CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (14 September 2016)

Vice President Roy Hammerstedt, taking the place of Jim Serene, who is traveling, opened the meeting at 6 pm with words of welcome. The meeting resumed after dinner at 6:40. Lee Stout reported on the club treasury. Art and Louise Goldschmidt described the IATC convention, which they attended. Louise told us how to set up a new club and how to build up an existing one. A discussion ensued about membership. Art announced that Region 2 will hold a regional meeting on 1 April 2017 in Lancaster and urged members to attend and to present papers. Al Turgeon introduced Dave Lykens, a retired helicopter pilot. Dean Snow introduced Walt Ebaugh and recommended him for membership. He was approved unanimously.

Dean Snow spoke on "Veracity Redeemed: The 1568 Long Walk of David Ingram." Although most of his contemporaries (and later historians) doubted Ingram made this trip, Dean showed that his claims could be true. He did indeed walk from Tampico to New Brunswick in nine months. His presence in those places can be proved, but did he really walk all the way? Nowadays, many people hike the entire Appalachian Trail; others have walked the California trail. A Polish army lieutenant, Slavomir Rawicz, claimed to have walked 4,000 miles from a Soviet camp to India in 1941-42 in eleven months. His claim was false.

David Ingram was a sailor on John Hawkins' third slaving voyage, consisting of seven ships and 408 men. Leaving Plymouth in October 1567, they sailed to West Africa and filled their holds with slaves, then sailed the Middle Passage, and sold slaves on the Spanish Main and the Caribbean islands, though Spanish colonists were forbidden by their king to buy from English slavers. Storms forced the fleet to seek refuge near Vera Cruz, just before a Spanish fleet landed there. In the ensuing battle, most of the English ships were lost, but Hawkins' survived, with 200 men aboard, above capacity. Half had to be left behind. Most were killed by Indians or Spanish colonists, but a few were offered Spanish citizenship. Ingram, however, fled northward, heading for the French colony at what soon would become St Augustine, when Spain captured it. Where did Ingram go from there? Dean showed a map of the North American trails existent in 1568. Later, after epidemics killed many of the European colonists, what had been farmlands in the 16th century became the eastern woodlands in the 17th. Stockades and tightly settled villages were common inland, unlike the coastal plains, where Ingram walked to avoid the hills and their warriors. He averaged nine miles per day, rarely stopping for longer than 3-4 days, reaching Maine by September, then on to New Brunswick. Hawkins received him in London in January 1570. Ingram and his companions (who predeceased him) made later voyages. Humphrey Gilbert hoped to start a coastal colony north of where the Spanish were likely to go and questioned Ingram in 1582, as did the queen's secretary, Sir Francis Walsingham. Their interrogation led to a written report, consisting of 76 answers to unknown questions, some focused on a mythic but oft discussed Norumbega on Maine's Penobscot River. Richard Hakluyt published the answers in his first edition of *The Principall Navigations, Voyages, and Discoveries of the English Nation* in 1589 but in later editions left out Ingram's walk, so he may have doubted his claims. Was Ingram credible? What did he say he saw? How did he find food? Why wasn't he killed by Indians? Are his stories accurate? The Walsingham manuscript's answers to unknown questions are difficult to sort out, but Walsingham did have guidelines of what to look for. Quinn (1967) found some questions on the local inhabitants and conditions. Ingram may have taken tales from other sailors. Often, he erred, mistaking mica for silver; iron pyrite for gold. He described silent barter, practiced by many peoples. Dean showed how seemingly crazy tales can turn out to be plausible. Some wild beasts and birds reported by Ingram really exist, such as the harpy eagle, walruses, and manatees. He saw shamans who resembled the devil. Like de Soto he may have carried bags of pearls, then numerous, to trade for quartz crystals or food. He could also gather food; shellfish, especially mussels, abounded. Richard Hakluyt came to doubt Ingram, as did such later historians as James Williamson (1927), Rayner Unwin, Samuel Eliot Morison (1971), and David Quinn (1979), who dismisses Ingram as illiterate, but good at telling tales. Quinn cautiously allows for "further study by scholars with time on their hands."

Members asked how old was Ingram? Why didn't he sketch the things he saw? Perhaps he couldn't. Why didn't he get strung up by the Indians? Indians did strip him and laughed at his body. Warfare was rare in coastal area. They may have viewed him as someone with goods to trade. Farther north more dangerous conditions prevailed; the English believed tales about cannibals in the interior. Europeans traded heavily there for beaver furs. *Iroquois*

was originally Basque for “killer,” but the coastal Indians posed no danger for Ingram. Illustrations of headless men reminiscent appear in other travel books of that time. People might doubt someone who wasn’t a nobleman. Did Ingram carry wampum made from shells, not pearls? Later on, the Dutch manufactured wampum. What was Ingram’s motive for telling this story? Maybe he was competing with the yarns told by other sailors in the pubs.

