

IMPERIAL COLLEGE LONDON

2014 Summer Tour Slovenia Expedition



Illustration 1: A view of the Krn massif from the Sunset spot

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Introduction

OVERVIEW

Between July 11th and August 18th 2014 the Imperial College Caving Club held its 19th expedition Skozi Zrcalo in the Triglav National Park, Northwest Slovenia. Skozi Zrcalo which means 'through the looking glass' refers to the small sonar Dr J.M. Frost (the club's diver) brought to measure the depth of a particular syphon, a necessary operation before any diving attempt. Weather conditions on the surface however did not agree with this project and the torrential rain made the cave passage to the sump near impassable and one pitch in particular unsafe to descend.

A total of 21 members of the club came out to the Migovec Plateau, along with one Irish caver and seven Slovenes. Unfortunately only a handful could make it out for the full span of the exploration but the shorter their stay the more determined the cavers were to see something done so that the lack of manpower did not diminish the level of exploration that took place.

Two years after the connection was made, the leads still abound and new objectives arise. This new chapter of exploration saw many important finds in the deep southern reaches of the system, bringing us ever closer to a lower entrance possibility. The northern reaches also offer promising perspectives but both are a little further still from the current deep camp, and this year's new leads may toll the bells for Camp X-Ray.

Surface exploration was not neglected this year, though deep exploration was prevalent. Efforts were made towards the digging of some blowing holes on the cliff face and a few cavers undertook some reconnaissance work on the northern side of the plateau towards the higher peaks of Kuk, and Skrbina, known as area N, where a promising lead was pushed two years ago. If the pot (N9) wasn't found, hopes are ever higher that a thorough surface work will eventually break into a more complex pitch series to the North which overlies directly the northernmost tip of the system.

During the Skozi Zrcalo expedition 1.2 km of new cave passage was found, all of which below 550m, most of which were at least 2 to 3 hours from camp. A new sump was found, as a lead left from last year was pushed to completion. Those figures represent a very high level of achievement for every caver involved, show their determination not to quit and more importantly to share the passion with newer members.

A twenty year long cooperation between the two clubs ICCC and JSPDT has thus been crowned with success once more and the need to go back the following year has never been stronger.

AIMS AND OBJECTIVES

The principal aim of the expedition is to share the experience of cave exploration with new members. This is done by exposing them to the full scope of pushing logistics; from packing the right equipment to the more technical skills refined by constant practice: bolting, rigging, surveying, all the way to deep underground camping. This year's expedition was a great success as all three expedition freshers went looking for new passage, camped underground and found both the joy of discovery and the disappointment of an impassable rift, constriction or the like. Major discoveries this year were not all made by 'crack' teams and new member contributed to the same level, far from the comforts of underground camp, let alone the surface.

Expedition dairy

EXPEDITION SET-UP

7th - 11th July

Pre-expedition: two dedicated cavers, Rhys and Clare flew to Trieste and then made their way to Tolmin, Slovenia where they stayed for a week in order to prepare the ground for the coming of the minibus. Two more joined them during the week mostly to a) buy essential and local goods for bivi life b) meet the Slovenes c) enjoy the pizzeria. Rhys and Clare walked up to Migovec and came back with ill news of an iceberg in the bivi.

11th - 12th July

On the other side of the Channel and Alps, a Union Minibus was packed carefully with caving gear and exploration essentials. 23 hours later it arrived in Tolmin with 9 cavers. They might have been nine logs by the looks of it but they still managed a pizza before going to bed.



Illustration 2: A snow plug in the bivi in early July

13th July

After a very good night's sleep for some, a team of keen members – some of which were new members either taken unawares or eager to show their worth – went off to the Hamlet of Ravne with the minibus and unloaded the kit in the Koblucar family barn. A few exchanges with the family were had around floral tea as the crates and barrels were packed neatly away to be stored and gradually emptied during the 5 weeks of the expedition. Then began the carries. The weather looked rather uninviting and the limestone face of the mountain was hidden behind a milky shroud but it remained stable. Therefore close to midday after nigh three hours of ascent most were up in the bivi, contemplating a snow plug almost 2 metres deep. We were undeterred though and started shovelling the snow into M10 a deep open shaft seconds away. It didn't prove to be anything else

than utterly exhausting so we changed our strategy to simply moving the snow around the bivi. At length the circle of stone seats was uncovered, as well as the cooking area so tea was made and soon proper food invigorated our cold limbs.

