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TECH.CALTECH.EDU

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The California Tech

Techers showcase talents in OASIS' "Sangam"

PARUL PUBBI
Contributing Writer

This past Sunday night, over 50 members of the Caltech community took part in the OASIS production "Sangam," a word of Tamil origin that means a junction of rivers. OASIS (Organization of the Associated Students of the Indian Subcontinent), frequently showcases Indian culture on campus by connecting interested participants and hosting performances two to three times a year.

The co-president of the Caltech Dhamaka dance team, Meera Reghunathan, emceed the event alongside the Dhamaka assistant captain, Anshul Ramachandran. When asked why he did Dhamaka and participated with Bollywood dancing on campus, Ramachandran mentioned he'd been breakdancing for six years, and that he'd done a



There were several dance performances at the OASIS Diwali celebration.

Photos Courtesy of Grace Park

school of dance, which originated in South India and is symbolized by fire. This was followed by another classical performance in Carnatic vocals by freshman Aadith Moorthy, who modulated his voice to the beat of a tabla (a set of hand drums). Chiraag Nataraj, a frequent performer now in his senior year at Caltech, sang as well: the enthusiastic renditions of "Ina Mina Dika," an older Bollywood song, and "Yaare Koogadali," an older Kannada song. Following the vocal performances was another dance number by Tech Naach to the well-known Bollywood staples "Aaja Naache" and "Kajra Re," performed by Aashrita Mangu, Archana Chintalacharuvu, Sumana Mahata, and Suchita Nety. A group dance to a series of

Ferguson case raises concerns

HANNALORE GERLING-DUNSMORE
Contributing Writer

On Nov. 24, 2014, a grand jury decided to not indict police officer Darren Wilson in relation to the killing of 18-year-old Michael Brown. This initiated nationwide protests that as of Nov. 29 still continue, as people throughout the United States reach their collective breaking point over police brutality, police militarization, and the mismanagement of investigation into and prosecution of police killing black males.

In the United States, a black man is killed by police officers every 28 hours on average, bringing the yearly average to 312. The FBI reports that police officers kill approximately 400 people per year, making over three-quarters of the people shot dead by police officers black men. Since the death of Trayvon Martin in February 2012, when he was followed by George Zimmerman and then shot

multiple times on "suspicion," with Zimmerman eventually being acquitted, the United States has again been forced to look at racially motivated crimes, and specifically, the treatment of black men as being inherently threatening, leading to excessive force being used in "self-defense."

"In the United States, a black man is killed by police officers every 28 hours on average..."

In 2014 alone, there were four high-profile cases of police officers killing unarmed black males: Michael Brown, John Crawford III, Eric Garner, and most recently, 12-year-old Tamir Rice. John Crawford was shot for carrying a toy gun around a Wal-Mart, and while the police initially claimed he was acting in a threatening manner, released security footage later showed he was shot without provocation. Eric Garner was being arrested for selling loose cigarettes, and died due to an illegally used chokehold that strangled him. Rice

was playing in a park with a toy gun when police arrived and, within a matter of seconds, fatally shot him. The relevant police officers were not indicted in any of these cases despite the obvious misuse of lethal force.

Here at Caltech, most students, postdocs, and faculty are scientists.

When the results from a given experiment come back far from the expected values, scientists carefully examine their experimental setup and techniques used, as well as usually repeating the measurements, to understand why the experiment went so far afield. In a similar manner, one can examine the unusually thoroughly covered Michael Brown case to try to gain some insight as to why there seems to be no justice when a police officer kills an unarmed black man.

Shortly after noon on Aug. 9, 2014, in Ferguson Missouri, police officer Darren Wilson unloaded at least a dozen rounds, with

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lot of Bollywood in high school, so "joining Dhamaka seemed pretty logical."

On the other end of the spectrum was freshman Ida Huang, who had just gotten involved with the Bollywood dance club during the club fair a few months ago. "I joined because everyone was so excited," said Huang. "We practiced once a week for the past few months, but a lot more over these last two weeks. It's been fun."

The show started with a fun, upbeat dance performed by the Dhamaka co-presidents who were also the organizers of the event, Reghunathan and Meghana Pagadala. The holiday dance honored, Diwali, is also known as the festival of lights; as such, the performance included diyas, or small candles. The OASIS committee then gave a surprise performance: Anupama Lakshmanan and Prachi Parihar sang "Pal Pal Pal Pal Har Pal" from the Bollywood film *Lage Raho Munna Bhai*. Sophomore Siddharth Murching accompanied the song on the keyboard.

Following another vocal performance by Preethi Periyakoil came a high-powered classical dance performance by Janani Comar from the Bharatnatyam

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Caltech Y Column

CALTECH Y

The Caltech Y Column serves to inform students of upcoming events and volunteer opportunities. The list is compiled by Neera Shah from information given by the Caltech Y and its student leaders.

More information about the Caltech Y and its programs can be found at <https://caltechy.org>. The office is located at 505 S. Wilson Avenue.

Upcoming Events:

1. Oakwilde Hike

Sunday | December 7th | 7:00 AM

The Caltech Y Outdoors group will hike to Oakwilde via Arroyo Seco on a 9 mile hike behind JPL. The elevation change is only 900 feet, so this hike is perfect for anyone (beginners to experts) who want to wander in the woods as a quick mental break before taking finals.

We will leave Caltech Y at 7AM to avoid the crowds as this trail is pretty popular. It only takes 15 minutes to get there by car and others estimate the hike to take ~5 hours, so depending on how fast everyone hikes we likely will be back around lunchtime or just after. Bring some snacks in case we're back a little after lunch and ~2L of water as it is still quite hot in the San Gabriels.

Contact Becky Schwantes for information about becoming Caltech Y driver approved or if you have any other questions about the trip (rschwant@caltech.edu).

2. Rise Tutoring Program

M - Th | 4-6 PM | Winnett

The Caltech Y Rise Program is currently accepting new tutors for the winter term. The Rise Program is an afterschool math and science-focused tutoring program that serves public school students between grades 8 and 12 who are struggling in math and science (receiving a C+ or below in either subject). Tutoring takes place on campus. Tutors are matched with 1-2 students and will ideally work with the same student for the whole year. Tutors commit to 1-2 days per week for at least 2 terms out of the year. Schedule changes can be accommodated. For more information about the program and to apply please visit our website.

