

Natural Selections

A NEWSLETTER OF THE ROCKEFELLER UNIVERSITY COMMUNITY

TULIPMANIA: THE ECONOMIC BUBBLE OF THE SEVENTEENTH CENTURY

JEANNE GARBARINO



The stunning *Semper Augustus*. In 1636, this could have bought you a penthouse. Credit: Wikimedia Commons under the creative commons agreement

Before the winter set in, I witnessed a man nearly reduced to tears as his newly purchased Ferrari 430 slowly rolled out of a delivery truck and into his private garage, conveniently tucked into the side of a building on 63rd Street. As New Yorkers, especially as residents of the Upper East Side, it is not uncommon to see a slew of spectacular objects representing unrestrained wealth. Whether it is a luxurious car, incredible jewelry, or fabulous real estate (or any combination thereof), it is clear that, even in the face of global economic hardship, the rich are alive and well. However, what we consider to be a symbol of prestige can differ vastly from what is a measure of wealth in other cultures,

or perhaps even more so, from other historical eras. Perhaps the most extraordinary example of a status symbol and the seventeenth century European culture that facilitated it can be summed up with one word: Tulipmania.

Few flowers have gone from obscurity to astounding fame like the tulip. Originally a wildflower growing in central Asia, the tulip, which derived its name from the Persian word for “turban,” was first commercially cultivated around AD 1000 by early botanists and flower enthusiasts of the Ottoman Empire. Drawn by its beauty, this society revered the tulip and, through horticultural experimentation, introduced a number of phenotypes associated with the flower’s color, shape, and blooming period. As the economic and political relationship between Europe and the Ottoman Empire grew, knowledge of this flower became more widespread within the botany circle. However, the tulip’s popularity in The Netherlands can be attributed to a single man—Carolus Clusius. This humanist, physician, and botanist was recruited by the Holy Roman Emperor Maximilian II to establish a botanical garden in Vienna, for which Clusius received tulip bulbs from the ambassador to Constantinople (Istanbul). After his dismissal from these gardens, Clusius became an honorary professor at the University at Leiden, where he would direct the development of a new botanical garden, Hortus Academicus. In 1594, one year after his arrival in The Netherlands, the tulip supposedly blossomed for the first time in Europe.

During this time, it was becoming fashionable to grow flower gardens, leading to the development of large flower markets. Clusius was disappointed by how flowers were becoming cheapened through commercialization when free exchange had always been a means for like-minded plant enthusiasts to share their prizes with one another. As a result, he became very protective over his precious tulip bulbs, and it was this covetous conduct that stoked the fires of envy. Despite this, over several years, many bulbs from Clusius’ tulip collection were taken and propagated for resale. Thus, the commercialization of the tulip had commenced.

Though flower gardens became a dime a dozen, nothing represented success like a tulip, and the desire to show off societal prominence catapulted tulips to the top of everyone’s wish list. However, supply could not keep up with demand. It generally takes seven to twelve years for a tulip to flower from seed and, due to a great deal of genetic variation, it is nearly impossible to ensure that offspring will have the same characteristics as the parent. In order to control for this variation, tulips are essentially cloned through propagating from bulbs, thereby maintaining the qualities inherent to a specific variety. Overall, tulip breeding was a process that was painstakingly slow and largely contributed to the exorbitant prices of tulip bulbs.

To control the tulip market price, Dutch traders changed how a tulip’s value had been assessed. Whereas it had been the norm for

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buyers to purchase the tulip in the summer months after it had flowered (and they knew what it looked like), it became more acceptable to buy tulips in the winter for delivery in the summer, with only a promissory note describing the characteristics of the flower. Additionally, breeders were introducing a slew of new varieties to the marketplace. By 1634, tulip prices were briefly depressed, increasing tulip accessibility to middle class tradesmen. Whereas by 1636, a futures market had been created for tulip bulbs and many investors were buying the bulbs in the winter at a fixed price (which was largely speculative) under the assumption that the bulb would actually be worth more when lifted from the ground the following summer. In theory, they could then resell the bulb based on its actual weight and turn a profit. This forced the tulip trade into a frenzy, and tulip dealers responded by doubling or tripling the speculated price of a single bulb.

The winter of 1636 saw the peak of Tulipmania in The Netherlands. Even the most common varieties of tulips were being sold at prices twenty times their original values. But, it was the highly sought-after *Semper Augustus*, a “broken” tulip characterized by its flames of scarlet red on a white background, which boasted the highest price tag. This tulip (pictured) was the epitome of beauty in the eyes of the Dutch. Because it was a very scarce bulb, the *Semper Augustus* was valued at over thirty times the average yearly salary and, at the height of the Tulipmania mayhem, a single *Semper Augustus* bulb was traded for

an extravagant canal house—equivalent to a townhouse on 5th Avenue in today’s market. It is interesting to note that the much sought-after “broken” variety of tulip bulbs, such as *Semper Augustus* bulbs, were actually damaged goods. We now know that these tulips had been infected with a type of mosaic virus, called the “tulip breaking virus,” which caused the multicolored phenotype in these flowers.