14th July

More carries up and down the mountain, more snow shovelling and the bivi looked more and more operational. Wages on when the iceberg will have disappeared, not on the morrow that is agreed. R. Tyers and T. Racine went and rigged the cave from the entrance to the top of Tessellator, D. Kirkpatrick left a string between the bivi and the cave entrance for ease of route finding in a)the dark b)torrential rain c)fog d)other conditions.

15th July

Another team went to rig to the bottom of Concorde (D. Kirkpatrick and W. French), some cavers enjoyed a tourist trip to Tessellator. More carries, more shovelling. The senior members of the club decided the weather was more favourable for a climb up the mountain. There was also a small degree of celebration on the mountain for the return of sunshine, a rarity on this expedition.

16th July

More carries. Jailbreak, a rather small cave on the western cliff face with a very tight entrance was looked at by R. Tyers, D. Kirkpatrick and T. Racine. After hauling a rock out of a drippy pit they found out it led nowhere. Other leads were checked and deemed impassable.

17th July

More carries and more snow shovelling. A digging trip was organised and four caver went to B10 (B stands for Blowing Hole, easily spotted in winter due to the lack of snow around it) and more rocks ended up on the mountain side rather than in the mountain so it was a fruitful trip. In a dig a few decimetres made are not to be overlooked ! They often conceal a lot of effort in enlarging the way forward.

18th July

The first underground camping trip was prepared for. William, Tanguy, Rhys and Sam went down after Clare who bounced before them to carry on rigging the descent. So the exploration began.

EXPLORATION SUMMARY (18TH JULY - 11TH AUGUST)

It is always the aim of the Migovec expedition to discover new passage using safe rigging and digging techniques. The need for an adequate approach is never greater than at -800m underground, a far cry from help and comfort. Organisation, as well as a good physical and mental condition are paramount in order to minimise the risk in a hostile environment. Trips are always carefully prepared in order to achieve the fine balance of morale, safety and efficiency for the party involved. That includes the setting of clear objectives, taking what kit is required and making sure it is in full working condition and finally communicating one's findings as extra care or kit may need to be taken on the pushing front. It is everyone's duty to look out for signs of wear on the equipment used, and to report any incident to the rest of the party and later the expeditioners as a whole.

This year again and thanks to everyone's cooperation, vigilance and proactivity all cavers have enjoyed an incident free expedition underground, a testimony to the hard and constant work put in minimising the risks. There are still improvements to be made in order to smoothen out the coordination of pushing parties.

Deep exploration



Illustration 4: Rhys Tyers in a phreatic passage leading to Republica Chamber (-810m)



Illustration 3: A crystal formation at Strap on the Nitro Aven (-820m)

Sic Semper Tyrannis, (off Atlantis) > Jericho, Squidgy Goodness, Pleasure Palace, Touching the Void

Left two years ago as a potential lead at the end of the Atlantis passage where two ways on presented themselves. The more obvious one had been pushed and surveyed to a perched sump (Lethe) the year before, but the flat out crawl to its left wasn't properly examined. The end of Atlantis lies approximately 500m due south of the cubic kilometre of dense tangled network , into completely blank mountain. Although it is mostly stooping or walking passage, it must be stressed how far this lead is from camp, let alone the surface. The first trip of the 2014 expedition into this area of the cave was organised by R. Tyers and T. Racine.

Sic Semper Tyrannis

With a little hesitation about what where the lead actually was, the flat out crawl was negotiated. After a sharp bend it opened up and turned to walking phreatic passage with a strong draught. One large ledge protruded from each side, providing a path 1.5 metre from the ground with mud ripples and other multiple mud formations. It continued for 20 metres until a shadowy alcove appeared to the left, and a pit to the right. Climbing into the alcove the passage became tunnel shaped and sandy until it hit a junction 15 metres later. The lead was pushed northward - *Jericho* starts southward from here - and again a pit appeared on the right before a turn to the left.

This pitch would be bottomed on another trip by R. Tyers and D. Kirkpatrick and leads to *Pleasure Palace*. Having turned left from the pitch head, after an awkward pit traverse, two sandy chambers separated by constrictions led to a larger chamber with a boulder floor sloping toward the north. At the western end the draught disappeared through another constriction from which the trickle of water could be heard. The passage ended 10 metres later at the foot of a 5 metre high waterfall. The water pooled at the bottom before flowing eastward through the boulders. A way on could be seen from there, underneath the pile of boulders, but it wasn't checked this year.