Other Announcements - Beyond the Caltech Y

City of Pasadena Homeless Count

The Count and Survey are important in the ongoing effort to end homelessness in Pasadena. The U. S. Department of Housing and Urban Development (HUD) mandates that each jurisdiction that receives federal funding conduct a Homeless Count of unsheltered homeless persons every two years. The Pasadena Partnership to End Homelessness has chosen to conduct a count every year, which is encouraged by HUD. The Count and Survey are integral for tracking homelessness in Pasadena which in turn informs grants submitted to the federal government. As you may know, Pasadena conducts this count each January, with the upcoming date being Wednesday, January 28, 2015.

Counters will be sent out in teams of 2-3 in the early morning and late evening, tentatively from: 6AM - 8AM & 8PM - 10PM. [Same teams will go out both morning and evening.] Each Counter is required to attend an orientation / training meeting.

There will be a choice of two evening orientations which will take place the week prior to the Count. Wednesday, January 21 or Thursday, January 22 from 6:30 PM - 8:30 PM. You can register by visiting the Pasadena Partnership to End Homelessness at pasadenapartnership.com

Contact Mark Bradshaw at markbradshaw@fuller.edu or 626-304-3787 with any questions.

Wilson's case causes questioning of justice system

Continued from page 1

six hitting unarmed 18-year-old Michael Brown, fatally injuring him. Just prior, Brown and his friend, Dorian Johnson, were walking down the middle of the street. Wilson drove up to them and told them to stop walking in the street, and to move onto the sidewalk. Wilson claimed there was then an altercation inside his vehicle, followed by the boys running in different directions and Wilson continuing to fire his weapon, killing Brown.

Wilson claimed that Brown was running at him, though witnesses have conflicting accounts—several famously reported seeing Brown raise his hands above his head as Wilson gunned him down.

Brown's body was left in the street for 4.5 hours, the first in many missteps on the behalf of the Ferguson Police Department during the investigation. The community of Ferguson grew increasingly outraged at the use of lethal force against an unarmed teenager, the mismanagement of the investigation, and most importantly, the presumed racial nature of Wilson's intentions, leading to many nights of protests that were met with escalating police strength. This, in turn, led to further outrage at the militarization of the police. The St. Louis County prosecutor, Robert McCulloch, made the unorthodox decision to go in front of a grand jury to determine whether or not Wilson committed a crime in killing Brown. The hearings began on Aug. 20, 2014, and about three months later and approximately 25 days of actual hearings, the decision to not indict Wilson came back last week. However, following the continued protests, Wilson decided to resign from the police department on Nov. 29, 2014.

Since the news first broke that an unarmed teenager was shot dead, both the local community and the wider national public turned a critical eye to the way the Ferguson police handled the investigation. Throughout the investigation, evidence was regularly mishandled, starting with leaving Brown's body in the street for 4.5 hours, completely exposed. The St. Louis county pathologist's autopsy reports finding gun powder residue on Brown's hands, as well as a wound indicative of a close range gunshot wound, which would support Wilson's claim of an altercation by his vehicle. However, when the Brown family hired an independent pathologist, Dr. Michael Baden, to do a second autopsy on Brown, much of the evidence was withheld from him, including the alleged gunshot residue, Brown's clothing, the initial autopsy photos, nail clippings and swabs, and, possibly most importantly, ballistics reports. Baden noted that dirt can frequently look like gunshot residue, even at a microscopic scale, and as Brown's body was left in the dirt for many hours, he would have needed to the actual residue to support the initial findings. Further, Baden noted it was impossible to tell if Brown was thrusting his hand forward in aggression, or throwing his hand up in a defensive position, when Brown was shot in the thumb. Blood spatter evidence could have cleared up the ambiguity, but this was missing as well. With the missing evidence, Baden pointed out that there couldn't be any conclusions drawn about Brown's movements, but from the injuries, it was clear that all but the shot to the thumb took place when Brown was at least 2 feet, and possibly up to 30 feet, away from Wilson's vehicle.

The forensics associated with the autopsies were not the only mishandled evidence. Wilson washed away important blood evidence on his body, which could have

been used to either corroborate or refute his claim that Michael Brown assaulted him in his vehicle. The medical legal examiner failed to measure the distance between Michael Brown's body and the vehicle, or even take pictures of the scene. Further,

up and Brown moving away from Wilson, and others claiming to have seen a punch or other aggressive actions from Brown, and still others essentially saying they weren't sure what they saw. One of the key witnesses in favor of Wilson claimed she saw Brown punching Wilson repeatedly, and then later charging at Wilson after being shot, ignoring the improbability of anyone charging toward anything as they slip into hydraulic shock, which results rapidly from a gunshot wound. The witness went on to admit that she had feelings that "others consider to be racist," and admitted to using racial slurs to describe the scene around Brown's death. Later, this witness went on to admit that she had lied about what she had seen, and was simply reciting things she had read on the internet about the alleged altercation.

The mismanagement of evidence, Wilson's and other witnesses' lying, McCulloch's potential conflict of interest, and the complete misuse of a grand jury are all concerning failures of the justice system in response to Brown's death. However, the most concerning information that has come to light was brought forward by the renowned hacktivist group, Anonymous. In the days leading up to the announcement of the grand jury's decision, Anonymous members took over the South East Missouri Chapter of the Ku Klux Klan (TAKKK) and began what they called #OpKKK, in which they revealed the identities of various TAKKK members in an act they refer to as "de-hooding." Amongst the de-hooded members were a police officer and two former deputy police chiefs in the area. TAKKK raised money for Wilson's defense fund, and threatened lethal force against protesters in Ferguson. On Nov. 26, 2014, Anonymous claimed to have information linking Wilson to the TAKKK through an informant in the police station, though Anonymous has presented no further evidence supporting this claim. However, former TAKKK member Henry Harrell told Anonymous, "I know for a fact that the TAKKK had a lot to do with what went on in Ferguson."

Ultimately, it is impossible to know what Wilson's intentions were when he killed Brown, or even to properly do a

"The United States cannot claim it aims for racial equality while allowing the justice system to fail so many so profoundly."