As tulips, and flowers in general, became very overvalued, people found themselves trading their possessions—every last item—for a piece of the tulip action. Although, even when made of beautiful flowers, this economic bubble was too good to be true. On February 5, 1637, the flower market in The Netherlands came crashing down, and the quick fortunes made by so many Dutch citizens were lost forever. Luckily, the Dutch stock market did not involve itself with tulips and this tulip crash had little effect on the Dutch economy. However, the crash of the tulip market did affect the reputation of many businessmen, ultimately leading to their financial ruin. Within days, the tulip went from representing the pinnacle of status to the symbol of economic folly.

The Netherlands is still the tulip capital of the world. Anyone who has visited the Bloemenmarkt in Amsterdam would know that the Dutch take their tulips, and flowers in general, very seriously. Furthermore, The Netherlands is home to Keukenhof, the largest flower garden in the world, where seven million flower bulbs are planted annually. But

the tulip will always reign. With its extraordinary history and stunning beauty, we should all take a moment to honor this wonderful flower as it peeks through the once-frozen ground. After this cold and snowy winter, it will certainly be a sight for sore eyes. ☺

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Confessions of a Special Olympics Winter Games Volunteer

CARLY GELFOND

I was born into a home with a Bedlington terrier and a three-car garage, and until I grew old enough to notice the world beyond the red front door and the cracked concrete porch, I assumed these things were standard issue.

Like the household practice in which my dad and I wore raincoats when dinner was spaghetti and meat sauce, volunteering at Special Olympics was one of those things I thought, at a young age, that everyone did.

There are lots of Special Olympics events that take place during the year—local and regional competitions for pretty much every sport you can think of. But it’s the state-level Winter Games that really stick with you, a series of memorable events including ice skating, downhill and cross-country skiing, snowshoeing, and snowboarding spread out over three days in February, and made all

the more memorable because for those three days, to put it bluntly, you really freeze your butt off.

Yes, weather-wise, it’s usually an absolutely miserable affair, and I’ve never been good with cold. I remember being younger and standing in my room in the early dawn light, tugging on layer upon layer of long underwear before stuffing myself into a hand-me-down snowsuit that could barely handle the bulk of me. One year, it wasn’t until we were pulling the car up to the ski slopes that I realized—so preoccupied had I been with my under-layers—that I had forgotten my jacket.

For many years, my dad was the director of volunteers for Special Olympics New Jersey, and since Special Olympics is a nonprofit organization that relies largely on volunteers to help run the show, he was a well-known

guy. I, by extension, was the well-known-guy’s daughter, a little kid with brown frizzy curls and an enormous bulky snowsuit. When we arrived, I would mill around the indoor Volunteer check-in table for as long as I could to keep from being sent outside. I’d keep a low-profile, offering to write nametags or hand out lunch tickets until my dad spotted me and suggested I head out (of the warm ski lodge) and off to my post on the frozen hillside.

Now, let me be clear: It had never occurred to me that I could simply ask not to go. Like Jewish summer day camp, with its mandatory swim sessions and sticky kosher ice cream, this was something I didn’t always enjoy, but was something I always just did. Perhaps more accurately, in the case of Special Olympics Winter Games, it was some-

thing that my dad and I just did together.

Since volunteers who couldn't ski were assigned to help out at the cross-country events (no skis required), this was where I was always sent. My assignment was to be the results runner. This meant that I would take the completed time sheets handed to me by Ellen at the finish line and trot them over to Mike in calculations, who would check the times and give the athletes who had competed in each heat an official place. Along my route, I would say hello to Sunny, who shot off the starter gun at the starting line, and to Rick and Nancy, who helped stage the athletes according to their heats, and to various other recognizable faces.

In later years, as I got older, I graduated out of my results running duties and was trusted with a stopwatch. At the finish line, I recorded athletes' times with fellow timers Leo and Kenny and several others who were new from year to year. I enjoyed being a timer because it allowed me to stand and chat

with the other volunteers, but I disliked that it was a significantly colder assignment than when my duties had been more aerobic.

At various times, I'd also been asked



Credit: Special Olympics New Jersey

to help with awards, and a smattering of other tasks that the staff had thought to use me for. The thing about each of these jobs, though, and for that matter, any volunteer job at Special Olympics, at any of these sports

competitions, ever, is that the job you're assigned is only half of the job you're actually expected to do. Special Olympics is, after all, about the athletes, people with varying types and degrees of intellectual disability—sometimes accompanied by physical limitations—who put everything they have into getting themselves down that snowy lane, towards you. The lane may only be 50 meters, but you have no idea how far they may have come, so to speak, just to get to the starting line.