At the top of the western end of the large chamber a window through the boulders led to the bottom of a massive 30 metre high chamber named *Helm's Deep*. The floor was a boulder slope, at the foot of which two different ways led to a small waterfall chamber (same water as waterfall 15

metres below). It appeared from a rift which could not be followed upstream without hammering. That lead did not look very promising so again it was left for the following year. The top of the chamber was reached trips later by G. Ambrus and I. Mozir, and led to *Touching the Void*: an even higher chamber on top, No obvious leads were found in *Touching the Void*, apart from the way which the water comes from, but that would be a very difficult climb. *Sic Semper Tyrannis* is 140 metres long and curves gently to the southwest. It is thought that the water found there is the same as the one falling into Brezno Slapov (the Waterfall Chamber), only pushing the active stream way will determine their relationship.

Jericho, Squidgy Goodness

This lead was explored by R. Tyers and D. Kirkpatrick, then S. Page, T. Racine and S. King. At the junction they followed the draught southward. The tunnel turned into a rift 1 to 2 metres wide with a general bearing of 100°. The rift was climbed, then followed a little drop – this is where *Squidgy Goodness* starts - another free climb and yet another drop, unbottomed. The later climb was done and rigged by G. Ambrus and P. Adamko, however, due to lack of time, the continuing passage could not be explored. Several ropes have been installed, but there is still need for more to be rigged. The draught at the end of the passage is very strong, leading outwards (in the summer). The rift is about 20 m high, with multiple levels of passages. This is now the southernmost point of the whole system. A dead animal was found in this passage identified as a pine martin, and possibly the same as the 'creature' seen at the *Hawaii* junction in 2013 (although it could not have followed the route we use from Hawaii because of the climbs in the rift). Its presence in a passage so deep is extraordinary for several reasons: this mammal (fur was identified) is clearly not a troglodytic species, there is no ecosystem on which it can survive for a long period of time underground. Its relatively large size (estimated at 20cm in length without the tail) is such that it cannot possibly survive an accidental fall through an entire pitch series without suffering crippling – if not lethal – injuries, in which case there is no conceivable means for the animal to make its way to the southernmost reach of the system from the Plateau. This leaves very few options : it either found a climbable way down from the Plateau, taking passages too small for humans or it could have travelled horizontally (or very nearly) from the surface. It is very tempting to extrapolate the rift southeastward and up (the shortest way to the surface from *Squidgy Goodness*) but the existence of a lower entrance to the cave can only be proven through further exploration through the rift. This lead is one of the priorities of the 2015 expedition.

Pleasure Palace

Pleasure palace begins with a 10m pitch off *Sic Semper Tyrannis*, followed by a 2m drop into a medium sized chamber. A crawl from this chamber leads through a collection of stalactites and stalagmites (many formed horizontally due to the air flow) and on to the top of a small boulder slope with a low roof. At the bottom a sandy crawl with a strong draught was followed for a few metres but left as a going lead.

Touching the Void – Explored by G. Ambrus and I. Mozir at the end of the expedition, this was found at the top of the *Helm's deep* chamber, at the end of *Sic Semper Tyrannis*. The steep and loose boulder slope had to be climbed to the top, where a rope was rigged off a slab of white limestone for ease of climb. From the top of the rope, one can squeeze between large boulders to reach the top of the debris. A large chamber is found atop, about 20 m high, with water entering from a higher shaft in the ceiling. In fact, *Helm's Deep* and *Touching the Void* used to be one massive bell-shaped chamber (about 50 m high, and at least that wide in diameter), which was filled up with sediment and then later re-carved by water. Due to this, the nature of the whole chamber is very unstable. Still, the presence of such a massive open space at this far end of the cave is very surprising, and it clearly indicates that the extensions at the south end of Atlantis belong to a different cave of the system, which lies directly below the peak of Migovec. The water reaches the bottom via three parallel shafts, and it is likely to continue to Brezno Slapov. No

obvious leads were found in Touching the Void apart from the way on the top where water enters, however, this climb would be very hard to do. The shafts have not been descended, although it would be quite dangerous because of the massive loose boulders surrounding them, and they end in boulder chokes at the bottom, as far as it is visible. The vertical legs appearing on the survey are estimates only, precise measurements could be made with the aid of a laser measure, although the lack of leads makes this effort questionable.