Wilson's gun was never tested for Brown's fingerprints, nor did Wilson turn his gun over to investigators, instead bagging the weapon himself. The police officer taking Wilson's initial statement did not take notes, making the reliability of the account questionable, and there was a substantial delay in taking Wilson's statement in the first place, as Wilson was taken to the hospital after claiming he had been punched twice by the 6-foot-4, 290-pound Brown at "full force." However, the hospital found Wilson had no injuries, and his only "symptom" was a slight reddening of the face.

About 10 minutes prior to the shooting, a convenience store reported a shoplifter roughly matching Brown's description taking a box of cigarillos. Despite initially claiming no knowledge of Brown being suspected of shoplifting, Wilson later changed his statements, claiming he saw the cigarillos in Brown's hands, and had stopped him for that purpose. Further, Wilson claimed the cigarillos were in Brown's right hands, yet also that Brown was punching him with his right hand, through the vehicle window (a Chevy Tahoe), though no cigarillos were found in the car. During the alleged punching, Wilson claimed Brown was also reaching with his right hand for the gun on Wilson's right hip, which—barring Brown having two right hands—does not seem entirely possible, especially considering the height of a Tahoe's window.

Despite the clearly suspicious testimony, McCulloch did not seem to cross-examine Wilson in any way. What McCulloch did do, however, was serve as president to an organization that raised over \$400,000 for Wilson, and has been known to have deep ties with the St. Louis Police Department (SLPD); McCulloch's father, brother, uncle and cousin were all SLPD police officers, and his mother worked as a clerk for the SLPD. This raises some questions of conflict of interest, especially given McCulloch's past in not pressing charges against police officers who shot unarmed persons, such as in 2000, when officers shot and killed two suspected drug dealers who were unarmed at the time and who were not even moving toward the officers. Many

have questioned McCulloch's intentions in choosing to go before a grand jury, rather than going directly to trial as he could have chosen to do, and especially to have testimony permitted in a grand jury. As Supreme Court Justice Antonin Scalia has said, "neither in this country nor in England has the suspect under investigation by the grand jury ever been thought to have a right to testify or to have exculpatory evidence presented."

Wilson's testimony was not the only problematic testimony during the hearing, however. As mentioned earlier, there were many conflicting accounts of what occurred between Brown and Wilson, with some witnesses stating they saw Brown's hands

"It is the duty of every American to ensure that the American justice system remains a great leveler..."

forensic examination to support or refute his accounts. However, it is clear that there is a trend of police officers killing unarmed black males without proper investigations into their actions. The United States cannot claim it aims for racial equality while allowing the justice system to fail so many so profoundly. Even if people do not believe Wilson's actions to be racially motivated, they should be horrified by the lack of rigor in the investigation, and that alone should be enough to incite anger in every American. "But there is one way in this country which all men are created equal," Harper Lee wrote in her classic, To Kill a Mockingbird. "Our courts have their faults, as does any human constitution, but in this country our courts are the great levelers, and in our courts all men are created equal." It is the duty of every American to ensure that the American justice system remains a great leveler, and thus it is the duty of every American to hold the justice system accountable when it fails to be so.

FEATURE

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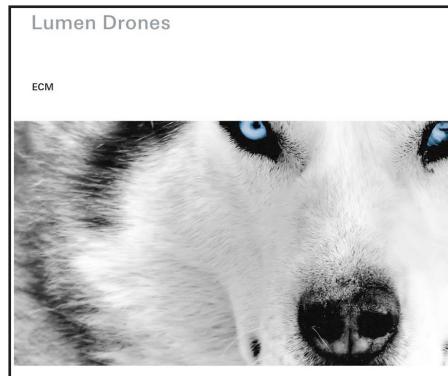
Instrumentalist trio Lumen Drones releases debut album

NAILEN MATSCHKE
Contributing Writer

Lumen Drones, a Norwegian trio of instrumentalists, describes its music as "psychedelic drone," a fitting but limited condensation of the folk, post-rock, progressive, and even classic rock influences that they meld together to produce the familiar yet brazenly unusual sound that permeates their first, self-titled release. The group itself is composed of two main components: the pair of guitarist Per Steinar Lie and drummer Ørjan Haaland, both members of post-rock group The Low Frequency in Stereo, and famed Hardanger fiddle player Nils Økland. The presence of the latter is almost immediately apparent to listeners of this record, with the lusciously rich, longing, and echo-filled tones of Økland's Hardanger fiddle, a traditional violin-like instrument with four additional resonating strings, serving as the melodic driving force of the music throughout the album. The traditional rock and blues sensibilities that Lie and Haaland then bring to the table (thanks to their eclectic, energetic, and distinctly retro-sounding work of The Low Frequency in Stereo) provide rhythmic layers of support and texture upon which the fiddle paints its achingly emotional picture. This formula does have its limits, as the group only really

pushes their sonic bounds in a handful of places, perhaps for fear of disrupting their delicate balance, but the 50 straight minutes of beautiful music that we are instead treated to makes this a bit easier to forgive.

Lumen Drones begins with "Dark Sea," one of its most sparse and innocuous tracks, consisting primarily of reverb-heavy guitar chords strummed sedately along with brush-played drums, while the fiddle explores its range of tones through slow, simple melodic patterns. Every detail of the fiddle's sound is on display, from the rasp the bow makes as it is slowly dragged to make the quietest notes to the cracks in the instrument's tone when it is pushed to its loudest, and this casts some much-needed warmth in an otherwise cold and barren landscape. It comes together with the guitar midway through the song to execute a swell, picking up a strong pulse driven by the latter's steady power chords, and at their highest point the fiddle climbs up a few notes and then wispily dies away, leaving the guitar alone to carry out its last few notes before the whole song begins to slowly fade out. These slow, deliberate, and layered progressions are what comprise the skeleton of each track, allowing the fine details to be draped around them by



-<http://dalstonsound.wordpress.com>

each individual instrument, and while "Dark Sea" is a simplistic example of this, the trio quickly demonstrates that it has a bit more to offer on the technical side.

The second track, "Ira Furore," instead opens up with chaotic tremolo-picked notes from the guitar and rumbling tom and snare rolls from the drums, underneath more wistful fiddle, before settling down into an almost jazzy groove with plenty of ride cymbal thrown in for good measure. The guitars on this track are quite a bit more adventurous as well, trading the spotlight between different tracks playing distorted chords or patterns fed through a strong tremolo effect, topped off by the occasional wah pedal-drenched chord floating out of the haze of electronic crunch. Also standing in contrast to "Dark Sea" is the fiddle, which ends up playing mostly a support role, providing the coherent melodies to tie everything else together as

it builds into an indistinguishable mass of drums and guitars during the song's climax.

