

Indiana Mark and the Gangsta-Mappers

this report contains sad scans of some pics taken during the survey by Indy's disposable camera; sorry for the poor quality...



Indy, Devin, Rafi - the G-Team!

Prologue:

Back in December, 1999, Indy attended the DC Grotto X-mas Banquet with some friends of his (Cat & Rafi) from the Grotto. Therein after consuming much good food of the masses and viewing a presentation on a cave diving project given by a Florida cave diver named Bill, Indy found himself caught up in a discussion by a sub-group of people calling themselves [the Gangsta-Mappers](#). They had just finished (mostly) their latest project, Bowden Cave, which Indy had the fortune of having a freed weekend and thus was able to be involved on one survey trip earlier in the year. Unfortunately the party Indy was assigned (consisting of caver-dude and survey god, Ralph, and Indy's climber/caver friend Cat) had their survey cut short when one of their teammembers (Cat) suffered a minor injury when a ~15-20 lbs rock was dislodged from the ceiling onto her calf. Although it only fell a foot or so, it fell just right so that it made her leg inoperable for almost a full day, necessitating that they evacuate the cave after maybe an hour of surveying. In her honor, the small room she was backing out of when the rock fell was named the Cat Catcher. Anyway, Indy now found himself at the end of the X-Mas party involved in a conversation with Miles, one of the Gangsta-Mapper leader types, Rafi (Cat's bf), and a few others, discussing upcoming projects. One of the proposed projects was to remap Windy-Cassell cave, down near Greenbank, West Virginia. As there was a reasonable amount of vertical work to be done in this cave (which entailed rappelling, rope ascending, and climbing), and as Indy is a climber, he was invited to join in on the survey as one of the "elite monkey boys". Indy enjoyed the first time he went surveying, and in order to do and learn more, readily accepted. The next visit to the cave would be a recon visit in mid-

January, which Indy could not attend due to other obligations, but the first resurvey weekend was mid-April, which Indy *could* attend, so marked it on his calendar. And prepared by finishing the construction of his vertical rig for ascending ropes (Indy's wonderful gf, the Amazon from Ozegna, helped out with this for Christmas).

Getting there.

April 14, 2000. That morning Indy dealt with last-minute things, loaded his Indymobile, and blasted out of Baltimore. He fervently hoped this weekend would be better than the past two weekends he spent out in West Virginia (the first involved the death of a dog on the drive out, [the second the death of a climber](#)). With those dark thoughts in his head, Indy found himself an hour and a half later on Route 340 south of Charles Town nearing Route 7. Before him, as he rounded the bend and came up the rise, was a van stopped cock-eyed in the fast lane, a litter of debris all in front of it. Several cars were pulled off to the side of the road and some people standing around. As Indy slowly drove past, he saw off in the field on the right a station wagon had smashed into the fencing and stopped. The rear door was completely missing, and the left rear quarter panel was heavily damaged. He could see a couple people attending to the driver. Oh, great, a wonderful way to start the weekend. Indy pulled over to see if they needed any assistance, medical aid (Indy had two first aid kits in the car), or anything else. Fortunately the woman driving the station wagon (easily in her 60s) was conscious, alert, and responsive, despite the serious cut to her head from hitting the windshield. The blood-covered face with the white eyes gave her a macabre visage, but other than that she was okay. Two women were attending to her with paper towels, and informed Indy that 911 had been called, but that was nigh 20 minutes before. Indy hung around, though, in case there was something that was needed, but two minutes later the local sheriff arrived, followed a minute later by two ambulances (when it rains...). The driver of the van was unhurt (though seriously bummed; he had been on his way home to Tennessee), so the ambulance guys converged like a flock of birds at a feeder on the woman in the station wagon. Well, not having actually *witnessed* the accident, no having anything useful to contribute to the situation (there were more than enough people to carry the woman in a stretcher the 40' over the grass to the waiting ambulances), Indy departed, happy that nothing more serious had happened (short of one or two cars being totalled). In hindsight, as he drove down the road, he figured he should have stayed. If anything it might have been entertaining to watch the two teams of ambulance guys fight over who was going to get to carry the woman to the hospital!