In other words, you're a Special Olympics volunteer, and so you cheer like crazy.

I've come to recognize that the feeling I get when I come to these games with my dad—when I find myself standing on a ski slope with fingers achy from hours in the cold and I'm jumping up and down to keep the blood in my toes but also because I'm cheering a participant onward—this feeling is an experience that's far from standard. ◊

Best Band of the First Decade of the 2000s

BERNIE LANGS

In terms of seeing live music, I've often been at the right place at the right time. When I was in my teens, I was lucky enough to be visiting San Francisco in 1975, procure a ticket, and settle in near the stage at a Rolling Stones concert (in the general seating section). A few years later, jazz saxophone legend Art Pepper made a comeback after years of prison and of fighting addiction, and I saw two of his great shows at the Village Vanguard. While I worked at the New York Philharmonic in the mid-1990s, I witnessed Kurt Masur conduct Beethoven's "Fidelio" and chanced upon the Maestro in an elevator a couple of days later, where we briefly talked about the grand performance. But I don't think there was any luckier musical day in my life than when I was working in London in 1978 and witnessed The Clash playing at a venue called The Music Machine. London was deep in punk and new wave and the place went mad as the band did their magic. For the encore, a couple of The Sex Pistols joined The Clash to bring the whole thing home. Performances of The Clash at The Music Machine can be seen in a film called *Rude Boy*. For all I know, they may have filmed the night I was there (I remember exactly where I stood and there is a pan of the audience that in a millisecond shows a silhouette of a bloke with

bad posture, that may just be yours truly).

From the 1980s to the 1990s, I enjoyed listening to U2 and I liked grunge for a bit, but popular music began to leave me cold in the long run. By 2000, I'd reached the unhappy realization that music was degenerating and that the craft of writing a complex rock or soul song was vanishing. Around 2003 or 2004, I was browsing CDs at a Borders bookstore when I saw one called *Global A Go-Go* by ex-Clash member Joe Strummer and his band, The Mescaleros. I previewed a couple of songs and really liked what I heard. I brought it home, and loved what I heard.

Joe Strummer & The Mescaleros released a total of three CDs and one of those was put out after Mr. Strummer's death from a heart condition in 2002. The second two are the stronger of the releases, *Global A Go-Go* and *Streetcore*. Joe Strummer had been deeply influenced by world music and he'd had an international radio show featuring all genres of music. The music of his last band reflects the joy in coalescing all he'd learned from world beats with original tunes that bounce along either quickly in joyful abandon or to a slow meditative texture. Much of the music shows a great sense of humor with clever plays on words as well as provocative lyr-

ics: "God sure baked a lot of fruitcake baby/ When Adam met the Eden lady," and "There's too many guns in this damn town/The supermarket you gotta duck down/baby flak jackets on the merry-go-round/London is burnin'."

Joe Strummer was always a political artist and after seeing two documentaries focused on him, one can see he was deeply committed to inspiring people to love life as a gift, and to help those oppressed gain the opportunity to enjoy and explore life; while as part of The Clash, he was angry and lamented the future of young men and women with no real chance to reach their potential. With The Mescaleros, he continued to present ideas on the oppressed, and mixed it with beautifully composed songs with great arrangements and with a more optimistic bent. Watching the documentary *Let's Rock Again*, which focuses on his time with The Mescaleros, I was deeply moved by Mr. Strummer's commitment to his fan base, by his deep love of music, and was awed by the great passion that drove his positive attitude towards the time one is given in this world. It's a terrible thing that his time was cut so short, especially as he was peaking with his new band and enjoying a somewhat settled family life. His fresh and startling attitude is sorely missed. ◊

Vox Clamantis in Urbe

“The Rent is too D*** High,” but not for the reasons Jimmy McMillan thinks

JACOB OPPENHEIM

Life in New York City is expensive. While one can get around the high price of food by cooking for oneself, it is practically impossible to get around the ridiculous rents. Many see spiraling property values as a failure of adequate government regulation, when in fact, exactly the opposite is true. The lack of affordable housing at all levels in New York City is due to the excessive intrusions of government into the housing market. Prompted by the noblest of motives, the city has eroded the ability of the private sector to provide reasonably priced housing.

In Manhattan, residential and commercial construction costs approximately \$300 per square foot, a figure that rises to nearly \$400 for more luxurious spaces. Fancy furnishings may be expensive, but they are amortized over the large sizes of more ornate buildings. Residential apartments sell for at least \$900 per square foot on the luxury side, and around \$500 per square foot for working and middle class housing. Even excluding federal subsidies, simple extrapolation shows that even low-income housing is profitable to build. Clearly, the economic incentives are there, yet very little gets built. Why?

