Road Scholar

2001 Colorado State Science Olympiad

## "The Portrait"

Maps used in this competition:	Codes used in this competition:
<ul> <li>HM – Rand-McNally MI Highway Map</li> <li>N – Negaunee SW Quadrangle</li> <li>O – Omer SW Quadrangle</li> <li>P – Pinckney Quadrangle</li> </ul>	<b>D&amp;V I</b> – Detroit and Vicinity Inset <b>M</b> = State Highway Routes as in M-36 <b>US</b> = US Highway Routes as in US-23 <b>I</b> = Interstate Routes as in I-75

Reggie Rowley had money, but he wasn't filthy rich. He wasn't young, but he wasn't close to collecting Social Security benefits either. Reggie felt frustrated that he had not yet achieved any notable accomplishments in his life, but he was fascinated with those in his family tree who had. Whenever time would permit, Reggie would visit the genealogy section at Detroit's main library, researching his family tree.

One day Reggie decided to walk across the street to the Detroit Institute of Art to idle away a few hours. As he strolled through the many galleries, pausing occasionally to admire the many works of art, a newly acquired portrait suddenly captured his attention. The portrait was entitled Lady Rowley and had been painted by John Hopner early in the nineteenth century. Reggie suddenly thought he recognized the woman in the painting as a distant relative he had seen in a family album his paternal grandmother had shown him many years ago. Just to be certain, he checked his genealogical notes. His observations were accurate. It was her!

From that day on, Reggie never visited the library without first crossing the street to view the portrait. It wasn't long before he realized that he could never be happy until the portrait was his. He made an appointment with the curator to ask whether he could purchase the portrait, but the curator refused stating that everyone deserved an opportunity to appreciate such a fine piece of work.

One spring morning, as he was reading the Detroit Free Press, Reggie spotted an article about a new traveling art exhibit being sponsored by the D.I.A. The traveling exhibit had been arranged to provide rural Michigan residents an opportunity to view some of the world's great masterpieces. When he saw that the portrait of Lady Rowley had been included in that exhibit, he instantly realized that this may well be his one and only opportunity to acquire it.

The article listed the towns scheduled to host the exhibit. In his now warped frame of mind, Reggie decided the ideal time and location to pull such a caper would be on Tuesday, July 17<sup>th</sup>, when the portrait would be on display in the Pinckney Town Hall. The portrait would remain in that facility overnight and then moved to its next scheduled appearance on Wednesday.

On Tuesday, July 17<sup>th</sup>, Reggie and his friend, Seymour, traveled to Pinckney in Reggie's Dodge Ram pickup. They arrived in Pinckney at dusk and parked in a marshy area west of town by the bridge where Cedar Lake Road crosses Honey Creek. Seymour inflated the boat while Reggie unloaded the equipment they would need to complete the task. At 10:00 PM, they rowed slowly and quietly toward the small town of Pinckney. Honey Creek turned into Mill Pond, and soon they had beached their boat behind Pinckney Town Hall.

Seymour walked around to the front of Pinckney Town Hall and ignited a small, but highly visible smoky fire in a trash bin. When smoke started to rise, Seymour yelled "Fire," and hurried away. Meanwhile, Reggie expertly cut a circular hole in a pane of glass, reached inside, and opened the window. Within a matter of seconds he was inside, standing next to the portrait. He quickly placed the portrait of Lady Rowley in a protective case and left the same way he had entered. He had actually been in the building for just a little more than a minute. Reggie and Seymour met up at the boat and were soon paddling their way back to the truck.

When they reached their vehicle, they discovered that it had sunk to its axles in the soft peat-like soil. The harder they tried to free the truck, the deeper it sank. Finally they gave up and decided to sleep in the cab of the vehicle until morning.

\* \* \* \*

The theft was discovered early the next morning. Due to insurance concerns, the D.I.A. decided against notifying the authorities immediately. Instead, they chose to call Art Deco, a detective who just happened to be on the Museum Board of Directors.