The rest of the trip was long, but happily uneventful. Indy made his way down to the Cass Housing in the 'town' of Cass. On his way there he stopped briefly at the Greenbank Observatory to pick up some information on the place (potential stop for some CCCers later this summer?). He found a few of the Gansta-Mappers already at the two houses, so quickly grabbed one of the rooms with two single beds (one for him, one for Rafi - who was the cook for the weekend, bringing with him tons of chili and flan, and who had requested Indy to secure him a bedspace ("I'm the cook, and if I don't get a bed, no one eats!" - seemed reasonable to Indy)). As Indy unpacked, more Gangsta-Mappers showed up. One was the inestimable Bob Zimmerman, who was to be the lead cartographer for this survey (ie, this was his project). Indy would later learn at the end of the weekend he had narrowly missed meeting Bob in Baltimore all the previous week, as Bob had attended portions of the "Decade of HST" Science Symposium, held at [the Space Telescope Science Institute](#). But that was neither here nor there.

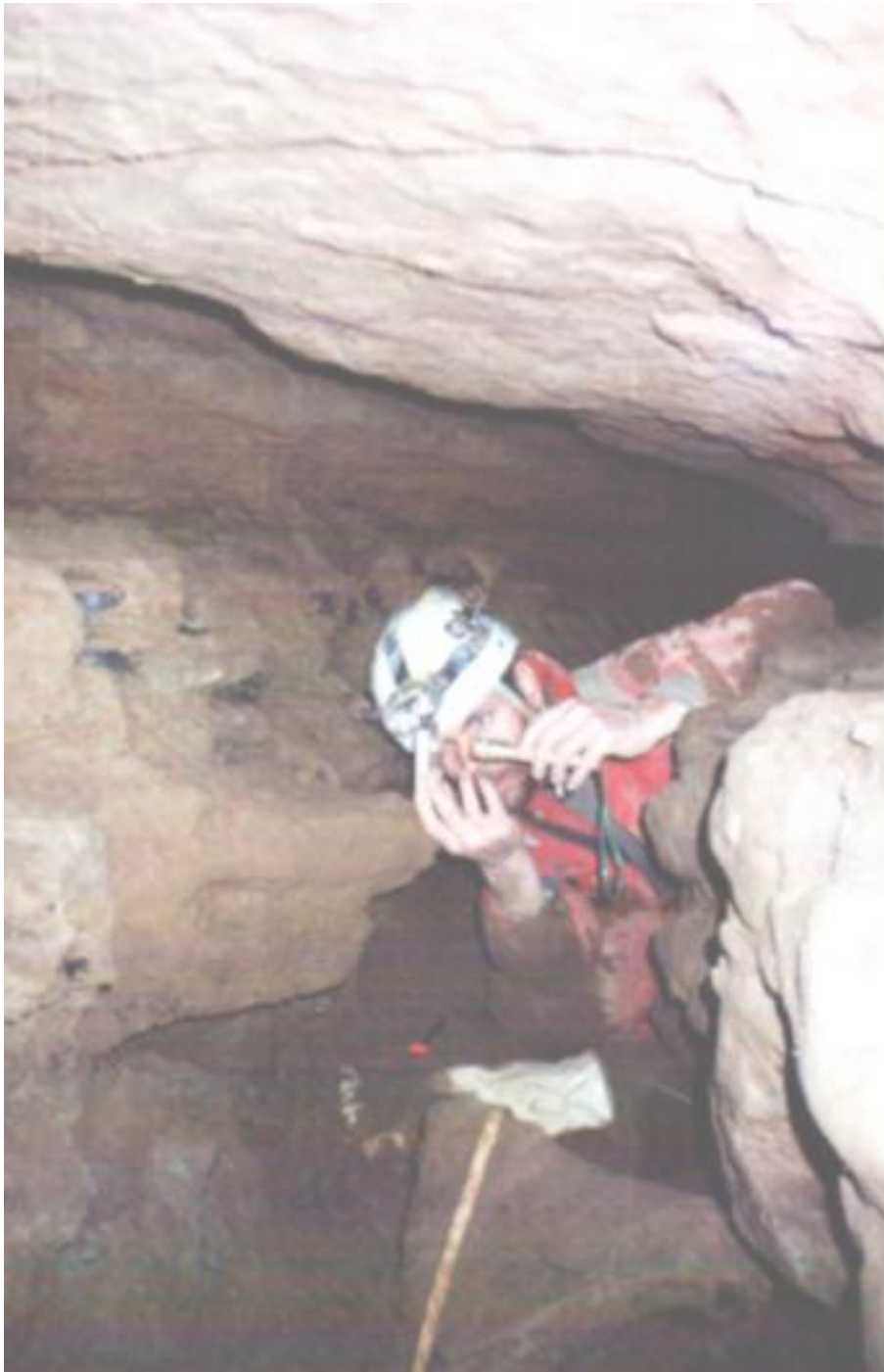
As the evening wore on more and more G-Mappers showed up. Indy sat in on one conversation between Bob Zimmerman, Bob Gulden, and Bob Hoke (Bob, Bob, and Bob!), as well as a few other (non-Bobs) cavers, as they discussed in a heated but friendly manner the virtues of how the final versions of cave maps should and/or should not be done. Gulden's 90%+ work on the Bowden Cave map spoke for itself: a huge, poster-sized map that could be put up on the wall for all to see at once. Very nice looking, very flashy, and good for groups to sit around and discuss (not to mention looks really nice in the office!). Not so good for bringing into a cave, though. Zimmerman's idea was to make a 'book' form out of the map, with a small scale front page showing the basic layout of the whole map, then each subsequent page being one section of the map. Not very good to put up on a wall for groups or individuals to look at and discuss from a distance (or up close; whichever). And definitely doesn't lend itself to being nice up on a wall in an office. But on the flip side, very useful on the practical level, while inside the cave itself (you simply turn to the page in question where you are and you know what is immediately around you). Eventually Rafi showed up, to cheers from all (since Rafi was, as had been mentioned earlier, the cook for the weekend and was bringing mucho amounts of chili; he also brought mucho amounts of flan, too!). The evening wore on, people settled in, teams were formed and unformed. Indy and Rafi hooked up with Devin for the morrow's survey run; Rafi had never surveyed before, though Indy had once; Devin had Rick Royer also on the team as a 4th very experienced person, but Rick bailed on them in order to join another team (or was coerced; this wasn't clear) to survey another section of the cave. Finally everyone went to bed for a brief night of sleep.