Then, on "Anemone," it's the turn of the drums to take a backseat, as the song focuses on the exchange between fiddle and guitar. The rasp of the fiddle I mentioned earlier is blended with the hissing of the electric guitar, and more wah-laden chords are used to extend and complement notes held by the fiddle. The fiddle will often introduce a snippet of a melody, for the guitar to warp until it's barely recognizable. It is at this point, however, that I feel the album misses a few opportunities to capitalize on its potential. The fourth track, "Echo Plexus," is one of the most sonically conventional on the album, allowing the fiddle and guitar to play what sounds like traditional folk music over a constant march-like drum beat, producing plenty of material for fans of the Hardanger fiddle, but failing to add to the scope of the group's sound in the same way as the first three tracks, which were much more deliberate explorations of what the group is capable of.

Despite a bit of stagnation in the middle, I must say that I really enjoyed this album. It leaves listeners feeling as though they've just traveled through dark Scandinavian wilderness, and are ready to sit down next to a humble fire for the frigid night. It's incredibly immersive, and I can't help but feel myself being drawn into the music, getting lost in the unforgiving but somehow comforting world it occupies. The passionate fiddle is absolutely gorgeous to hear, and combined with solid classic rock and post-rock foundations, the music is made more accessible and diverse, and I expect anyone with the patience to give *Lumen Drones* a fair shot will find something to like.

Sudesh Bhosle Live



Date: Dec. 27, 2014

Time: 8pm

Venue:

Cerritos Center for the Performing Arts
12700 Center Court Dr.,
Cerritos, CA 90703

Organized by

INDIAN DENTAL ASSOCIATION OF CALIFORNIA

Proceeds benefit Down Syndrome Foundation

and The Oral Cancer Foundation.

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FEATURE

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THE CALIFORNIA TECH

There's more to it: Escaping the bubble

KSHITIJ GROVER
Contributing Writer

It's no secret. If you go to a school like Caltech, you're in a complete bubble. Boxed in. It's not even a bubble—more like an opaque box. Oh, and it's no Schrödinger experiment either—you're alive (fine, this one is a little bit arguable), and you're certainly in it. Boxed in.

There's a lot of bubbles like this—including the Silicon Valley tech bubble. Let's leave that one aside and talk about the one we all share:

The Caltech Bubble

You guys know exactly what I'm talking about. Ask yourself:

When's the last time I watched the news, not counting the quick glance at Chandler? More concretely, describe the results of the midterm election. Could I really fill someone in on the facts of the Ferguson case?

When's the last time I voluntarily read a book? The last time I called a high school friend just to catch up?

You probably don't have particularly appeasing answers to these questions, and I think that's a problem. It's only natural. You spend a lot of time working on sets throughout the week, so you deserve that no-brainer time to relax. At the same time, it's foolish to ignore the fact that there's a real world out there after all.

Here are my big takeaways on getting out of the Caltech fantasy, physically and otherwise:

1. Set your mobile homepage to a real news source. More often than not, something will probably catch your eye, and you'll read an article or two (and don't fall into the trap of thinking this is wasted time!). Better yet, set it to something that's not always serving up Math or Science news—and stay away from clickbait, because you get plenty of that on Facebook. TIME is my choice here for news, and Medium is my choice here for casual reading.

2. Go off-campus on weekends for dinner/dessert, and do it with a group.

I've noticed again and again that the conversations that happen at a table in a place like Urth Caffé (my destination of choice) are significantly different than those happening in your dorm room. Your environment is a real limitation. Change it. You'll end up talking about something more personal, or sharing more of who you are. One thing is for sure—you're a whole lot less likely to pull our your Math Set and compare approaches to #5.

3. Keep work in perspective by getting involved! Whether this means doing something extracurricular like volunteering at a Pasadena High School, going dancing at night with a school club, or just being more involved in your house, being occupied with things other than homework is going to keep your work in its place. Work is a part of your life, so make your life extend outside of work. Easier said than done, but the results are invaluable.

Some shorter ones:

1. Don't turn down that trip to In-N-Out.
2. Work from Starbucks.
3. Put down iMessage and hit Call.
4. Stream live TV instead of Netflix.
5. Go to a concert off-campus.
6. Go to that study abroad meeting. Escape for a term.
7. Buy a plane ticket to that conference you want to go to.
8. Take a road trip, and figure out a way to do your sets later. You'll be fine.
9. Call home. (This has nothing to do with getting out of the bubble, but really—Call home.)
10. Start a project with a group of friends that's not academic. You'll come to treasure that time.

These little things aren't going to fix everything. They seem obvious at first. Yet, to me, these are the little things that keep all our problems on campus in perspective.

There's more to it. Pop.



(From top) "Los Angeles Museum of Art" by Alice Könitz and "The Room is a Frame and/or An Accumulated Anthrome" by John Burtle were among the displays in the Armory Center for the Arts.

Photos Courtesy of Crystal Liang

Visit to Armory Center for the Arts evokes nostalgia

CRYSTAL LIANG
Contributing Writer

of pretension, reaching parodic levels of abstract fluff. Despite the first-year-liberal-arts-student-tier informational writing, which conveyed little more than the mixed media nature of the exhibition, many of the pieces are able to speak for themselves.

S h i z u Saldamando's "B a c k y a r d Hardcore," for instance, is an understated colored-pencil drawing of an archetypal

"tough guy" lying on his side with his back turned to the viewer. The way Saldamando frames his form with sheer, tender blades of grass, sketched exquisitely in subtle shades of green, blue, red, and purple, renders him vulnerable, his head bare, his hat hanging from the reeds, a strip of bare skin and underwear exposed beneath his black jacket, perhaps hinting at an inner life that the subject hopes to hide from the world. Samira Yamin's "Scotoma" is a black-and-white photograph focused on a couple in the foreground, their images distorted; Yamin has cut much of the photograph into tiny triangles, rotated them, and pasted them back in place. The distortion is in the shape of a triangle, and emanates from the eyes of a child in the background. Much like "Backyard Hardcore," it's a subtle but powerful statement, possibly on the failings of memory, the need for repression, or parental neglect—the title of the piece, after all, refers to the blind spot of the eye.