A Pun Too Far (off Kamikaze)

This lead was found in 2010 by D. Wilson and J. Kirkpatrick by a stroke of luck (fate). Through a boulder choke halfway down Milka Pitch (35 minutes from camp X-Ray) and then through a window in a wall there began a sandy passage. The passage to the right heading south had been surveyed first and pushed to its completion until a large boulder obstructed the way on. The 100 metre long crawl named Kamikaze ended as a dry little alcove about 1.5 metres high with the tantalising sound of dribbling water beyond.

Four years later the boulder was shifted by T. Racine and A. Brown late in the expedition until a passable constriction was opened. It continued into a dry chamber of small proportions and a morphology strongly dictated by a fault plane dipping at approximately 30 degrees towards the East. (thrust fault probably).

At the north end of the chamber a hole appeared where the ceiling met the ground looking into another chamber, an active stream way with a small amount of water at the time but marks of flooding were seen around 50 centimetres higher. This small pitch was 7 metres high, and the flow of water headed towards the south east, disappearing after a tight and oblique rift. There was a bypass further up the rift and another pitch head where the stream was seen again, cascading down.

The tight pitch head was cleared of the unsafe boulders until the 4 metre high chamber was bottomed. Some boulders were chiseled open in the process, revealing a fault breccia structure which comforts the idea that the passage morphology is linked to a significant – if not major – geological fault. The stream could then be followed up and down the fault plane in a rift periodically tightening and widening. Again it disappeared at the bottom of an oblique rift. Climbing up the rift another pitch head could be found, this one overlooking a 15 metre pitch, 5 metres in diameter.

After this larger pitch was bottomed it closed down again and turned again to rift passage with a succession of small drops and tight, sharp squeezes, the ceiling however goes up to 8 metres high for a while before it gradually falls down to four metres. The passage was left as it dropped 7 metres in a circular shaft for want of rope and time. It remains a tantalising lead for the 2015 expedition, one of the few left relatively close to the X-Ray camp.

The new pushing front is now 53 metres deeper and although Kamikaze bent northwards, this one follows a trend of 140° on active stream way. The pushing front trends alarmingly towards Hash, a passage off Lost Miles famous for being tight and scary, left unpushed for the same reasons. It is hoped they do not simply connect, but lead to more active stream way, deeper than the Lost Miles passage, for it is almost blank mountain (for now).

Strap on the Nitro

On the 3rd day of their underground camping trip R. Tyers and J.M. Frost took a Hubsan X4 H107C high-def video recording quadcopter to Strap on the Nitro Aven. Here they assessed the rock as being of high quality for bolt climbing, measured the height of the aven (33 m), the distance to the rope belay from the prior free climbing attempt (2004, + 12 m) and noted the existence of what appeared to be several windows on the shaft, most notably at the top where the passage appeared to round off.

Using a 2xCREE-XML bike light, the drone was flown up the aven. Two flights in total were attempted, the first one reaching about + 18 m. A more determined second flight reached ~30 m.

Considerable buffeting was experienced at the top of the aven, seeming to indicate that there was considerable horizontal draught. The drone descended with difficulty, and having nearly lost it (and the footage!), it was decided not to try risking it again.

Bolt climbing was initiated by Maffi, much progress was made but the top was not reached this year.

Colarado Sump Duck – Below Big Rock towards the North

During a 3 night camp at Camp X-Ray, R. Tyers and J. M. Frost worked on increasing access to the Watership down part of the deep cave. However high rainfall prevented them descending below Republica.

On the first day they emplaced a tent and two thick roll mats at Red Cow, a good quality campsite (slightly further up the passage) being located. The camp is warm and dry, with an abundance of dry sand / rock flour. This supplements the methylated spirits + mess tin which was left there after 2012.

On the 2nd day, they rerigged the Republica pitch itself to move the rebelay out of the water. The rather minimalist original 2003 exploration rigging between Big Rock and Red Cow was entirely overhauled, with 10 bolts placed replacing awkward naturals and protecting free climbs.

On the 3rd Day they took a Hubsan X4 H107C high-def video recording quadcopter to Strap on the Nitro Aven. R. Tyers and J. M. Frost then continued through the 2003 and 2004 exploration, taking photos and videos. A number of challenging free climbs were overcome along the way, and the occasional bare spit was located. There is a full 'derigging' tackle sac found just beyond the Red Cow camp, which upon conversation with Clewin Griffith almost certainly contains the gear to rig all these pitches for SRT.