The reason is regulation. Zoning laws and historic preservation codes make it extremely difficult to build. When a developer does manage to push a building through the permitting process, it is nearly always for the high end of the market. Lacking the ability to build freely, developers try to maximize the profit they make on the few buildings they can build. The result is little to no incentive to build affordable housing, even for the middle class.

It was not always this way. Until 1916, New York had no zoning laws. In that year, concern over the new Equitable Life building in the Financial District led to the creation of a simple system, dividing the city into residential, commercial, and industrial zones. This new system in no way hampered development, but rather allowed neighborhoods to flourish away from industry. In the 1920s and 30s, New York’s most iconic skyscrapers, the Chrysler and Empire State buildings, were built. In return for increased height, builders had to set back their buildings, leading to the “wedding cake” shape seen throughout midtown and downtown. This form had the beneficial side-effect of promoting “neighborly” skyscrapers—buildings that fit in with those next to them, in spite of their enormous height. At ground level, the base of the Chrysler building is unassuming; it does not tower over the street, and it seems to be an organic part of the Grand Central neighborhood.

In 1961, however, the city adopted a much harsher zoning code that prescribed a multitude of districts. Everything down to the size of signs on apartment buildings became regulated. As Edward Glaeser, the nation’s foremost urban economist, notes in this month’s issue of *The Atlantic*, “Art-supply stores were forbidden in residential districts and some commercial districts. Parking-space requirements also differed by district. In an R5 district, a hospital was required to have one off-street parking spot for every five beds, but in an R6 district, a hospital had to have one space for every eight beds.”

Zoning laws were followed by historic preservation laws in 1965. The majestic marble building that housed Penn Station was destroyed in the early 1960s to make way for the towers of Penn Plaza.

Public uproar led to the creation of a few small historic districts. Since then, these districts have expanded to cover not only beautiful old buildings, but their plainer, occasionally uglier, neighbors as well. Building in such districts is nearly impossible. These laws have kept the historic districts less diverse and far wealthier than the city as a whole.

It would be an understatement to note that these regulations have had deleterious effects on the supply of housing. Glaeser remarks, “In the post-war boom years between 1955 and 1964, Manhattan issued permits for an average of more than 11,000 new housing units each year. Between 1980 and ’99, when the city’s prices were soaring, Manhattan approved an average of 3,100 new units per year. Fewer new homes meant higher prices; between 1970 and 2000, the median price of a Manhattan housing unit increased by 284 percent in constant dollars.”

Increased regulation has also changed the character of the builders and the buildings that are built. In the late nineteenth and early to mid-twentieth centuries, real estate was an investment open to the upper middle class as well as the rich. It was not uncommon for people who had made or inherited a small amount of money to pool investments and build an apartment or a commercial building. The market was full of small-scale developers. Yet, as society has grown even wealthier, real estate has become an unattainable investment. Only the extremely rich can afford to borrow money and wait while the years-long permitting process occurs. Such a market clearly leads to suboptimal outcomes. There is a clear visual manifestation of this—the proliferation of hideous new “trendy” buildings, designed by modish architects. If only a few buildings can be built, their owners want them to stand out. Concerns for architectural homogeneity, neighborliness, aesthetics, and the view from the ground are outweighed by the desire to create something new and innovative that is impossible to ignore. Styles that appeal to the elite and stick out like a sore thumb flourish, as *The New York Times* building demonstrates. In the past, the opposite was the case. With thousands of developers, the issue was not making a statement, but rather building a good and beautiful building that would attract tenants².

The solution to these issues is not more regulation, the burden of which has only increased since the mid-1960s with new environmental and sight line codes. Each new obstacle has been motivated by the best of intentions, but the result has been the inability of the middle class, let alone the working class, to find affordable housing in Manhattan—and by extension, the rest of the city. Restricting the supply of real estate artificially increases prices in an age of high demand. With the city’s economy growing once again, and its cultural luster untarnished, the demand for housing will only increase. It is time our leaders took effective action, cutting the barriers to building, streamlining the permitting process, and freeing the real-estate market from the power of a few extremely wealthy vested interests. ◉

References:

1. Architecture is a matter of taste, but it is impossible to walk around midtown and downtown without noticing how the buildings from before 1960 far outshine those built after.
2. Oh for the days when buildings competed for tenants.



This Month Natural Selections interviews former RU President Paul Nurse
Country of origin: United Kingdom

New York State of Mind

1. How long have you been living in the New York area? Nearly eight years.
2. Where do you live? The President's House (upstairs anyway).
3. Which is your favorite neighborhood? Central Park.
4. What do you think is the most over-rated thing in the city? And underrated? Overrated: Bagels. Underrated: Small leather repair shops.
5. What do you miss most when you are out of town? Boats on the East River.
6. If you could change one thing about NYC, what would that be? Better public transportation and better book shops.