My personal favorite was Trang T. Le's "Growth Wraps Around Tigris River and Desert," a minimalist oil on linen that, like Burtle's piece, appealed to my inner child, the roots drawn as squiggly brown strands wrapping delicately around the shore and the growth rendered in earthy green shades as a cloud of circles with the paint swirled in like the heads of lollipops.

The third main exhibition, "The Fifth Wall," is thematically more cohesive than "Attunement"; it seeks to expose the factors that influence a viewer's perception of art by presenting the viewer with works that challenge that faculty. The title references the ideas of German modernist and playwright Bertolt Brecht, who sought to achieve "Verfremdungseffekt" ("alienation effect") in his works: audience members are constantly aware of the fictitious nature of the performance, and in that state of detachment can critically analyze the actions of the characters to gain an intellectual understanding of human nature that they can apply to their own lives. In the process, the "fourth wall" separating the audience and the fictitious world is broken. "The Fifth Wall," then, goes a step forward and examines the very act of perception.

Alice Könitz's "Los Angeles Museum of Art" is shamelessly meta. Its true form is initially unclear; what caught my eye was an arrangement of duplicates of a few objects—a statue head, a black bottle, books—rendered with a simplicity that suggested virtual simulation. To emphasize that point, at the center of the installation was a chest of drawers, its surface completely smooth

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SPORTS

THE CALIFORNIA TECH

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Men's basketball digs deep and discovers the true meaning of friendship

GOCALTECH.COM

Actual Sports Content Editor

PASADENA, Calif. (Nov. 29, 2014) – Sophomore Ricky Galliani (Menlo Park, Calif. / Sacred Heart Prep) made an impact off the bench as the Caltech men's basketball

team endured a second straight night of cold shooting in a 76-48 loss to six-time defending Northwest Conference champion Whitworth University on Saturday night.

The Pirates separated early, building a 15-6 lead in the opening four minutes, and the Beavers simply could not keep pace as shot

after shot failed to fall. Whitworth, which has qualified for nine consecutive NCAA Championship appearances, improves to 3-2 with the win while Caltech dips to 0-5.

"That's why we played them – to experience what a championship program is like," Head Coach Dr. Oliver Eslinger said. "We played hard and competed. The pressure defense was better, and the whole bench was pumped when we forced a shot clock violation. We're working on better defensive techniques and it showed with our fouls being way down."

While the Beavers shot just 36 percent from the field and 10 percent from long range, the Pirates lit up the gym with a 57.7 shooting percentage (52.9 on three-pointers) and dominated both the assist-to-turnover battle (20:13 – 8:14) and down low (38-18 points in the paint).

Senior Andrew Hogue (Arroyo Grande, Calif. / Arroyo Grande) led the Beavers with nine points while sophomore Lawrence Lee

(Hong Kong / Hong Kong International School) contributed eight points and four rebounds. Galliani and sophomore Luke Lango (San Diego, Calif. / Pacific Ridge School) chipped in with eight and seven points, respectively, in just 33 minutes combined off the bench, with Galliani adding a team-high six rebounds in just 19 minutes. Sophomore Nick Buoniconti (Orlando, Fla. / Lake Highland Prep) mustered two points, three rebounds, two assists and two steals in just 16 minutes coming off the bench as every healthy Caltech player saw at least three minutes of action in the game.

"I'm glad we got all the guys in today," Eslinger said. "We can see we are a deep team, and I loved the way we finished out the game. We've gotten some terrific senior leadership from Hogue and [Bryan] Joel, who have learned so much over the years and are trying to pass that on to the young guys so we can really build something."



Say what you want about this picture, but I am convinced Ricky Galliani licked this guy's armpit.
-http://gocaltech.com

Beavers may fall in home opener, but Kate Lewis soars

GOCALTECH.COM

Actual Sports Content Editor

PASADENA, Calif. (Nov. 26, 2014) – Sophomore Kate Lewis (San Antonio, Texas / Ronald Reagan) recorded her second straight 24-point effort and first double-double of the season as the Caltech women's basketball team hosted Linfield College in the Beavers' home opener on Wednesday night.

"Kate is doing a tremendous job making the most of her game," Head Coach Sandra Marbut said. "She has scored well two games in a row and there is still plenty of room to hone her skills. That speaks to her talent and her focus."

The Wildcats built up an early lead and extended the margin to a final of 28 points in a 77-49 victory, improving to 4-2 while the Beavers drop to 0-3. Caltech shot an



Kate Lewis reaches for the ball while this other girl reaches for her hair. Rude.
-http://gocaltech.com

impressive 36.4 percent from long range and sank 71.4 percent from the charity stripe, but lost the assist-to-turnover battle (22:15 – 7:19).

"I saw some really great things tonight," Marbut said. "There was definite improvement from the first two games. Our players are learning completely new things because our thin roster necessitates some creativity to play to our strengths. We can see it starting to work, but it takes time. The progress we have already made is beyond what could have been expected, which is exciting!"

Linfield picked up the first points of the game nearly two minutes into play, but junior Stephanie Wong (Palos Verdes Estates, Calif. / Palos Verdes Peninsula) nailed a three-pointer on the next possession to give Caltech the 3-2 edge. A 17-4 run allowed the Wildcats to surge ahead by 12 at 21-9 after

seven minutes, and Linfield extended the margin to a high of 20 at halftime. Caltech was unable to chip away at the deficit in the second half, although junior Kristin Anderson (Folsom, Calif. / St. Francis) gave the crowd reason to cheer with a tip-in in the final second of play.

Lewis netted 24 points for the second consecutive game and added 13 rebounds, including seven on the offensive glass, to record her fourth career double-double and first of the 2014-15 season. Wong added 13 points on 3-of-6 shooting from beyond the arc to go along with six rebounds and four steals in just 26 minutes before fouling out.

"Stephanie to score for us even when she is not quite in her groove yet," Marbut said. "Everything is new this season, so she is finding her way within that. Steph is doing exactly what we need her to do and finding more ways to contribute."

The picture of Stephanie was too blurry, so here's another picture of Kate Lewis



Check out the disdainful looks of the girls on the bench. Haters gonna hate.
-http://gocaltech.com

GOCALTECH.COM
Actual Sports Content Editor

LOS ANGELES, Calif. (Nov. 29, 2014) – Junior Stephanie Wong (Palos Verdes Estates, Calif. / Palos Verdes Peninsula) finally found her stride, nailing four three-pointers on her way to a team-high 16 points and eight rebounds as the Caltech women's basketball team hosted East Texas Baptist University in the Caltech-Occidental Fall Classic at Occidental College on Saturday afternoon.