To Infinity and Beyond aven was not really an aven, just an increasing climb in the end of a rift passage (~4 m across) which was followed until the footprints disappeared and the next boulder seemed a little difficult to scale! It's not obvious where it is going, or where the ceiling is.

Descending Colarado, there appears to be an inlet passage which has not been pushed. Hoover dam was not visited.

Finally reaching Colarado sump, they were confronted with an obvious duck. 2004 era footprints were preserved in the silt bank within the pool, and the PSS cairn was covered with gloopy mud but not otherwise disturbed, both indications that no significant flow occurs here. No air draught, so the passage must be sealed at some point beyond. Distance to the boulders observed on the fair shore line was 14 m. It passes through an archway seemingly 40 cm across and 30 cm high, about midway through the duck. The cross section of the sump is roughly bath-tub like, so would be an easy crawl. In the opinion of J. M. Frost, the large descending Phreatic followed to the sump (>40 m long in sections) has been interrupted by a slip fault which forms the 'hammerhead' of passage in which the duck exists.

Photos (and further drone footage) were collected on the way back from this first ever revisit to the 2004 extent of the cave, a place so far North that it resides under the next mountain peak, Tolminski Kuk. A mostly unbroken trail of photos now exists from the furthest extent, to be added to Clewin Griffith's interactive survey website.



Illustration 5: Colorado duck revisited by Rhys Tyers and Jarvist M. Frost

Leads off Cuckoo's nest

Gravity

Dwarf Pine, a wet 25m pitch found off Hydrophobia/Cuckoo's Nest had been descended last year to a ledge with a further 5m pitch continuing. S. Page and W. French bolted down this pitch, and followed the water through a tight rift passage. This was pushed until reaching another 2 metre pitch. Bolting this pitch was difficult as there was not enough space to fully retract the bolting hammer or to lean in to blow air out of the hole being made for the spit. So in the end only a single bolt was used. When the time came to screw it in, it also became apparent there was not enough space to use the end of the bolting hammer to tighten it. As they had not brought a spanner down, a maillon had to be used instead. While breaking the maillon, this was not very effective at tightening the bolt, so it was a rather dubious belay down. Another 40m or so of tight rift led to a 3m free climb down to a pool of water and walking phreatic passage. Sam found a PSS revealing that they were in Highway 32, and thus killing the lead. The passage was named Gravity, in reference to the fact that W. French dropped a number things while bolting.

Hips Don't lie

HDL is a small crawl off the downstream continuation of Rejuvenation Rift. The stream quickly disappears into a small impassable crack just after it is joined by another small stream in a tall (5m) but impassably thin rift(probably from Time Bandits). Above this incoming stream (and clearly part of the same rift) a very small crawl heads in an upstream direction. A squeeze not far into the crawl was widened and passed to be followed by another constriction which was left unpushed. Time

bandits was investigated and it is not obvious that this crawl immediately joins it. There is also a larger space beyond the second constriction with tantalising dark space to the left.

Cuckoo's Nest

Shortly after the Xanadon't bypass entrance into Cuckoo's nest there is an obvious climb (4m) on the right with a passage (1m tall by 1.5m wide) heading off the top. It would be difficult and unwise to do the climb unprotected so it was left unexplored

Serrure, Your Mum (off Esoterica)

Serrure

This lead was explored by W. French and T. Racine. Early on the Esoterica rift a climb shot off to the right, leading to a pitch head, and further on back to Prince Consort Road. The pitch was found by O.M. Myerscough and J.M. Frost in 2012 but left undescended for logistical reasons. The pitch was 15 metres deep , and at its foot a small dry alcove opened up by the stream way Some interesting mud stalagmites were found in the alcove. The stream disappeared in a rift below, judged impassable without more hammering work.

Your Mum

Esoterica was a going wet pitch series discovered in 2010 off Prince Consort Road. While less than an hour from camp, it had been left unexplored for several years partly due to difficulty finding it and there being more promising leads elsewhere. After first descending the wrong hole, W. French and J. O'hanlon found the way on. Once they reached the pushing front, they bolted a wet 5m pitch (which they called 'Your Mum') and found the stream way continued down another 15m pitch, which they did not have the motivation to descend. On the way out a natural in one of the earlier pitches in Esoterica failed. Luckily the backup natural held firm, so this meant nothing more than two wet and unhappy cavers prussiking up a waterfall.

