

Incorporation of Hammermen Scholarship Report

Louis Marie

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The award of the Hammermen scholarship allowed me to visit the Indian universities of: The Indian Institute of Technology (IIT) Madras; and The Birla Institute of Technology and Science (BITS), Pilani; in the cities of Chennai and Hyderabad respectively.

I was able to spend three months, from June to August 2018, collaborating with field leading research engineers on a collaborative project focused on utilising solar renewable energy to improve, and lower the carbon footprint of the rural Indian sugar industry.

I arrived in Chennai, India, at 3am on a Sunday night, and was immediately thrust into the chaos that is urban India. I made my way to the hotel I was staying at and collapsed into my bed, the next morning I was met by two of my colleagues whom I had only had correspondence with over e-mail. They took me to IIT Madras, which was to be my workplace for the next month or so. I crossed the Krishna gate from the city, into the campus walls, and the maelstrom of people, tuk-tuks, motorcycles, and cars gave way to open space, a few copses of trees, and a menagerie of wildlife. I was instantly struck by the quiet of the place. My colleagues, seeing my reaction hurried me along to the campus bus, where we rode to the mechanical engineering department. After meeting with my Indian-side project supervisor, I got set up and began working on the project.

I worked at IIT Madras for a month, and I can truthfully say it is one of the most amazing places to work in the world. The aforementioned menagerie of wildlife included: giant fruit bats, Bandar monkeys, and Blackbuck antelope. This combined with the tropical jungle of trees deeper into the campus made it extremely easy to forget I was in the heart of one of the largest and most densely populated cities in the world. All too quickly, my time in Chennai was done, and I was to continue my work in Hyderabad with another group of collaborating researchers.



1 Chennai



2 Spotted Chital Buck (Left) Monkeys seen from my office window (Right)

I flew to Hyderabad, and made my way to the campus of BITS Pilani. The campus is located an hour from the airport, and its surroundings are a stark contrast to IIT Madras. BITS Pilani is situated in a forest in a sparsely populated outskirts of the city. Again, there was wildlife to be found, but dryer climate, and the presence of large campus gardens, in place of thick groves of trees, meant that this wildlife was harder to find. However, I was able to spot mongooses (not 'mongeese', as I referred to them before being corrected).

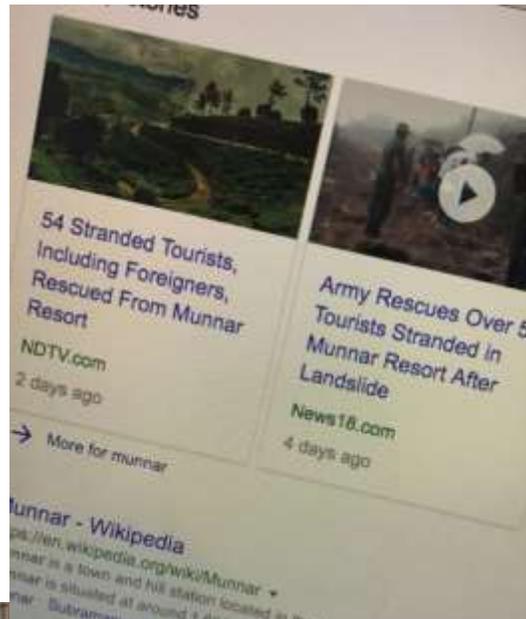
I continued to work on the project, and began to develop a numerical model for predicting the energy requirements of a solar sugar refinement system, as well as researching the viability of certain cutting edge refinement technologies like freeze pre-concentrating. The rural Indian sugar industry



4 BITS, Piloni Campus Gardens

has, unsurprisingly, not changed in hundreds of years, and this meant that the research of my colleagues and myself would likely have a very significant impact on the viability of many farmers businesses. This fact allowed me to gain a real sense of fulfilment that the work I was doing had value. On top of this I found my colleagues, and Indians in general to be an extremely welcoming and friendly people. My colleague and friend Prudhvi, who was a PhD student I worked with in Hyderabad, invited me to his family's home for dinner. So we travelled into the city and I met his family who were all lovely, and very keen to know what Scottish life was like, and how it compared. One of the things I now miss about India is the ability to eat with my hands. At first, it was a very odd and jarring experience, but I quickly became used to it, and by the time I returned to Edinburgh, it felt strange to be using cutlery again.

I continued to work on the project throughout the month of July, and into August. I talked with my Scottish side supervisor, and arranged to take a week holiday to see the nearby Indian state of Kerala. Venkat, (a PhD student whom I worked with at IIT Madras) who called it one of the most beautiful places in the world had recommended it to me. What he had not mentioned was that August was Monsoon season in Kerala. I planned to stay at a mountain resort in a town called Munnar and explore the region, before traveling to the coastal state capital of Kochi to see the city and hang out on the beach for a few days. However, on the day of my travel I checked the weather to see rain for the next week. Being Scottish, this did not particularly faze me. However, while waiting for my flight I received an e-mail cancelling my booking at the hotel in



6 Munnar on the day of my travel



5 Traditional South Indian Dinner with Prudhvi (Center)

Munnar, so I tried to ring, but could not get through. A google search of news in the region revealed that I would likely not be staying in Munnar that week due to landslides brought about by the monsoon cutting off all roads to the town.

I decided to extend my stay in Kochi, and booked in early at the beachfront hotel I was staying at. As expected, when I arrived in Kochi, it began to rain. Hard. And the rain did not stop for several days. After a few days I had to move inland to another hotel, as electricity and running water had been cut off at

the beachfront hotel. That same evening, the airline I was due to return with cancelled my flight because the airport was under two meters of water; it very quickly became apparent that my jaunt to Kerala had been a bit poorly timed.

That month, Kerala was hit with the ‘worst monsoon in 100 years’, and I was stuck in the middle of it. No buses, trains, or taxis were running, and the only way to get around was by the few tuk-tuks still braving the floodwaters. The first thing I did was contact my UK supervisor, who quickly escalated the problem to the university security team, who then escalated it to the ‘Global Security Operations Center’ (GSOC). Who advised me to stay put in the hotel, which I was quite happy to do, as I had already been to the train station to try to find a way to get out of the city, and found that everyone else had had the same idea and no one was getting out. A few ticketed flights were running from the local military base. I tried to get on one of them, but couldn’t get tickets, and on top of that, GSOC were advising that I wait for them to send a security escort to get me to the military base (a bit of an overreaction in my opinion). The next day, the rain abated and I was able to stay in my hotel for the next week until the waters subsided, and the trains began running again. As soon as I could, I got a train out of Kochi, to the city of Trivandrum, where I was able to fly back to Chennai for the final week of the project.

The final week of my time on the project was spent finishing off my portion of the research, and beginning to write a paper on our findings, and after a few more days, my unforgettable summer in India was over. I am still writing this paper currently, and am still involved with the project. I also intend to return to India again this summer (for a much shorter time), to wrap up the project.



7 Kochi International Airport

The Hammermen Scholarship allowed me to become totally immersed in India culture over the course of three months, which gave me the opportunity to gain vital experiences, which will serve me throughout my life. I was also able work far more closely with the lead research team than I otherwise would have been able to, meaning that the work I produced benefited greatly. For these reasons, I would like to deeply thank the Hammermen for their support, and for the vital charitable work that they



8 Clockwise from top right: Flooding in Cherai; My seat on the train out of Kochi; Indian Flag; Burst river near Kochi



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