"Stephanie did a great job shooting today," Head Coach Sandra Marbut said. "When you consider the major adjustment Kate had to make down low against their 6-6 center, Stephanie's hot hand was exactly what we needed tonight."

The Wildcats pulled ahead early and that made the difference as the Beavers matched them nearly point-for-point in the second half, ultimately falling 76-57. ETBU improves to 3-1 while Caltech is now 0-5.

"We just gave up too many points on turnovers to make it a close game down the stretch today," Marbut said. "I was happy to see the second half surge we made, which certainly made them work hard to take away that win. Combined with the drastic size

disadvantage we had down low, we stayed in the game well."

ETBU scored the first five points of the game and built up their lead to as much as 19 with 4:21 left in the half. Behind by 16 at the break, Caltech began to rally in the second half, pulling within 10 at 45-35 after the first five minutes. The Wildcats were able to stretch their lead back out to a game-high 22 points at the 5:57 mark, but the Beavers brought the final margin back down to 19 by the final whistle.

Wong led the Beavers with 16 points on 5-of-11 shooting (4-of-9 beyond the arc) and completed an all-around line with eight rebounds, three steals, two assists and one block. Sophomore Kate Lewis (San Antonio, Texas / Ronald Reagan) followed up her three straight 20-point efforts with another day in double figures, scoring 13 points on 5-of-12 shooting, while sophomore Michelle Wong (Palos Verdes Estates, Calif. / Palos Verdes Peninsula) added seven points, four rebounds and a team-high four assists.

"I am happy with how players are stepping up to score," Marbut said. "Playing with just eight means we need everyone involved every moment of the game. Everyone is exposed and it forces them to step up and contribute every night."

ANNOUNCEMENTS

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DECEMBER 1, 2014

THE CALIFORNIA TECH

ASCIT Minutes

There was no ASCIT meeting last week, so there are no new minutes to be posted.

The California Tech would like to thank **The Moore-Hufstedler Fund** for funding the purchase of new equipment, including computers and cameras.



The Tech staff appreciates the Fund's support of the paper's commitment to better inform the Caltech community and to reach a wider audience.

REMINDER FROM THE COUNSELING CENTER:

Meditation Mob

(drop-in mindfulness meditation group)
meets every Tuesday
Bottom floor of Winnett
from 12:00-12:50 pm

CALTECH THEATER offers several chances to branch out and take chances, have fun and expand your social network this fall!

1. Wednesday Nights 730-930 in Ramo Auditorium. Director of Theater Arts Caltech, Brian Brophy (*Star Trek TNG, Shawshank Redemption*) helps guide you through the fundamentals of Directing/Acting/Writing for the stage (life), to a final production of several ten-minute plays by students December 3, 2014. We still have room for about six more students! Last chance 2014!

2. WANTED: Actors, singers, musicians, technical personnel, and designers for new, original Caltech musical *Alice Through the Wormhole!* This musical is currently in the development phase with a world premiere run February 20-March 1, 2015! If you are interested in any facet of production, including script development, contact Brian directly!

NOMINATE YOUR FAVORITE PROFESSOR FOR THE FEYNMAN TEACHING PRIZE!!!

Here's your chance to nominate your favorite professor for the 2014-15 Richard P. Feynman Prize for Excellence in Teaching! You have from now until January 5, 2015 to submit your nomination package to the Provost's Office to honor a professor who demonstrates, in the broadest sense, unusual ability, creativity, and innovation in undergraduate and graduate classroom or laboratory teaching.

The Feynman Prize is made possible through the generosity of Ione and Robert E. Paradise, with additional contributions from an anonymous local couple. Nominations for the Feynman Teaching Prize are welcome from faculty, students, postdoctoral scholars, staff, and alumni.

All professorial faculty of the Institute are eligible. The prize consists of a cash award of \$3,500, matched by an equivalent raise in the annual salary of the awardee. A letter of nomination and detailed supporting material, including, but not limited to, a curriculum vitae, course syllabus or description, and supporting recommendation letters should be emailed to kkerbs@caltech.edu or directed to the Feynman Prize Selection Committee, Office of the Provost, Mail Code 206-31, at the California Institute of Technology, Pasadena, California, 91125. Nomination packages are due by January 5, 2015.

Additional information including guidelines for the prize and FAQ may be found at <http://provost.caltech.edu/FeynmanTeachingPrize>. Further information can also be obtained from Karen Kerbs (626-395-6039; kkerbs@caltech.edu) in the Provost's Office.

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The advertising deadline is 5 PM Friday; all advertising should be submitted electronically or as camera-ready art, but *The Tech* can also do simple typesetting and arrangement. All advertising inquiries should be directed to the business manager at tech@caltech.edu. For subscription information, please send mail to "Subscriptions."

FEATURE

THE CALIFORNIA TECH

DECEMBER 1, 2014 7

Get Fit with Brad/Chad: Supplementation Part I

BRAD CHATTERGOON
Contributing Writer

Hey guys and girls. It's week 10! Hope you had a successful Thanksgiving, and by successful I mean that you ate as much turkey as possible, passed out from a food coma and woke up just in time for school this week. By that definition, my Thanksgiving was a success. I don't have a cool monologue this week because I was either sleeping or working on sets for all of it, so here's something to think about instead: Three men are on a boat with four cigarettes, but they forgot to bring a lighter or any matches. What do they do? Answer at the end of the article.

This week I'm talking about steroids ... I mean "supplements." So what are supplements? Well they qualify as anything that you're taking external to your normal food intake and include items such as protein powder, creatine, and horse growth hormone. It's important to note that supplements are exactly as the name suggests: they *supplement* your diet, not replace it. You can't out-train or out-supplement a bad diet. So what is the purpose of supplements? Well the answer depends on the specific supplement. Some are there because in most cases your diet is not giving you everything that you need to have a balanced nutritional intake, especially in the micronutrient area. Some are there to help you achieve your training goals faster or allow your body to sustain more intense workouts. And some are there to augment your macronutrient intake. Here's a look at supplements that I recommend and what they are used for:

I. Daily Multivitamin: This is your standard once-a-day tablet that will usually provide around 100% of your recommended micronutrient intake according to the FDA based on a 2,000-calorie diet. I mark this as (WO) MANDATORY. In most cases you are almost certainly not getting

everything that will promote smooth bodily function from your diet in recommended amounts. I am so serious about this that I took a month's supply with me on my backpacking trip this summer. It was the only supplement I was not willing to part with. These also usually come with some extra stuff added in, like probiotics or herbs, depending on the brand. I personally recommend OptiMen and I want to say OptiWomen but as I've never used the latter I can't give it my full blessing. Do some research and see what appeals to you and your needs.