Saturday - Survey Day!

Indy woke up early and grabbed a quick shower. Other people arose soon after and began dividing up into teams as yet unformed. Devin's group, known as the G-Team, remained the same: Devin, Indy, and Rafi. While some people aren't comfortable being the only very experienced person on a team, Devin was cool with it, and after giving Indy a refresher on how to read instruments, and teaching Rafi how to read the same, the three gathered their gear and got ready to rock (well, drive up the road 15 minutes and cave, at the very least!).

However, before they could leave, word came back to the collected and assembling cavers that there had been an accident up the road. Apparently there had been a head-on collision involving at least one of the survey teams. A hard enough collision that the airbags (both) had inflated. But fortunately no one was hurt. Shortly after the news came down Indy and Rafi piled into Devin's Large Vehicle (LV) and off they went. Not 5 minutes later they came upon the scene of the accident. Apparently what had happened was a caver from Pittsburgh had presumably decided to sleep at home that night instead of coming down to Cass and sleeping in the cabins there, then got up way early to drive all the way down in the wee hours of the morning to get to the housing area before everyone took off. Only he was apparently running a little late and came flying around a blind curve at a velocity somewhat higher than the legal limit. At that very moment, Ralph (same Ralph that Indy did his first survey with in Bowden Cave with Cat; see above) and his son came around the corner. The road was narrow (essentially one lane with wide dirt shoulders so people can pass). The Pittsburgh guy basically slammed into Ralph's car, totalling it, and causing the airbags to inflate. Which was a Good Thing (tm) since Ralph's son might have gone through the window otherwise. Fortunately he didn't, just rec'd a minor hit on the head and that was that.

After checking with Ralph, Devin and crew drove on another 10 minutes to the cave. There they suited up. Devin and Rafi showed Indy where the 90'+ pit entrance was (originally if the water had not been flowing into this vertical pit this would have been the entrance they would use, which would require vertical expertise, both down and up; however, with the waterfall flowing as much as it was, this entrance was no longer safe, as one could easily get extremely hypothermic trying to ascend the 90'+ pit through the water w/out a wet suit - in a word, a very dangerous thing to try and do). So they would be going in the Windy Entrance, closer to the cars, and head to a major T-junction known as 'Times Square' to start their survey from that point, and follow it back towards the back part of the cave.