When Art asked whether anyone had shown particular interest in the portrait of Lady Rowley, he was informed that Reggie Rowley had made an offer to purchase it. He also discovered that Reggie would visit the portrait almost daily and stare at the portrait for hours. Art requested to view the museum's security tapes. He also requested a recent photo of Reggie. Next, Art called a friend at the Office of the Secretary of State to obtain the license numbers and descriptions of all Reggie's personal vehicles.

Hanging up the phone, Art turned to his assistant and said, "Nora, we have to go to Pinckney. Go home, pack your stuff, and be back here a.s.a.p."

"Yes, Sir, I'll need only a half hour or so to get ready. Shall I call Jane?"

"Good thinking," Art replied. "This case must be solved quickly and quietly, Jane would be a big help. Yes, do call her."

An hour later, Art asked his secretary to drop everything she was doing and seek out as much information about Reggie Rowley as possible. Upon Nora's return, she and Art packed the Cadillac Escalade with luggage and equipment. Nora, a cartographer by trade, insisted on taking her maps. When Jane arrived, Art requested she drive since she had driven a taxi in New York City for four long years.

Since their trip to Pinckney started in the densely populated city of Detroit, they first consulted the Detroit and Vicinity Inset (D&V I) located on the flip side of the Michigan State Highway Map. From downtown Detroit, the party headed west on I-96. Jane soon spotted a sign posted along I-96 indicating that this stretch of highway was also called <u>1 D&V I</u>. At the I-275/I-96 intersection, Jane turned north. Near Livonia, they passed from Wayne County into <u>2 D&V I</u> County. After traveling a short distance further, they again turned west onto I-96.

After the heavy Detroit traffic had subsided, Nora turned to the Pinckney Quad. Her trained eye quickly informed her that the topographic map had been drawn at a scale of <u>**3**</u> **P**, the contour interval was <u>**4**</u> **P**, and it was a <u>**5**</u> **P** (a. 7.5; b. 15; c. 30) minute series map. She also noted that the largest lake on the map was <u>**6**</u> **P** Lake, and that its surface was <u>**7**</u> **P** feet above sea level. The next feature Nora found interesting was Little Portage Lake (in sector 8) almost completely surrounded by <u>**8**</u> **P** (a. orchards; b. wooded marsh; c. swamp, d. woods).

Jane broke Nora's concentration when she announced that they were near Brighton (T-19 on the highway grid).

Nora folded the Pinckney Quad, placed it on the vacant seat next to her, and took out the highway map. After scanning the highway map for a few seconds, she said, "Jane, turn south on US-23. We'll take US-23 south to M-36. We'll only be traveling <u>9 P</u> miles south on US-26 before we turn west onto M-36. We'll turn off US-23 at exit <u>10 P</u>. The road only goes to the west, and it will take us right into Pinckney."

"I've never ever heard of a town named Pinckney. How many people live there?" Jane asked.

"The population is **<u>11 HM</u>**," Nora replied.

"Is it in Oakland County?"

"No, it's in **<u>12 HM</u>** County."

"Is it the county seat?"

"No, the county seat is a town named **<u>13 HM</u>**, northwest of Brighton."

When they arrived in Pinckney, they located Town Hall. After several interviews, they discovered that no one had seen nor even heard a car at the time of the

theft and that no strangers had been observed walking on any of the streets. Circling the building, Art soon discovered fresh footprints and signs of a boat having been dragged out of the water and onto the shore of Mill Pond. Obviously, the thieves had used a boat to pull off this caper.

Art, Nora, and Jane stood on the shoreline, staring at Mill Pond. Nora, topographic maps in hand, indicated that Honey Creek widened into Mill Pond (NW corner of sector 5) and then narrowed back into Honey Creek, eventually flowing into Portage Lake. This meant that, from Pinckney to the lake, Honey Creek was flowing to the <u>14 P</u> (a. NE; b. NW; c. SW, d. SE).

"They must have hidden a vehicle somewhere along the creek. Let's try to locate the spot where they parked," suggested Art.