II. Protein Powder: The quintessential bro-drink, the protein shake. Protein powder is useful for a lot of reasons. The main reason is that having a direct source of readily digestible protein free from other macros can prove quite beneficial when trying to fill your daily calorie needs. There are also several types of protein, each with a different digestion rate. The two common ones are the quick-digesting whey protein and the slow-digesting casein protein. Quick digestion is preferable after a workout to get the protein into your bloodstream immediately, while slow digestion is desirable so that there is a steady supply of protein to the muscles if going to bed or just wanting a protein source in the background. You can buy whey or casein separately and then mix if desired, but I've found that it's easier to simply buy a blended protein powder to avoid the hassle of mixing from two different tubs. I recommend Optimum Nutrition if buying pure whey or pure casein and MusclePharm Combat Powder if interested in purchasing a blended protein. Triple Berry is a decent flavor in the latter case.

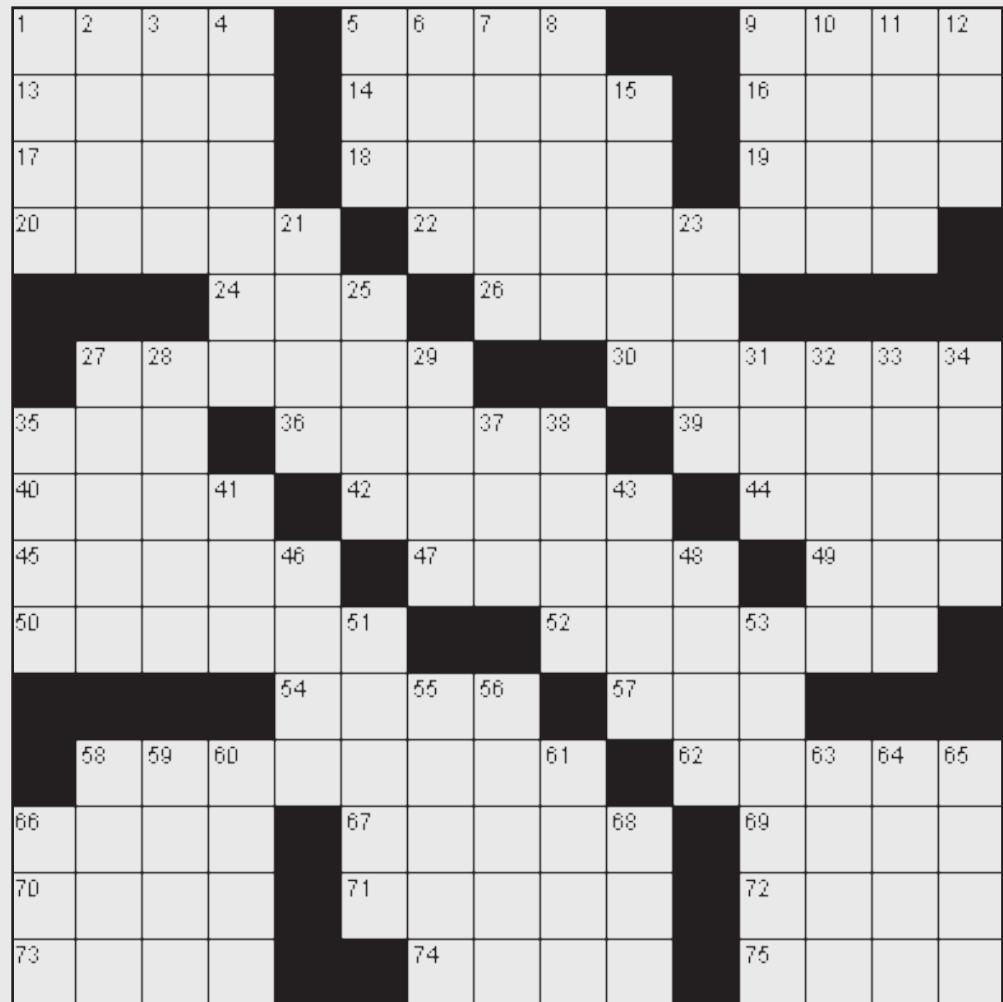
Supplementation will be continued in a future article. I hope you haven't forgotten about my brain teaser: The three men throw one cigarette overboard and then the boat becomes a cigarette lighter. Start studying for finals!

-Brad/Chad



[-http://gymflow100.com/](http://gymflow100.com/)

Crossword



-puzzlechoice.com

Across

- 1. At that time
- 5. Slide without control
- 9. Singing voice
- 13. An actor's portrayal
- 14. Internal
- 16. Prevaricator
- 17. Translucent mineral
- 18. Female relative
- 19. Edible flatfish
- 20. Taut or rigid
- 22. Brass instrument
- 24. Peculiar
- 26. Group of three singers
- 27. Amiable
- 30. Male feline
- 35. Mongrel
- 36. Delicacy
- 39. Flashlight
- 40. Charter
- 42. Religious doctrine
- 44. Whittle
- 45. Embellish
- 47. Commence
- 49. Liveliness
- 50. Panic
- 52. Sent via the postal service
- 54. Bird shelter
- 57. An argument in favor of
- 58. Selecting what seems best of various styles or ideas
- 62. Bird of prey
- 66. Certain
- 67. Excluded from use or mention
- 69. Stomped heavily
- 70. Region
- 71. Edible bulb
- 72. Female red deer
- 73. Garment
- 74. A meeting arranged in advance
- 75. Jittery
- 76. Story
- 77. Metal-bearing mineral
- 78. Send money in payment
- 79. Redact
- 80. Item of footwear
- 81. Move with sudden speed
- 82. Usher
- 83. Mistake
- 84. Fermentation
- 85. Sediment of an alcoholic beverage
- 86. Swab
- 87. Have a great desire for
- 88. Strong and sharp
- 89. Those people
- 90. Informal conversation
- 91. Colony insect
- 92. Squad
- 93. Wander from a direct course
- 94. Snare
- 95. Not any
- 96. Become fatigued
- 97. Right-hand page
- 98. Abhor
- 99. Support or foundation
- 100. Shinbone
- 101. Monetary unit
- 102. Ship's company
- 103. Containing little excess
- 104. Water hen
- 105. Power system
- 106. Yearn
- 107. Miniature whirlpool
- 108. Droop
- 109. Single person or thing

