory by one the only people in the world who knows how to make antimatter. Professor Jeffrey Hangst explained the theory behind both antihydrogen's nature and manufacture - the expected characteristics being the same as hydrogen and how its manufacture would be a challenge given the difficulty of creating and slowing down antiprotons. We then went to visit the Globe of Science and Innovation and of course the gift shop to round off our CERN experience.

On Sunday, after packing up, we headed to a park in Geneva for their Remembrance Service. Although the service was in French, we all wanted to observe the two-minute silence and watch the parade. We then headed to the Museum of the History of Science.

Highlights including the world's first battery, electron microscope and general measuring apparatus (like compasses and weighing scales). We then walked to St Peter's Cathedral and up quite a lot of stairs to look over Geneva.

Finally, we headed to the airport and back to school - ready for a Physics lesson period 1 the next morning.

Overall, it was a really enjoyable and educational experience - it was amazing to witness what goes on at CERN first-hand and Geneva was a really beautiful city. A massive thank you to everyone who made the trip possible.

EXPLORING PARTICLE PHYSICS

CERN is home to the Large Hadron Collider, a particle accelerator that pushes protons or ions to near the speed of light, colliding them at four points around the machine. It consists of a giant ring of superconducting magnets with a number of accelerating structures that boost the energy of the particles along the way.

The LHC's aim is to answer an array of particle physics questions.

- Circumference: 26 659 m
- Dipole operating temperature: 1.9 K (-271.3°C)
- Number of magnets: 9,593
- Number of turns per second 11,245
- Number of collisions per second: 1 billion

Autumn 2019