As they returned to the Escalade, their car's fax machine was about to complete transmission of a photo of Reggie. It had already printed out a fairly complete biography of his life.

\* \* \* \* \*

At dawn, Reggie and Seymour awoke, climbed out of the cab, peered at the truck mired in mud, and realized that it would require a tow truck to pull it out. Calling for a tow truck was out of the question, as they would most likely be caught if they hung around long enough for one to arrive.

Studying his copy of the Pinckney Quad, Reggie said, "We really do need a car. The best place to get one is most likely Hudson Mills Metropolitan Park (Pinckney quad, sector 9)."

"And, just where is that park?" asked Seymour.

"It's in sector nine on the quad map. We'll hop into the boat and take Honey Creek to Portage Lake. We'll cross the lake and take Huron River to the park. Unfortunately, we'll have to paddle past Pinckney. No one saw us last night, so we should be able to slip by without arousing anyone's suspicion."

"Honey Creek isn't very large. What if it has dried up on the other side of Pinckney?" asked Seymour with a little concern in his voice and a weird expression on his face.

"The map shows that Honey creek is a/an <u>**15 P**</u> (a. perennial; b. intermittent) type stream. There should be sufficient water to float our boat.

Seymour, peering at the map over Reggie's shoulder, asked, "What's that black cross near the southern shore of Portage Lake? I hope it's not a bad omen predicting our capture."

"That's a graticule tick mark," Reggie explained. "There are <u>**16 P**</u> (a. 1; b. 2; c. 3; d. 4) of these marks on every 7.5-minute quad. They separate the quad into nine equal sectors to use in making it easier to communicate locations on a quad. The tick mark in Portage Lake is the SE graticule. Its coordinates are <u>**17 P**</u> north latitude and <u>**18 P** west longitude."</u>

"Thanks for the explanation," Seymour said, "but that's actually much more than I needed to know."

"I want the portrait of Lady Rowley to hang in our family home in Negaunee. No one is living there at the moment. Before we drive to Negaunee, we must stop in the small town of Omer. My sister, Ruby, lives there. She has the only key to the house and is the only person who has the code to the security system."

\* \* \* \* \*

Later that morning, the investigators located Reggie's stranded truck. Items left in the truck confirmed Art's suspicions that Reggie had had an accomplice. They spied an abandoned boat across the river and guessed that the culprits were now in search of a car.

Just then they overheard, on the police frequency they had been monitoring, that a woman's car had been carjacked at Hudson Mills Metropolitan Park. Obviously, their next task would be to interview the victim.

While in route to the park, Jane began to wonder how the people in the area earned a living. Nora replied that many of them worked in nearby cities, but that some probably worked in the <u>**19 P**</u> (economic activity found in the W  $\frac{1}{2}$  / NW  $\frac{1}{4}$  / 7 / T1S-R5E).

They soon spotted the lady whose car had been carjacked. She was talking to the local police in the parking area near the entrance to the park. When the police had finished their interview, Art approached the victim, introduced himself, and showed her a photo of Reggie. She, without hesitation and a bit of anxiety, identified the man in the photo as one of two men who had stolen her car. She reported that this man had called his accomplice by the name Seymour. She had no idea where they were going, but did lament that they were now traveling in her brand new, white Lincoln Town Car. Art asked if she was in need of a ride, but she replied that she had already called her husband's cell phone and that he would be here shortly.

"Reggie's bio states that he has a sister living in Omer. It's the only lead we have, so I suggest we go there now," Jane suggested.

They left the park and returned to Pinckney. When they reached Pinckney, they turned right onto M-36, a <u>20 P</u> (a. primary; b. secondary; c. light-duty) road. Approaching the eastern neat line of the Pinckney Quad, with a longitudinal value of <u>21 P</u> west, Jane asked how far it was to US-23. Nora informed her that the distance from Pinckney to US-23, was <u>22 HM</u> miles.