The meeting adjourned at 8 pm.

Next talk on 12 October. Bob Hendrickson on “Sexual Assault and Due Process on the College Campus”

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (12 October 2016)

President Jim Serene called the meeting to order at 6:35 pm, introduced himself, and described his travels. Ming Tien introduced his guests: Sarah Schwartz and Lulu Yarber, and Frank Deutsch his wife Mary. Art urged the members to respond promptly to his invitations and noted that the next meeting will be on 9 November. Jim introduced the speaker, Bob Hendrickson, a retired professor of education who also served Penn State in various administrative capacities.

Bob spoke on Sexual Assault and Due Process at Colleges and Universities, starting with some statistics: one woman out of five will be raped in her lifetime; 17 reports of sexual assaults at University Park so far this academic year; 84-98 per-cent of on campus assaults are by perpetrators known to their victims. College student hookups without romantic involvement, most involving alcohol, occur very often. He cited a study of first- and third-year students at a Midwestern university, which found forced sex more common for first year, psychological coercion for third year women, but both involved alcohol. About half engage in binge drinking, often leading to unplanned sex. Student party scene starts on Wednesday or Thursday, occurring as often in apartments as in fraternities. He recalled his role as an assistant dean of students and an RD at UW-Whitewater in the 1960s, when he dealt with race relations issues. A fight broke out after a basketball game between a black and a white fraternity, leading to a revenge raid against the latter. Six black students dismissed, more African Americans poured in from Milwaukee, someone poured gasoline on the floor of Whitewater's oldest building, which burned down. The National Guard was called in. In his residence hall Bob invited students getting low grades, many of them Afro-American, to take a study skills course that he taught. He got to know some of the Black students, who complained of feeling watched whenever they went out. On a warm May night, he got a 1 a.m. phone call from the director of the women's residence hall, complaining that one of her residents had been raped. Both male and female police officers came to her residence hall to interview the man and the woman. They found that the woman had reported having sex with the man to her roommate, who told others that it was a rape. No one was sure if the girl gave consent. The man, an African American, was explicit about what had occurred. They concluded that there was consent.

Title IX (1972) forbids the exclusion on the basis of sex of any person from a program or activity in a university receiving federal aid. It originally was applied just to athletics, having been added without debate to the bill as an amendment. The interpretation of a "program" and its application to the whole institution (or "system" in the UW and PSU cases) is broad. The financial assistance issue comes into play if any student is receiving federal student aid. Another issue is the Family Rights and Privacy Act, requiring that all information about students must be private. The institution and its staff must have student's consent to reveal any information, even a recommendation. Under the 14th Amendment students in public universities are guaranteed a constitutional right to due process, both a property and a liberty interest. Most private institutions have guaranteed student rights in their student handbook's code of conduct because the public expects it. Academic dismissal is different, but due process issues may arise. In any disciplinary process, the accused must get written notice of the charges and grounds for dismissal and must have a hearing, not only with an administrator, the names of witnesses testifying against him/her, and oral or written statements of the facts testified. The accused has the right to defense, to get a statement of the findings, and to appeal the decision. The student may have legal counsel if the university has a lawyer; both may cross examine. The university usually has advice from a lawyer behind the scenes. So far legal counsel has not been always required. The Office of Civil Rights sets detailed guidelines for sexual assault or harassment cases. A university that disregards them can lose its federal financial assistance (e.g. research grants). Most institutions use preponderance of evidence to determine whether a sexual assault has occurred. Perpetrator and victim must have similar and timely access to information, but FRPA rules also come into play. Both the accused and victim have due process rights. Victim must consent to the investigation. If she requests confidentiality, does this harm the perpetrator' legal rights? May the perpetrator cross examine the victim? Often institution assumed perpetrator's guilt, hut the legal system concluded that the sex was consensual. The OCR challenged such decisions. Bob cited two cases: Doe v. Columbia University (2014), or the "Mattress Case" and Marshall v. Indiana University (2016), both exonerating the accused. A lively discussion ensued on how today's students act.

The meeting adjourned at 8:05 pm.

Next meeting will feature Phil Park speaking on “Local Government: Consolidation or Cooperation?