Surface exploration:

The Migovec Plateau can be divided into three areas of interest: namely North, West and South. North and South, because they lie over the reaches of the deep system. The blank mountain above those is thought to hold potential for more vertical cave development. West because of the still elusive Primadona, main system connection.

This year some surface bashing was undertaken in the South, in valley nested between Migovec and the camping area with the old path running in its talweg. The entrance PF10 - once a contestant for potential against the Main System now left at a depth of 120m – was spotted along with a number of various cavern entrances. Three constrictions were dug out, to little avail as all entrances choked soon after. The new pitch series remains to be found.

Two cavers organized a trip to the Northern Area of the Plateau, named Area N and went looking for N9, the most promising lead there. Unfortunately, due to poorly cairned paths and adverse weather conditions the shaft was not found.

Exploration on the western edge of the plateau has yielded several caves that have piqued ICCC's interest in recent years, including Monatip which was connected to Primadona/U-Bend in 2008. The JSPDT has concentrated on exploration in Primadona and Monatip in the interims between expeditions, and every year draws closer to a connection with System Migovec at the - 100m level. This is both a main aim and hope of our expedition. New caves in the west of the

plateau could plausibly connect with Primadona, extending its length and providing new entrances to the system.

In 2014 surface bashing of caves re-discovered in last year's surface bashing was the focus for western-plateau exploration.



Illustration 6: A view of the karstic Migovec plateau with Krn in the background

An afternoon of pushing in last year's main surface discovery, Jailbreak, unfortunately succeeded in killing the cave, as both leads – a dig and a pit containing a boulder blocking onward progression – died. The trip featured a lucky escape for Rhys, the first of a couple he suffered this year! Ropes and bolts were removed for exploration elsewhere.

B10, first marked with red paint during the 'Blowing Holes Recce' of 1995, had been looked at in 2013. Located just off the path to Kuk about 10 minutes from the bivi, it contains a skinny-caver-sized tube suitable for digging with an enlargement referred to as a small chamber. Digging this year expanded the size of the crawling passage, allowing larger cavers to successfully reach the 'chamber'. The cave continues and B10 has potential to reach a length of 10m; however, such gains will only be made with significant digging effort. It is our hope that it will continue and connect with Primadona.

While looking at B10 a pit marked as N1, shown on various maps of the plateau (and not related to area N beyond Kuk), was rediscovered nearby. There was little information about N1 in the Hollow Mountain despite its presence on maps. A team looked in the bottom of the pit, approximately 3m deep. A tight rift-like wall could conceivably be hammered to reach a small chamber, but there is no visible downward progression.

A small hole was identified off the path up to the camp and logged as Sunset Hole in the GPS. There is also a rumour that there is a blowing hole on the scree-slopes approaching the portal (where the paths to Kuk and Migovec meet and join the path to Tolminski Ravne).

Our re-investigation of N1 and logging of small holes such as Sunset Hole ties in with our aim to gain a greater understanding of the plateau. Our current understanding is largely dependent on the experiences of whichever members found/explored each cave entrance. This 'scattering' of mental knowledge makes it difficult to know whether a hole has been previously discovered, killed, or left as a viable lead. We hope to gather together all information about surface cave entrances into one accessible written form within the next few years.

EXPEDITION PACK-UP

On the 11th of August seven able caver on the surface prepared themselves for the final caving day, that is when the underground camp is put to sleep for another year and the whole 'entrance series' is derigged: ropes are pulled up the pitches so as to avoid the damage of water over time, bolts are protected with vaseline. Two cavers R. Tyers and D. Kirkpatrick were sent down under to sleep overnight and pack-up the underground camp while the seven others raced down the pitch series in the morning to take their share of tackle bags up. They then trickled out of the cave one by one during the afternoon in various states of tiredness. The last one out, R. Tyers did all the derigging while others climbed out ahead and managed to make it out early in the evening, admittedly quite a feat and overall an efficient derig.

On the 17th of August, after celebrations of another successful year, the minibus headed back to the UK. This marked the end of the Skozi Zrcalo expedition and the renewal of a promise: the promise to go back in 2015 as better cavers.