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As Art, Nora, and Jane were leaving Pinckney, Reggie and Seymour were headed toward Omer. They took M-36 from Pinckney to US-23. They then traveled on US-23 which merged with I-75 in Flint. Seymour, who was now driving, asked Reggie where Omer was located and how far it was from their present location.

"According to the highway map grid, Omer is located in <u>23 HM</u>," Reggie replied. "It is <u>24 HM</u> miles from Flint to Bay City. From Bay City to Omer is another 37 miles. The distance from Flint to Omer is <u>25</u> miles. If we average 60 mph, we should be in Omer in an hour and <u>26</u> minutes. We'll stay on US-23 until it splits from I-75. US-23 will take us straight into Omer."

As they approached Omer, Reggie decided it was time to change cars since every police officer in the state would now be on the lookout for a white Lincoln.

Seymour continued onward until he came to a bar. He pulled into the parking lot, stopped, and walked in. Ten minutes later he returned and signaled for Reggie to climb out of the Lincoln. He led Reggie to a 1997 Intrepid and asked him to hop in.

"What did you do?" Reggie asked.

"I swapped cars with a guy in the bar. I told him that we were desperate for cash, so he offered me this Intrepid plus \$200.00 for the Town Car. As I was leaving, I overheard him bragging to his friends about how they had really suckered me. Like the expression goes, 'There's a sucker born every minute,' but it's not us! At least, not this time."

Using the Omer SW quad as their guide, they left the parking lot and continued NE on US-23 (sectors 8 and 9). When they reached Hull Road, they turned north. They stayed on Hull Road for 0.44 miles. Just past the <u>27 O</u> Church, they turned right onto Conrad Road. They pulled into the driveway of the first house on the left. They had finally made it to Reggie's sister, Ruby's, house.

\* \* \* \* \*

The Escalade was now about 30 minutes behind Reggie and Seymour. Nora had the Omer SW quad at the ready when they left the <u>**28 O**</u> quad, the quad south of the Omer SW quad. They entered the Omer SW quad on US-23 in sector 8, traveling in a NE direction.

"US-23 is a north-south route, but the compass indicates we're traveling at an azimuth of **<u>29 O</u>**," Jane remarked.

Several miles ahead, the white Lincoln pulled out of a parking lot and proceeded NE on US-23.

"That must be Reggie," Art said. "Follow them, Jane."

It was not long before the driver of the Town Car realized he was being followed. He assumed it was a bookie who he owed quite a sum of money. The driver knew that the bookie drove an Escalade. He was also very aware that a bookie, this one in particular, could become quite unreasonable if he didn't receive his money in the agreed time. The driver decided to make an attempt at outrunning his pursuers.

The race was on, with the Escalade never far behind the Lincoln. After about ten minutes, the Town Car was about a half mile in the lead. He attempted a right hand turn from northbound Dobler Road onto eastbound Main Street Road (sector 1 on the Omer SW quad). He lost control of his vehicle and ended up in a ditch in front of the Melita Church. Fully aware of their predicament, the two men abandoned the Town Car and ran SE across Main Street Road and into the fields beyond.

Seconds later, as Jane approached the intersection, she for a moment thought she had lost the Lincoln. Then she spotted it tipped precariously in a deep ditch. She quickly parked her car in the church parking lot and, with Art and Nora close behind, ran toward the abandoned car.

"There's no one in the car!" Nora shouted.

"I don't see the portrait either," Art said as he peered through the darkened windows of the Lincoln.

"The portrait may be in the trunk."

"Look over there! See those two men running. That must be them, but they're not carrying anything!"

"Let's catch those thugs so we can get some answers, Art said.

"We can't drive through there. We'll have to pursue them on foot or drive around and wait for them to come to us," Jane shouted. "Before we go, does the Escalade have a GPS unit?"

"Yes, it does," he replied.

"Good. I'll record our coordinates just in case we have to call a chopper."

They returned to the Escalade, and Art activated the GPS. After a few moments, he had the coordinates for the vehicle and for Melita Church, just five feet away.

"The latitude of the church is <u>**30 O**</u> degrees north and <u>**31 O**</u> degrees west," Art said to Jane.