7. Describe a perfect weekend in NYC. Run in Central Park, visit to the AMNH, coffee and kuchen at Café Sabarsky, visit to the Metropolitan Museum of Art, flight in Boeing Stearman Bi-plane, visit to the Morgan Library, visit the Irish Famine Memorial, trip to Pearl Theater, and beer in Belgian B. Café.
8. What is the most memorable experience you have had in NYC? Manhattan Solstice, when the sun sets along the streets.
9. If you could live anywhere else, where would that be? London.
10. Do you think of yourself as a New Yorker? Why? No, I don't speak properly. ◊



PDA News: Winter Months, Party Months

ISABEL KURTH

This year started with lots of socializing! After a long break from any PDA parties, we hosted a winter version of the traditional PDA BBQ this January at the faculty club. Traditionally, the PDA hosts two parties per year, usually one in spring and the other in fall. The goal is to bring everyone—and we do mean everyone—on campus together to chat, eat, drink, and have a great time. Unlike many institutions, Rockefeller does not have institutional retreats, where people get to know one another and can mingle outside the lab. So these are some of the few—and usually very crowded—occasions where one can do so. The last party we hosted was in May 2010, when the jazzy sounds of *Moth to Flame* on the patio of the faculty club accompanied the wine and cheese served inside. So, we were long overdue for a follow-up—and what better time to do so than when the cold makes people avoid traveling long distances to have fun? The faculty club was booked for January 27, 2011, a day that New York will remember as one of the snowiest this winter. That day broke an 86-year-old record for January snowfall. More than 2,000 flights were canceled that day, schools were closed, some subway services were suspended temporarily, and surely a few labs remained partially empty. Regardless, the faculty club filled up at night, along with the smell of Middle Eastern-inspired food and the sounds of

DJ Juan's dance music. Pat, with the help of two additional bartenders, was working hard behind the bar. The winter might have scared away a few people but those that came had a great time. The dance floor started getting more crowded as the night went by and alcohol levels increased. Approximately 200 people, mostly postdocs and students, filled the seats and their stomachs. We are especially proud that the food didn't disappear within thirty minutes as it has in the past. We learned from past events how hungry people usually are when they get out of the labs. And we learned that there are always quite a few people that not only feed themselves for the night but for at least the next two weeks. Overall, the party was a success, and for all of you who didn't come, don't miss the next one—our summer BBQ!

The winter party was followed by Super Bowl Sunday on February 6, 2011, when we usually sponsor drinks and food at the faculty club. Approximately forty postdocs, students, and lots of kids made their way to the faculty club to cheer for one or the other team, or just hang out with old and new friends, drink beers, and eat chicken wings and pizza. In fact, the first round of pizza and wings was devoured within minutes. The second round of pizzas came to the rescue and lasted until just before half-time, but thanks to the open bar, people who were left hungry were still

satisfied. According to Jim Miller, who organized the event, there were some very interesting side bets going on during the game based entirely on whether the jersey number of the player was an even or odd number.

In January 2011, we also invited the PDA members from MSKCC and Cornell over to meet and get to know one another. We realized that despite being very close, there is little interaction among postdocs from the different institutions. The meeting went very well, and everyone agreed that we should join forces when it comes to organizing career development seminars or social events that would allow for the fostering of a collaborative and interactive postdoc community around RU. Our first venture that came from this Tri-I PDA meeting is to expand our monthly PDA seminar series to a Tri-I postdoc seminar series, starting on February 24, 2011. Every last Thursday of the month we will have two speakers present their work in a twenty-five-minute talk. We are happy to have already filled all slots until June 2011. Out of all ten speakers, we will have three postdocs from MSKCC and two from Cornell who will talk about their work. Please contact us if you are interested in presenting your data to your peers. If there is enough interest from speakers, we will extend the seminar series to a bimonthly event next year. ◊

Omega 3s (or Fatty Fish)

AILEEN MARSHALL

Do you remember scenes from *The Little Rascals* where they were forced to ingest a spoonful of cod liver oil? Or perhaps you've heard stories from older family members how they had to undergo the same ritual. As unpleasant as it tasted (I've heard), it seems the old wives really did know what was good for you. In recent years, Omega 3 fatty acids have become popular as an important part of a healthy diet, supposedly inhibiting anything from a heart attack to depression. While there is some scientific evidence for the benefit of this polyunsaturated fat, not all claims are well proven on this point. What are Omega 3 fatty acids? Chemically speaking, it's a long chain polyunsaturated fatty acid that has a carbon double bond at the third bond from the methyl end. These should not be confused with Omega 6 fatty acids, which are chemically similar. However, Omega 6s compete with Omega 3s for utilization in the body, and will reduce the benefit of Omega 3s. Americans tend to consume 14 to 25 times more Omega 6s than Omega 3s.