There were some new rules (new to Indy, at any rate) about how to survey. Before it used to be you surveyed all the large, main passages, then came back later to sweep up the side passages, until you got everything. This trip was going to be different: a team would survey a passage until there was a junction or fork or side passage. Then they would immediately follow the side passage until it ended. If more side passages appeared, they would continue to work their way either left or right (keeping consistent from the first break they took off the main passage) until they ran out of passage. This also applied to up/down (with 'up' being higher priority over going down). THEN go back and sweep up the remaining unsurveyed passages until all the side passages were done. Then continue on with the main passage. This has the potential to make surveying a LOT slower, but it does clean up the dangling passages early on (which are usually left for last because no one wants to do them).

But the instruments used are still the same: a compass and a clinometer. Usually the ones used are ones one would use for general survey work, not your 'orienteeing' or hiking-type compass. You also have to be careful, esp with the compass, to not get your light too close to

the instrument lest the magnetic fields of the batteries interfere with the readings. You need the light to illuminate the instruments, but if it's too close, you can throw the compass reading off by 15-20 degrees or more. Before Indy tried this surveying stuff the first time around, he didn't realize how powerful the localized magnetic fields of batteries were (that or just *how* sensitive the instruments are). This can be a real bitch if you're using a helmet-mounted electric lamp; oftentimes people have to take their helmets off or turn them 180-degrees around. Not the most comfortable thing, ya know?

Another note of surveying, if the readings between the fore-sight and the backsights disagree by more than 2 degrees (whether it's the compass reading or the clinometer reading), you need to re-measure them again. This helps ensure accuracy in the final numbers.

Yet another surveying terminology note: 'shots' are the distances between survey stations. A given 'shot' may be 17 feet long, meaning between where the first or previous survey station was set to where the next survey station was established (hopefully without intervening obstacles, but you do what you can) there is 17 feet of cave. Some people like to do long shots (100+ feet at a crack) if at all possible; others, particularly the map-drawers, as Bob Zimmerman is in this case, prefer that shots are shorter - 20 feet or less).

After getting geared up the trio slid into the Windy Entrance, and wound their way into the bowels of the Earth. Only, they didn't get very far before getting held up by a traffic jam. There are a couple of rather exposed places one must clambor and/or climb up to continue along in this cave. There had been requests by various team members to have either cable ladders rigged or handlines (with knots to help climb up) strung. Some sections were done; others were not. After watching one person struggle for a long while, Indy volunteered some of his webbing for handlines. It was tossed up to those above to help those below. While this was being rigged, Indy, Devin, and Rafi found an alternative route to climb up. Not so exposed, fairly easy going up (but coming back down might be a bitch!). Up they went and others followed. Indy used some of Rafi's extra webbing (good thing they decided to bring it!) to rig a handline for that climb (while easier and less exposed than the 'normal' way, a slip there would still be Bad(tm)). After that was done, the three pushed deeper into the cave.



squirming through a tight tube that is vaguely reminiscent of [the Airblower in Hamilton Cave](#), the trip followed the main group of people to the major T-junction known as 'Times Square'. This was to be the '00' point for most (if not all, Indy wasn't 100% clear on this) surveys. G-team's job would be to survey down the left passage, keeping in mind the rules outlined above. They set up their first station and began surveying. Devin decided that since Rafi had never surveyed before, and Indy had (once, in Bowden cave a year earlier), Indy would lead and do rear-sights (taking readings backwards), Rafi would be in the back and taking fore-sights (taking measurements forwards), and Devin would sketch. Thus decided, the team began surveying.

And immediately found that their proposed route was diverted by...an upper level passage! While running parallel to their original passage, the team would have to survey this one first. So up Indy went. Stations were set, readings taken, and sketches of the room/passage way done.

For the most part the survey work went without problems. It did get uncomfortable at times, though, when the team had to push a side lead that squished down to something akin to a 2' diameter tube, but that happened rarely. Instead, the team found themselves often in these broad, flat, but not-very-high rooms (think on the order of 1-2 feet max, 30+ feet wide/long). At other times they were in almost-walking passage.