"I'm bringing the map and a compass," Nora said. "We have to remember that the declination between star north and magnetic north is <u>32 O</u> degrees to the west."

"I see them," Jane shouted.

"So do I," Nora replied. "From Melita Church they're running at an azimuth of 140 degrees. That means they will leave 27 / T20N-R4E near the intersection of Bishop Road and <u>33 O</u> Road."

"Jane, take the Cadillac. Wait for them at the intersection, but try to keep the vehicle out of sight. Nora and I will pursue them on foot," Art instructed.

As Jane drove away, Art and Nora started jogging at an azimuth of 140 degrees. After crossing Main Street, Art spotted a dry, intermittent stream bed paralleling their course of travel. They followed the dry stream bed, making excellent time.

The two men, however, were not making very good time. Perhaps it was their poor physical shape. Whatever their reasons, when they finally stumbled out of section 27 they found Jane waiting for them, with Art and Nora rapidly closing in from behind.

After the men were assured their pursuers had not been sent by his bookie, they dropped to the ground in exhaustion and willingly explained how they had acquired the Town Car.

Art, Nora, and Jane were quite irritated that they had wasted so much valuable time pursuing the wrong people. They were, however, pleased to know that Reggie and pal had been in the area. They decided to pay Reggie's sister a visit. On the way to her house, a fax arrived with even more information about Reggie. Specifically, they had learned of Reggie's family home in Negaunee.

As they were interviewing Ruby, they found her to be a compulsive liar. Compulsive – yes; good at lying – no! She at first denied having a brother. Then she denied that she had seen him after the fact that he existed had already been well established. She also denied his having possession of the stolen portrait. When she denied the existence of a family home in Negaunee, her eyes never stopped shifting from side-to-side. It was then that Art knew for certain that Reggie was on his way to the family home.

Art, Nora, and Jane left Omer by the same route they had taken to get there. They took US-23 back to I-75. Turning north onto I-75, they began the long drive to Michigan's Upper Peninsula. When they finally reached Grayling (R-11 on the highway map), they stopped for food and gas. Jane asked how far it was to the bridge. Nora told them that from Grayling to St. Ignace (Q-6) on the north side of the bridge of the Upper Peninsula, was **34 HM** miles.

Minutes before reaching the Mackinac Bridge, they spied it in the distance.

"That certainly is one humungous-sized bridge!" declared Jane.

"Yes," said Nora. "The Mackinac Bridge is huge. It is <u>35 HM</u> miles long. It connects the Lower and Upper Peninsulas of Michigan. It spans the <u>36 HM</u> which connects Lake Michigan and Lake Huron."

"What's with the green-coloring of the bridge?"

"That informs us that we must 37 HM before we're permitted to cross."

After they crossed the bridge into the Upper Peninsula, they turned left onto US-2. They stayed on US-2 until they had reached M-77. Here they turned right and proceeded northward through the towns of Blaney Park and Germfask. Seven miles north of Germfask, they arrived in the town of <u>38 HM</u> where they turned left onto M-20. M-20 becomes M-28. They stayed on M-28 through Marquette and into Negaunee.

Nora was studying the Negaunee SW Quad as they entered the village. She saw Teal Lake to her right and then found it in sector 9 on the quad. She also saw that the intermediate contour closest to the water had a value of <u>39 N</u> feet.

Nora noticed that some features on the map were tinted purple, indicating that those features had been photorevised but had not yet field checked. In the bottom margin, she saw that the map had been photorevised in <u>40 N</u>.

They located the Rowley home without much difficulty. It was the easternmost house in a cluster of five houses in the SW  $\frac{1}{4}$  / SW  $\frac{1}{4}$  / 35 / T48N-R27W. The Intrepid wasn't there, and the house was locked up tight. A neighbor informed them that Reggie had been there with a friend, but that they had left about an

hour earlier. She thought they had gone to the family's deer camp. Nora showed her the Negaunee SW quad, and the neighbor pointed out the cabin.