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (9 November 2016)

President Jim Serene called the meeting to order at 6:45 pm. Art announced a meeting of 2nd district Torch Clubs, which will occur in Millersville on Saturday, 1 April 2017, and the next annual IATC meeting in Kalamazoo on 15-18 June, urging members to attend one or both. He also explained the terms under which the Ramada Inn will set up a mini-a bar in our room, provided we buy $250 worth of alcoholic beverages in one evening. Lee reported our Treasury is fine. Phil Park introduced his guest, Tom Berner, a former member who has local government experience. Jim introduced Phil, who has lived here since 1967, earned bachelor's and master's degrees from Penn State, and chaired the Patton Township supervisors and other organizations, speaking on "Local Government: Consolidation or Cooperation?"

Centre Region makes up the bottom quarter of Centre County, comprising part of Benner Township as well as State College Borough, College, Ferguson, Patton, Harris and Halfmoon Townships. A judge named Dillon ruled (1868) that local governments are creatures of the state, organized by the state legislature. Pennsylvania has 67 counties, which are administrative subdivisions, providing justice and welfare service. Pennsylvania's state legislature may not pass laws for specific counties; hence it divides its 67 into classes. Philadelphia is the only first-class county. Second class counties are Allegheny plus Bucks, Delaware, and Montgomery. Centre is a fourth-class county; its recent promotion from fifth class enabled it to hire an additional judge. Our state has 2,561 general purpose units of local government, classified by their population per square mile. 1st Phila, 2nd Pittsburgh & Scranton, and 53 cities of 3rd class. 71 municipalities have "home rule." The state has passed some acts ("uniform legislation") applicable to almost all municipalities, such as a planning code, solid waste management act, sewage facilities act, local tax enabling act (e.g., real estate transfer and, earned income tax), intergovernmental cooperation, creation of authorities (e.g. our water authority and the University Area Joint [Sewer] Authority), and home rule (enacted ca. 1972) that enable a municipality to draft its own charter, as. State College Borough and Ferguson Township have done. Legislation can also empower the municipality to impose certain taxes beyond the usual imposts it has authorized generally. Municipalities plow streets, manage water and sewer, and provide police protection. Phil showed a chart of the municipalities (to be attached). Local assessed value of property in the Borough and townships are taxed separately from the school districts. Municipal units share revenues with school districts. If you divide tax revenues by population-(minus-students) you get per capita costs, which are much higher for State College than the townships.

Cities used to annex portions of townships that wished to obtain their services, but now this is rare. Every township buys its own equipment. Formerly each could have its own transportation committee, but the state ruled that transport had to be under a regional board. Patton and Ferguson have their own police, but State College provides police service by contract to College and Harris Townships. Regional planning is coordinated by the Council of Governments, but several authorities provide water and sewer. COG was set up to plan and coordinate services; now it handles building codes, parks & recreation, and general and emergency planning, but cannot impose taxes. All regional or joint programs must be approved by municipal ordinance. A general forum of COG members meets monthly to discuss their concerns. Fire and rescue were under Alpha Fire Company, which took 1200 service calls in 2015, has 100 active volunteers, and apparatus worth $7 million. No other municipality has this kind of protection, which costs only 11% of the national average. Ferguson Township and State College have their own planners in addition to COG's. Refuse collection outside the Borough had multiple providers until COG chose a single contractor, at a large cost saving to homeowners. Other regional services include parks and recreation and Schlow Library. The Borough and townships have long debated forming a single municipality, which they may do if each has a plebiscite and the voters approve. A single community in everything except our municipal government and its services, we might want to merge as our school districts were consolidated in the 1950s, but even this wasn't easy. Township may have unique conditions that might by harmed by consolidation. A member argued that regional planning isn't cost effective, as each township has peculiarities, inhabitants have local loyalties, and fear control by State College. But is Ferguson Township a coherent city? A lively discussion ensured, in which many members participated.

Jim adjourned meeting at 7:55 p.m.

Our next meeting, on 14 December, will feature Roy Hammerstedt on “Nutroceuticals: Snake Oil of the 21st Century?”

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (14 December 2016)

President Jim Serene called the meeting to order at 6:40 PM. Lee Stout said that the treasury is fine. Art Goldschmidt has put the yearly threefold pamphlets at each table. Gordon DeJong introduced his guest, Ted Alter, former Dean of the Penn State College of Agriculture. Bob Hendrickson introduced Roger Williams, former Executive Director of the Penn State Alumni Association, now completing his biography of Evan Pugh. Jim introduced Ned Balzer, computer programmer at Penn State. Art Goldschmidt, acting for Ed Buss, introduced Ed Klevans, Professor Emeritus of Nuclear Engineering. He also introduced the District II Regional Director, Meredith Rousseau (Lancaster), who spoke about the regional meeting scheduled for Saturday, 1 April 2017, urging our club members to attend. There will be a continental breakfast and lunch, and the whole meeting will take just six hours. Speakers will advise us recruitment, using the new IATC online club management system, and writing for the *Torch* magazine. [I will distribute the brochure advertising the conference].