The only problem which occurred was early in the surveying when Devin, checking out a higher passage, accidentally dislodged a small, head-sized rock directly onto Rafi's back/neck/helmet. Fortunately for Rafi the rock had only dropped a few inches before hitting his helmet. Unfortunately for Rafi after bouncing off his helmet it landed kinda heavily on his shoulder and back, which was just recovering from a rather nasty bout of being thrown out earlier the previous week. And while Rafi was able to shrug off the rock, it proved to be an aggravation to the shoulder which prevented the normally powerful caver to attend to dragging his bulky camera bag along on the survey. It was decided that it would be left behind and collected on their way out.

Gee, the last time Indy caved with Rafi's girlfriend, Cat, on a survey a rock dropped on her. Maybe it's bad luck for Indy to do survey work with either Cat or Rafi?



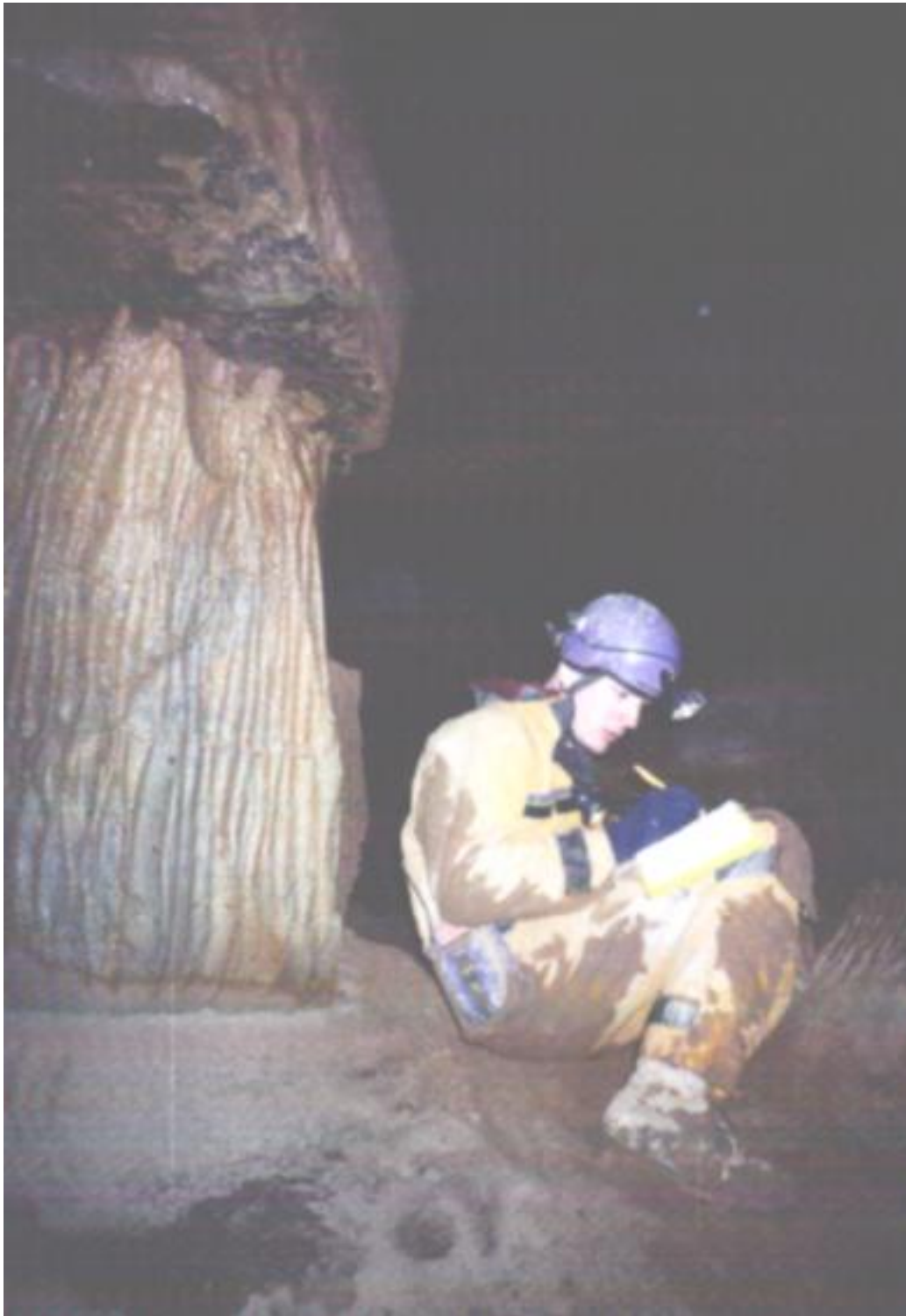
They

continued surveying for nearly 7 or 8 hours. They had closed off all of their extraneous loops, made great detailed sketches of the areas they had surveyed, and were pretty tired and hungry. They decided to beat feet at this point and head out. Devin estimated they had surveyed around 700' of the cave - not bad considering the stuff they had to crawl through!

The first time Indy had surveyed he learned just some basic stuff: how to use the compass and clinometer, and how to survey basically level passages, how to set and/or mark stations, etc. This trip Devin showed

both he and Rafi some more advanced surveying techniques - such as how to take readings *through* a massive boulder (there are a number of different ways to do this; attempting to begin listing and describing each would entail the writing of a surveying book). Indy is looking forward to his next opportunity to go surveying, and really hopes to have gotten a handle on getting his own instruments for it (rather than continue to borrow other people's).

After they were done the three headed out. They took a slightly different route than the one they surveyed through back to the 'Times Square' junction, and were somewhat surprised at the pit that Indy had led them over (from the upper passage it didn't seem that bad; from the middle passage it was a gaping maw you had to be careful not to slide into; from below...well, the team never got down there). They collected Rafi's camera equipment and retraced their steps to the entrance. After dealing with the 60' squirm tube passage they quickly found themselves at the exposed up/down climbs. There they noted that someone had rigged a cable ladder for the more serious drop, but the other drops either had webbing or...nothing (the webbing that was there earlier was now gone). Indy figured it was no big deal; it was only 20 feet of webbing of his was now missing. That would be easily replaceable. Rafi's newly-acquired section of webbing had also vanished. Bummer. But not a critical piece of gear (like an ascender would be - slightly more expensive than webbing, ya know?).