"Where's the cabin?" Jane asked.

"It's in the SE 1/4 / NW 1/4 / 7 / T48N-R27W."

"That's meaningless to me! Show me where it is on the map so I can determine which roads to take. By the way, would the description of this other cabin, 0.15 miles SE of the Rowley cabin, have the same description as the Rowley property?" Jane asked.

"No," Nora answered. "The description of the neighboring cabin would be <u>41 N</u>."

"Is it far away?" Art asked Nora.

Nora quickly measured both the azimuth and distance and said, "The azimuth from the Rowley house to the Rowley cabin is  $\underline{42 \ N}$  degrees. The distance, if we could follow the azimuth on a straight course, is  $\underline{43 \ N}$  miles."

On their way to the deer camp, Art received a call from Willow, his secretary. She informed him that the state police had found out about the theft and had connected its disappearance to Reggie. Art replied that he wasn't overly surprised that the police had become involved.

When they reached the fork in the road, (N  $\frac{1}{2}$  / SW  $\frac{1}{4}$  / 16 / T48N-R27W), Jane stopped the Escalade.

"Which way now?" she asked.

"Go left. We'll stay on this secondary highway until we turn onto an unimproved road that'll take us to the cabin."

Before continuing on, Jane said, "I've always thought the Upper Peninsula is mostly mountainous, but obviously it's not."

"There are some weathered mountains west of here, but most of the U.P. has either a flat or rolling-type topography. For example, at this fork in the road (SW  $\frac{1}{4}$  / 16 / T48N-R27W), there is a bench mark with an elevation of <u>44 N</u> feet above sea level. The elevation of Reggie's cabin, two miles away, is <u>45 N</u> feet above sea level. So, as you can see, this part of the U.P. is relatively flat."

Just as they turned onto the dirt road, the Intrepid raced toward them, made a right, and headed for Negaunee. They saw that there was only one person in the car, and it wasn't Reggie. They decided to continue on to the cabin.

\* \* \* \* \*

Reggie was sitting all alone. His shortwave radio had informed him that he was now a wanted man. The police knew about the stolen portrait, the carjacking, and the swindle that had gotten him the Intrepid. Ruby had called to warn him that several individuals in a Cadillac Escalade were hot on his trail. Seymour had decided to make a run for it, but Reggie chose to sit tight. Maybe he'd get lucky and wouldn't be found.

Reggie was not at all surprised when he spotted the Escalade pull up his driveway. In a way he was happy that it was all over. He opened the door and walked over to the Cadillac.

"I believe you're looking for me?" Reggie stammered, almost tearfully.

As they drove back to the Rowley home, he led them into the living room. There, in the center of a large wall surrounded by Rowley family photos and paintings, was the portrait of Lady Rowley. With a tear trickling down his cheek, Reggie removed the portrait and reluctantly handed it to Art.

"I guess my obsession with genealogy has really gotten me into a heap of trouble," Reggie muttered.

At that very moment, a police car pulled up. The officers arrested Reggie, but let Art retain the portrait due to an agreement that had been reached between the museum's Board of Directors and the police.

Leaving Negaunee, the investigators finally realized just how exhausted they were. It had been a very long day. They felt badly about Reggie's plight, but were thrilled that their job was not completed and they would soon be heading home to friends and family.

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2.	Oakland County	26.	25 minutes	
3.	1:24,000	27.	Assembly of God	
4.	10 feet	28.	Standish	
5.	a. 7.5'	29.	048° ( <b>050°</b> ) 052°	
6.	Portage	30.	44° 06' 47" +/- 05"	
7.	850 feet	31.	83° 59' 14" +/- 05"	
8.	c. swamp	32.	3	
9.	5	33.	Knight	
10.	54	34.	89	
11.	2141	35.	5	
12.	Livingston	36.	Straits of Mackinac	
13.	Howell	37.	pay a toll charge (or similar	
14.	d. SE	38.	Seney	
15.	a. perennial	39.	1380	
16.	d. 4	40.	1975	
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