The three most common dietary types of Omega 3s are α -linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic

acid (DHA). ALA is mostly found in plant sources like flaxseed, walnuts, pecans, hazelnuts, and soybeans. DHA and EPA are mostly found in cold water fatty fish, such as salmon, pollock, halibut, and tuna. The effects of DHA and EPA are more pronounced than those of ALA.

Epidemiologic studies have shown that people who eat fish regularly have a much lower chance of dying from heart disease than those who do not. Several studies have shown DHA to produce a small decrease in blood pressure. The Inuits have a diet high in fatty fish and have high HDLs (the good cholesterol) and low blood triglycerides. People who have had a heart attack were given fish oil supplements, and it was found that they had a greatly reduced rate of death from a heart attack and a lower total mortality rate than those who did not consume the fish oil.

There have been many studies looking at the effects of Omega 3s on transplant rejection, rheumatoid arthritis, asthma, cancers, cystic fibrosis, lupus, psoriasis, diabetes, bipolar disorder, depression, schizophrenia, and dementia. For every one of the studies that have indicated a beneficial effect, there is another study

that did not show any effect. While pregnant women are cautioned against eating too much fish because of the possibility of getting an excess of the toxins that can sometimes build up in fish, fish oil or Omega 3 capsules should not have this risk. There has been some indication that ingestion of Omega 3 fatty acids during pregnancy, specifically DHA, may increase birth weight and gestational length.

High doses of Omega 3s can cause increased bleeding, bruising and an increased risk of hemorrhagic stroke. The American Heart Association (AHA) recommends eating fish twice a week. For those who have coronary heart disease, the AHA recommends one gram of DHA and EPA per day, and two to four grams a day for those with high cholesterol.

Next time you are at your favorite sushi bar, remember you may be doing something good for your heart. ☺

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2. www.mayoclinic.com/health/fish-oil/NS-patient-fishoil/
3. <http://en.wikipedia.org/wiki/omega-3-fatty-acid>

The Story of Insulin

ZEENA NACKERDIEN

The words "pharmaceutical company" and "doing the right thing" don't often belong in the same sentence, if critics are to be believed. Inflammatory rhetoric magnifies the myriad of known examples justifying negative publicity. Therefore, one could perhaps be forgiven for entering the ongoing exhibit at the New-York Historical Society with a measure of skepticism at its latest offering: "Breakthrough—The Dramatic Story of the Discovery of Insulin and the Era of Hope," co-sponsored by the pharmaceutical company, Eli Lilly. The first pleasant surprise comes when the helpful attendant explains that flashing a Metrocard earns one a discounted admission. The second comes while studying the exhibit. For a brief moment one could be transported to an almost-forgotten success story, in which academia and industry collaborated positively towards conquering a hitherto incurable disease, and manufacturing, as well as disseminating, quality-controlled, life-saving medications to sick individuals worldwide.

The narratives, photos, and videos focus mainly on the researchers involved in the prelude to, and actual discovery of, insulin. Diabetes mel-

litus, the latter word derived from the Latin for "honey," had affected sufferers for centuries, as evidenced by historical quotes (Aretaeus, the famed second century physician from Cappadocia who practiced in Greece and Rome, referred to diabetes in terms of "the melting down effect on flesh and limbs") and diagnoses, e.g. descriptions on an Egyptian papyrus of sweet-smelling urine characteristic of the disease. The anatomy and physiology homage to the boomerang-shaped pancreas and histological stains highlighting the islets of Langerhans may only elicit a cursory glance from those already familiar with the subject. For many, it would be the stories of the researchers and their patients that grab attention. Dr. Elliott P. Joslin is acknowledged for making patient involvement and empowerment the key features of diabetes management. One can pause next to a poster of Dr. Frederick Allen, an alumnus of The Rockefeller University known for his difficult personality as much as for his research: his work showed that diets below 1000 calories could lower blood sugar levels. The shoulders of these and other research giants formed the

platforms for the men who would eventually share the Nobel Prize in Medicine in 1923 for the discovery of insulin, Drs. Frederick Banting and John Macleod.