Appendix

SUMMARY OF ACCOUNTS

Expenditure		Income	
1st Aid	£150.74	GPF Funding	£650.00
Underground Equipment / Camp	£1,528.46	Members Contributions	£5,391.88
Food	£1,169.35		
Travel Expenses	£1,845.40		
Surface essentials	£1,347.93		
Total	£6,041.88		£6,041.88

GHAR PHARAU FOUNDATION REPORT

This year one Fresher, T. Racine benefited from the Alex Pitcher award. Thanks to this support he was able to come out for the full five weeks of expedition and participate in all aspects of the expedition.

Exploring the depths of Migovec, Slovenia.

This summer I went on Migovec, in the Triglav national park with the Imperial College Caving club as a Fresher. I spent five weeks on the mountain, camped underground and had the opportunity to explore new passages in the Hollow Mountain. This was a very enjoyable experience for which I thank the Ghar Pharau Foundation in helping me financially with the Alex Pitcher award.

Deep exploration at below -575m was the emphasis of the 2014 expedition and the 1.2km of passage added to the survey bear witness to this high achievement for a student run society. I am proud to have been part of the endeavour in all its aspects. I have been extremely lucky to camp underground for a total of ten nights, and to take part in seven deep pushing trips as well as several other outings closer to the surface.

As a Fresher I have experienced a steep learning curve, familiarising with underground camping logistics, as well as those of deep pushing and surveying. I have also been fortunate to tread new passages all trips, sometimes participating in the digging of constrictions or SRT rigging of the pitches we found.

My first trip took me to the southernmost end of the system, a good eight hours from the surface, at a depth of -800m. Left two years ago as a potential lead at the end of the Atlantis passage where two ways on presented themselves. The more obvious one had been pushed and surveyed to a perched sump (Lethe) the year before, but the flat out crawl to its left wasn't properly examined. The end of Atlantis lies approximately 500m due south of the cubic kilometre of dense tangled network , into completely blank mountain. Although it is mostly stooping or walking passage, it must be stressed how far this lead is from camp, let alone the surface.

With a little hesitation about what where the lead actually was, the flat out crawl was negotiated. After a sharp bend it opened up and turned to walking phreatic passage with a strong draught. One large ledge protruded from each side, providing a path 1.5 metre from the ground with mud ripples and other multiple mud formations. It continued for 20 metres until a shadowy alcove appeared to

the left, and a pit to the right. Climbing into the alcove the passage became tunnel shaped and sandy until it hit a junction 15 metres later. The lead was pushed northward - Jericho starts southward from here - and again a pit appeared on the right before a turn to the left.

This pitch would be bottomed on another trip by Rhys Tyers and David Kirkpatrick and leads to Pleasure Palace. Having turned left from the pitch head, after an awkward pit traverse, two sandy chambers separated by constrictions led to a larger chamber with a boulder floor sloping toward the north. At the western end the draught disappeared through another constriction from which the trickle of water could be heard. The passage ended 10 metres later at the foot of a 5 metre high waterfall. The water pooled at the bottom before flowing eastward through the boulders. A way on could be seen from there, underneath the pile of boulders, but it wasn't checked this year.

At the top of the western end of the large chamber a window through the boulders led to the bottom of a massive 30 metre high chamber named Helm's Deep. The floor was a boulder slope, at the foot of which two different ways led to a small waterfall chamber (same water as waterfall 15 metres below). It appeared from a rift which could not be followed upstream without hammering. That lead did not look very promising so again it was left for the following year. The top of the chamber was reached trips later by Gergely and Peter, and led to Touching the Void. Sic Semper Tyrannis is 140 metres long and curves gently to the southwest. It is thought that the water found there is the same as the one falling into Breszno Slapov (the Waterfall Chamber), only pushing the active stream way will determine their relationship.

My second underground camping trip took me back to the end of the Atlantis passage, where with the help of Samuel Page a further 25 metres of passage was found in a multi-level rift.

The third outing was with William French, and closer to camp. The outcome was a descended 15 metre pitch, and a rift too narrow to be passable (yet). I had the chance to put several bolts in at the top of the pitch. Said pitch was bottle shapes, which enabled us to rig it as a straight hang.

The final trip, over 98 hours long was by far the most demanding but it taught me the value of perseverance at one pushing trip. Since I had never pushed at the same front in one trip, to go back to the same passage four times in a row was undoubtedly trying my commitment to the caving cause. In hindsight, it appears the only way any significant progress could have been made because it meant we were the only pair to know the ground, which enabled us to push more efficiently. To this day, no one but Aileen Brown and I have been at the new front, for it was late in the 2014 expedition. Here is an account, written for the Fresher's issue of the Imperial newspapers.