After getting down they headed out. It had apparently drizzled on and off most of the day, but was fine (if cloudy) now. They changed, spoke to some locals who drove by, then headed back to the cabins where Rafi's chili was cooking. Starved, they were. Chili (or hell, any food of any substance!) sounded just perfect right then!

Back at the cabins a couple other teams had already returned, including Bob Zimmerman's. He was busy collecting everyone's data and inputting it into the laptop he had brought along. Before the evening was over he hoped to have all the numbers collected. After G Team gave him their findings, he displayed for them a line-sketch map of what they had surveyed. They compared that to the currently available map (dated some 30 years previous) and understood they had covered a LOT more of the cave than the original map showed (none of it was 'virgin' cave; it just wasn't mapped/surveyed in the original surveying runs for some reason). There was much speculation that Cassell Cave would grow

substantially by the time the Gangsta Mappers were done surveying this cave, and thoughts went to the potential for pushing virgin passages. Keen idea, but the next survey is happening during the [first CCC of 2000](#), and Indy wouldn't be able to make it (likewise Rafi would probably not make the next Cassell survey trip, but the August trip both plan on returning).

G Team helped themselves to chili and bread and rice and who knows what else people brought to be consumed. Indy stayed up a while (partly because the cabin they were in was the 'noisy' cabin, since everyone was collecting there to compare their results with the map and see what numbers Bob

Zimmerman was coming up with), but eventually he was too tired to stay awake any longer. Off to bed he went.

As you might imagine, sleep came quickly.

Sunday - Departure:

The morning brought sunshine to the wet countryside. People slowly packed up and headed off to their respective destinations. Indy also packed and helped Rafi clean up (he found their missing webbing in the 'collected gear pile' drying outside the cabin, then the two headed off to the Greenbank Observatory to walk around the grounds checking out the massive radio telescopes there (home of the largest telescope in the United States - note, it is a radio telescope, not an optical one, so you can't look through it). After a nice, warm hour or so in the sun that the two headed back to their respective homes.

Thus endeth the first survey run into Cassell Cave.

Final official details of the G-Team Survey:

- 729 feet surveyed
 - 32 stations.
 - 20.8 feet average shot length.
 - 3 loops, all closed "Good."
 - Approximately 11 leads.
-