Snapshots from the exhibit discussing this intriguing history are further elaborated upon in an identically named book upon which the exhibit is largely based, written by Thea Cooper and Arthur Ainsberg. The image of Banting that coalesces from this book and other sources is one of a loner, with no sense of purpose when he first enrolled in classes at the University of Toronto. Yet his whose forceful, irascible personality and valor won him the Military Cross during World War I. Contrast Banting's persona with that of Professor John Macleod, a Scottish recruit to the University of Toronto and world authority on carbohydrates and metabolism, and one begins to grasp why there was discord between the two men who would eventually share the Nobel Prize. At the start of his research, Dr. Banting was already aware of the elusive secretions from the pancreas that could normalize blood sugar levels. However, because of degradation caused by digestive en-

zymes, no one in the English-speaking world had been able to isolate this secretion. In 1916, the Romanian scientist Nicolas Paulesco was successful in normalizing the blood sugar levels of dogs by injecting them with an extract called “pancrein,” but this success was not yet widely known. So much of Dr. Banting’s early work was conducted in a vacuum with only his assistant, then medical student Charles Best, serving as an immediate sounding board for his ideas. Endless months of apparently fruitless labor by both of them finally paid off when dog 408, a collie, finally responded positively to injections of pancreatic extract. Buoyed by ensuing successes, Dr. Banting drafted a seminal paper titled “The Beneficial Influences of Certain Pancreatic Extracts on Pancreatic Diabetes,” that would eclipse all prior discoveries in the field and change this research area forever.

Enter Big Pharma in the form of Alec Clowes, the man charged with identifying medical projects with commercial potential for Eli Lilly. Perhaps contrary to the needs of today’s investors, Eli Lilly, the grandson of the company’s founder, is described as a man who thought that the future of the company hinged on patenting fundamentally new ideas, not improvements of old ideas. Basing his thoughts on the successful collaboration between inventors George West-

inghouse and Thomas Edison, he proposed that basic biological research could provide the source of information enabling pharmaceutical companies to develop and patent entirely new proprietary drugs. Risk was not new to the Lillys. Colonel Lilly built the first plant in 1895 to manufacture gelatin capsules, in essence a more palatable delivery mechanism for unpalatable medications.

The transfer of production rights from Toronto to the Lilly plant in Indianapolis was by no means a straightforward exercise. The University of Toronto already had an agreement in place with Connaught Laboratories, and with the help of Dr. James Collip, the biochemist who had purified the extract, insulin production was first undertaken in Canada. It seemed as if every short-term victory was followed by failure, with batches of variable quality insulin being produced, and insulin shortages becoming a huge issue. Diabetes specialists were also faced with the ethical dilemma of whom to treat and whom to turn away. Through a large monetary investment by Lilly and further interactions between the Canadian group and Mr. Clowes, large-scale production of insulin was finally undertaken at the Indianapolis plant. Celebrities often bring more attention to a cause, and this was the case with Elizabeth Hughes, daughter

of the Supreme Court Justice Charles Evans Hughes, who went on to live a full and productive life after receiving insulin.

Fast forward to the present day, and the rising numbers of diabetes sufferers in the developed and developing worlds seem to overshadow the successes from this positive academic-industry collaboration. In 2006, the United Nations passed a resolution declaring diabetes as serious a health threat as infectious diseases such as HIV/AIDS. As if to reinforce that theme, the exhibit concludes with flickering images of children in the developing world walking long distances to a clinic to receive life-saving medications. The International Diabetes Federation’s Life for a Child Program supports the care of 4000 children in 26 countries worldwide; benefits from the sale of the book on the discovery of insulin will also go towards its activities, described here: www.lifeforachild.org. ©

References:

1. Cooper T. and Ainsberg, A.: *Breakthrough: Elizabeth Hughes, the Discovery of Insulin, and the Making of a Medical Miracle* (St. Martin’s Press, New York, 2010).
2. Breakthrough: Elizabeth Hughes, the Discovery of Insulin, and the Making of a Medical Miracle (Ongoing Exhibit at the New-York Historical Society).

Queens Archery Range

SHAUNA O’GARRO

For those of us who never attended day camp, archery is a sport that may have never popped up on our radar. But it’s not too late for anyone who wants to learn to channel his or her inner Legolas (or, in my case, his or her inner Katniss Everdeen—from the wonderful *Hunger Games* trilogy by Suzanne Collins) thanks to the appropriately named Queens Archery Range.

Located on an inconspicuous dead-end street lined with auto mechanics, Queens Archery Range provides a haven for urban archery enthusiasts and newbies alike. There is nothing fancy about the range; the walls are cinderblock and a few tables in the back serve as the waiting area. However, as you enter and see people of all ages and colors lined up trying to hit a bullseye or loitering around the front desk discussing which model is better, you understand that what draws people here is the sense of community, not the decor.

Al and Martha Lizzio, the couple who own and run the place, are welcoming to beginners and enthusiastic about those who want to learn the sport. “Learning the basics is easy,” Al, a competitive archer, told me when I visited for

the first time, “but perfecting it takes a lifetime. Trust me, I’ve been trying for 50 years!”

The beginner lesson is \$18 and covers a free lesson and equipment rental for one hour. The lesson itself is only about ten minutes, so you have the rest of the time to practice your form. You get to choose between a compound bow (my personal favorite, as it requires less upper body strength) and the more traditional long bow. You would think that the most important part of the lesson is learning to aim and shoot, but safety trumps all. The archery range is small, with several people practicing, so you immediately have to learn the proper stance, the correct way to notch your arrow, how to safely hold the bow, when it’s acceptable to shoot, and when you are allowed to go retrieve your arrows from the target.