Down

- 1. A slow pace of running
- 2. Be optimistic

Armory artwork elicits childhood memories

Continued from page 4

save for a single drawer that was slightly ajar—it was as if the computer, to save resources, had deemed the other drawers insignificant and not bothered rendering them. And yet, the installation, which reminded me strongly of the cover of Macintosh Plus' *Floral Shoppe* and, more generally, of the vaporwave aesthetic, was not the "Los Angeles Museum of Art," but in fact its occupant: Könitz's work was a raised platform with wooden beams supporting a corrugated metal roof, which housed the arrangement. Since 2012, the structure has been traveling around Los Angeles, hosting a variety of exhibitions and performances. It makes art of the space that art occupies.

The other works are similarly subversive in form: Evan Holloway

contributed a series of etchings that depicts various epic sculptures by the Abstract Expressionist David Smith seen from the side, reducing them to thin, rectangular structures and emphasizing their two-dimensional nature. Farrah Karapetian's "The Kitchen and Its Negative" features the interior of a kitchen with entire sectors blackened by scorch marks, inspired by those that the artist saw burnt onto walls in Hiroshima in World War II. On the other side of a dividing wall, one finds the blackened sectors now rendered in bronze, floating displaced in the absence of the undamaged parts of the kitchen.

But perhaps the most poignant of all was Artur Źmijewski's "Deaf Bach." Although the work itself is purely audio, the use of space is devastatingly effective. One "enters"

the work through a doorway that leads into a small room with bare floors and walls, sparsely furnished with a few wooden stools. Hence the attention is fully captured by the only stimulus, a recording of a deaf choir's interpretation of a Bach score. The choir's wailing is artless, impassioned, dissonant; assaulted from all sides, the listener feels unsettled and exposed. Meanwhile, a piano plunks out the accompaniment, the sublime beauty of Bach's composition leaking out through the clumsiness of the playing like sunlight through clouds. Although the world of the deaf is alien to us, one can sense something familiar and universal in what they seek to express. Perhaps it is the very desire for expression itself, and what it offers: the assertion of one's existence through human connection.

HUMOR

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THE CALIFORNIA TECH

Acquired Taste

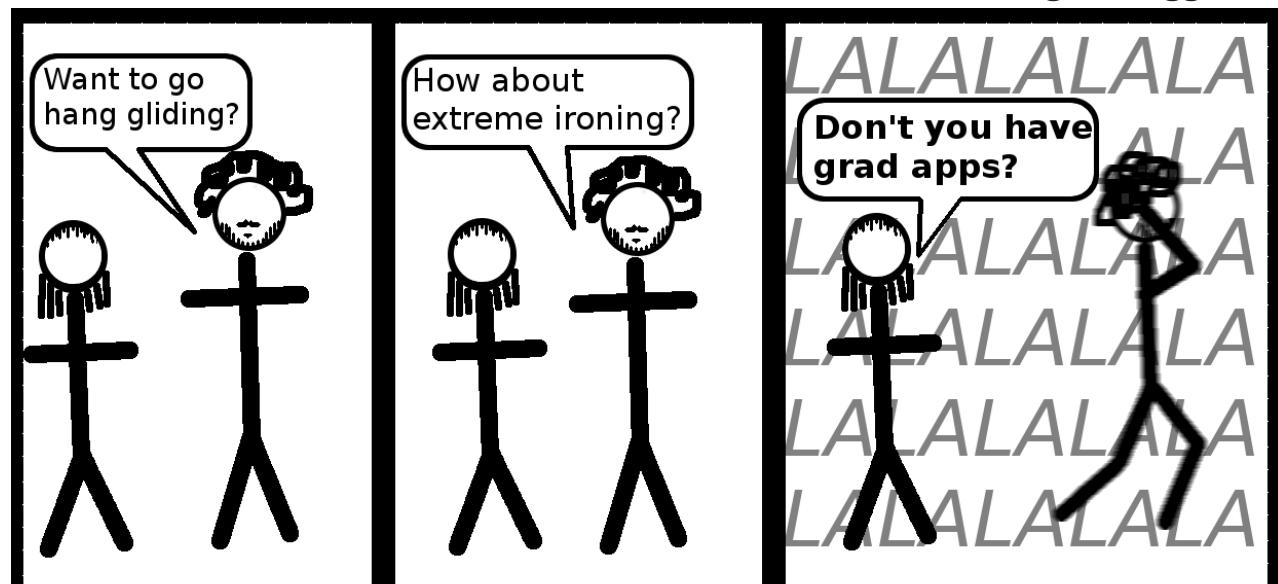
Dr. Z



Rochelle Weber

"Wanna write a comic?"

Georgio Kraggman



Answers to previous Sudoku

4	8	5	2	6	1	3	7	9
3	9	2	7	8	4	6	1	5
6	7	1	9	5	3	4	8	2
2	4	7	6	9	5	8	3	1
9	6	8	1	3	7	5	2	4
5	1	3	8	4	2	7	9	6
1	2	4	5	7	8	9	6	3
7	3	9	4	1	6	2	5	8
8	5	6	3	2	9	1	4	7

Answers to previous crossword

RANCH	P	E	G	S	W	O	R
A	F	I	R	E	A	E	E
P	A	N	I	C	C	N	A
T	R	E	S	T	L	E	R
P	I	E			H	E	N
A	L	E	C	A	P	D	I
H	E	A	P	S	U	R	P
E	A	S	Y	T	R	O	I
A	V	E	R	L	I	E	T
D	E	L	E	T	S	A	N
							E
							O
S	T	O	P	P	E	R	T
P	A	P	A	L	I	C	Y
A	R	E	N	A	S	P	S
M	O	N	E	Y	E	W	E

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Example:
15 callers
x
10 call hours each
x
\$13 = \$1,950!

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