'Hey ho !' Silence, we know what it means. Cavers returning. The kettle lets out a hisssss and gurgles. A tackle bag falls heavily on the floor and we all look up. 'Hey ho !' And conversations resume, 'yes this word fits', 'what about fifteen down ?', 'Does it go?', 'tea is up !', 'where's the cow ?'...

I am sat in the bivi, a large depression with an overhanging rock bridge on the Migovec Plateau in the Triglav National Park, western Slovenia. From the 'Sunset Spot' one can gaze all the way to Italy and on a clear sunset one can even spot the Dolomites rising in the distance, shadows crowned with russet light. West of Migovec is the Krn massif, former Soča front during WWI sometimes wreathed in storm clouds while stars twinkle upon Migovec.

Those are the first things I learnt as an expedition Fresher. Then come the more prosaic rules: when and how to use the toilet facilities (a dignified pit), not falling into M10 (a 30 metre open pitch) when leaving the bivi at night, where to pitch the tent, how to successfully manufacture a 'dwarf pine sofa' etc...

Living for five weeks at 1850 metres of elevation, three hours from civilisation is almost as remote as you can get in terms of summer expedition. Water? collected with tarpaulins into barrels. Electricity? collected via solar panels. That's the problem with a 'hollow mountain': there are no overground streams for water collection or electricity production. Food? Hunted for in British supermarkets and cooked on petrol stoves. There is always the latest teaspoon spinning device

available and a myriad of other ingenious contraptions to make mountain life easier. To quote the expedition veterans 'they must invent not just explore'.

I am sat in the bivi, discussing possible leads with the old lags and the returning cavers. I book four nights in the underground camp and start preparing my kit. Tomorrow, another caver and I are going to explore at -700m with chisel, crowbar and hammer. We have a 600kg rock to shift in order to squeeze past. I hear tales of the chamber beyond, and the roar of a waterfall afterwards. As excitement builds up, so does apprehension. I've been down at underground camp, I've been at the southern most point of the cave, a good three hours from camp and from there five hours to the surface. But I've never slept at camp X-Ray more than two nights in a row, and I've never done more than one 'pushing' trip. There no knowing what you sign up for when going pushing which is either thrilling or sobering.

On the morrow we set off in pair and walk to the cave entrance, a few minutes off the bivi. We enter the cave. 98 hours later, we make it out, exhausted and elated. It is four in the afternoon and we enjoy the smell of dwarf pine mixed with earthy fragrances we were starting to miss. The temperature is a delight after the ubiquitous 1°C of the cave. Twenty minutes later we arrive at the bivi.

'Hey ho!' Silence. 'Does it go?', 'Do you want some tea?', 'yes', 'cow?', 'no'...

'Yes the cave goes, it always goes, the mountain is hollow after all.' A pause, that tea is hot. 'After the rock was shifted – it took us three hours - we found a small chamber, at the end of which a pitch head awaited us. So we rigged it the day after and descended into an active streamway. Not the roaring torrent we were expecting but some water nonetheless. From then we crawled into an oblique rift and found another pitch head. Whilst clearing it of unstable boulders one rock shifted into the gap and obstructed the way on. The day after, with chisel and crowbar we attacked it until it yielded another chamber, more rift and a third pitch. This we descended on the last day, and walked down more tight rift, free climbing over pristine pools of water until we were faced with a last circular shaft, seven metres deep. We surveyed our finds, slept at camp and got out.' The tea is drinkable now.

'Shall we enter the survey data now?', 'Of course'. And little by little the 150 metres or so of passage are added to the grand survey. What a joy to see four days worth of work take shape before one's eyes! Where does it head to? Is it blank mountain? As ever we raise more questions than we actually answer.

There lies the thrill of exploration: more people have been to the Moon than in the passage we found. Tomorrow though is the expedition D-Day. This is the final caving day when we will put the cave to sleep for another year by packing up camp X-Ray and finally head down to Tolmin the nearby town in the valley before the long journey home. Migovec, I'll be back.

All in all, those five weeks of expedition have exposed me to a range of entirely new caving/survival techniques and taught me skills precious for future explorations. I thank all members of Imperial College Caving Club and Jamarska Sekcija PD Tolmin for their support and the Ghar Pharau Foundation with the Alex Pitcher financial support. Thanks to all I have grown in maturity as a cave explorer and as a potholer in general.

Tanguy Racine