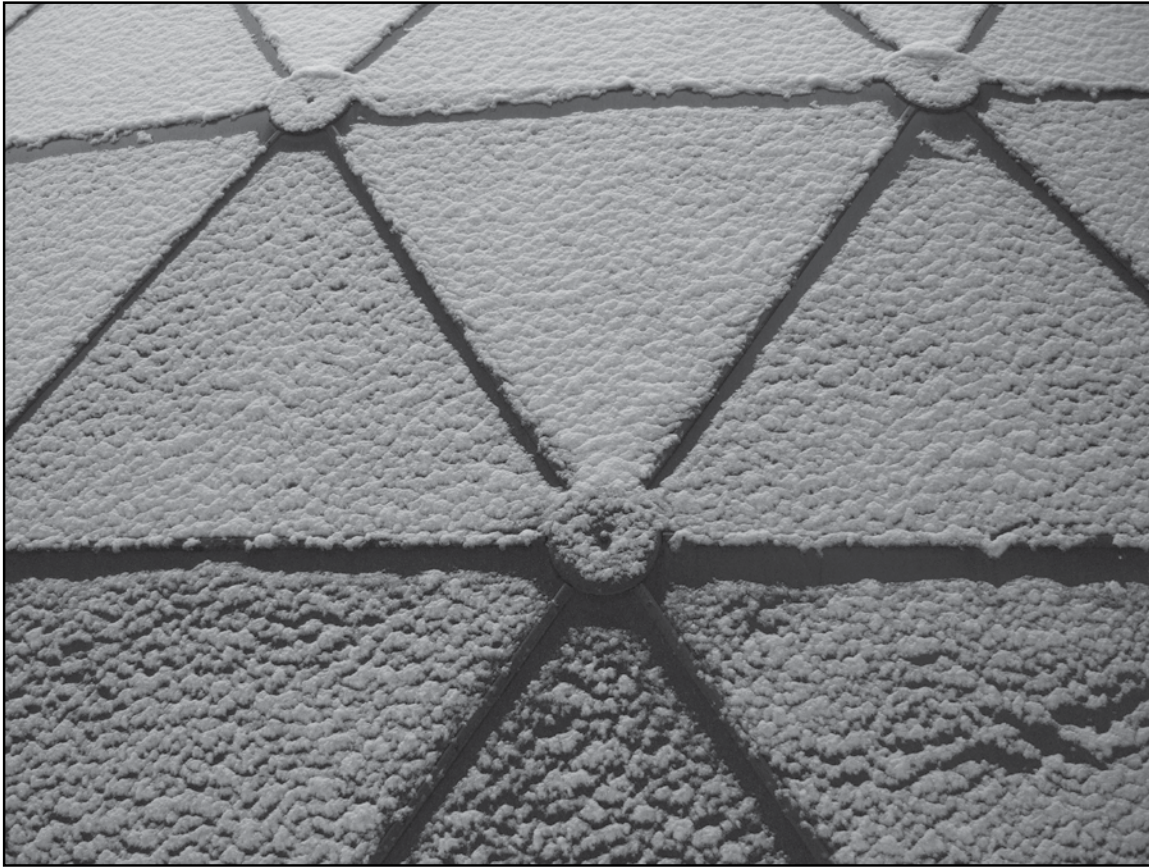
In the December 2009/January 2010 issue of *Natural Selections* (Number 65), I chronicled my first visit to the Westside Pistol and Rifle Range, and my trepidation about shooting a gun. This wasn’t the case at the archery range. I don’t know why—an arrow can be just as deadly as a bullet. But there is something more peaceful about archery. Perhaps it is the quiet of

the range; people talk here and there, but there is no constant crack of gunfire to detract from your focus. There is also something satisfying in slowly taking aim, in feeling your muscles move in sync with the pull of the string before you release the arrow, and in the dull ache in your arms and shoulders after you’re done.

Although the archery range can be a bit of a hike to reach, the reward is definitely worth it. I guarantee that you’ll want to stay for longer than the initial hour lesson. And remember: archery is for everyone. Don’t be intimidated! As I left after a couple hours of practice, the owners received a phone call asking if girls were allowed on the range. “Can you believe that?” Al exclaimed. Apparently this kind of call is not uncommon. Just be sure to choose the right type of bow for your stature, and you will be fine. You may not be the next William Tell, but you’ll be sure to have fun. ©

Queens Archery Range
17020 39th Avenue
Flushing, NY 11358
(718) 461-1756 (call ahead to be sure the range isn’t booked)
www.queensarchery.net/

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