Jim introduced Roy Hammerstedt, a retired professor of biochemistry who remains professionally active. And he spoke on "Nutraceuticals: Snake Oil for the 21st Century." Sales of these products are rising faster than any other pharmaceuticals, but their effectiveness is questionable. Despite government warnings and some lawsuits, nutraceuticals sell because many buyers believe in them, as described in Maria Konnikova's *The Confidence Game: Why We Fall for It....Every Time*. The public's susceptibility is based in human psychology and the desire for a quick cure to any ailment. One example: belief in the healing power of compressed yeast, popularized by the Fleischmann family, which owned a Cincinnati brewery that produced compressed yeast as well as gin and vodka. It promoted yeast as a good source of vitamins at a time when they were becoming known, but people can meet all their needs from food and excess vitamins get eliminated in urine. Hyping of patent medicines dates back to post Civil War era, when the food supply network expanded, causing the uncontrolled spread of pathogens and the use of harmful chemicals like formaldehyde, notably in Chicago's meat processing industry. A national food safely law was passed, applicable only to interstate commerce, but did impose laws on the importation of meat products. The Pure Food and Drug act (1906) tried to regulate pharmaceuticals in interstate commerce. Some states passed even earlier laws, often setting a model for national legislation, regarding safety standards. Truth in labeling laws: made pharmaceuticals list on their labels any habit-forming or poisonous ingredients and outlawed any claim to contain chemicals that they lacked, e.g., Coca Cola had to eliminate some of its ingredients. The laws required publication of any violations; so fear of shame caused drug makers to obey the law, which has been revised and strengthened over the years.

Penn State Professor William Frear chaired the committee that wrote the Pure Food and Drug Act. However, can the government regulate a product that is neither a food nor a drug, like nutraceuticals? Why do some people fall asleep after a large Thanksgiving dinner? Turkey contains tryptophan, a serotonin that causes sleep, but it must be isolated. Scientists developed a method to mass-produce tryptophan. A 1989 article in the *Wall Street Journal*, estimating its annual sales to exceed $60 million, reported that it can cause illnesses and even death. Public health specialists reported other harmful effects, leading to the Dietary Supplement Health and Education Act (1994). It regulated advertising but did not make manufacturers report their efficacy or risks. For more than 20 years nutraceuticals have been advertised by print and TV. The general population knows little about them; easy ways to cure ED, build muscles, or lose weight attract a credulous public. Manufacturers rely on a well-known physician, like Dr. Mehmet Oz, to promote their products, but he has been refuted by Dr. Pieter Cohen, of the Harvard School of Public Health, who publishes in scholarly and popular magazines. The industry has been suing him, unsuccessfully. Roy, too, has been consulted, but the industry is entrenched, and it may take years to expose their rackets. We need national legislation to protect the public. Can a law be passed regulating how these products are advertised? New York has enacted regulations and if other large states follow suit, this could rein in the nutraceutical industry. Regulations often impede useful developments. They aid lawyers. Human nature says there will always be a willing seller and a willing buyer. But we need rock solid information about nutrition to protect the public.

Questions raised included the possibility of a regulation to "do no harm," the possibility of legislation that could be reworked as our level of knowledge changes, the reality of the "placebo effect," the declining price of GNC stock, the use of multi-vitamins, the beneficial addition of some chemicals to food, truth in advertising

laws, Chinese herbal medicine, alternate medicine, doubts about vaccination of children, extreme specialization (the goal of modern medicine is to ensure that you will die of someone else's specialty), what did compressed yeast taste like and good did it do?

The meeting adjourned at 7:55 p.m. Jim Serene announced Ming Tien's talk, "OMG—GMO" on 11 January 2017.

Respectfully submitted, Art Goldschmidt, secretary

January minutes not available

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (1 February 2017)

President Jim Serene called the meeting to order at 6:45 p.m. Gordon DeJong announced the death of our former club president, Rex Warland. No treasurer's report. Art reminded the members that there will be a meeting of Region 2, to which we are all invited, in Millersville, PA, on Saturday, 1 April, and briefly spoke about a buffet option, which would cost each diner $5 more than what we pay for a fixed meal. Dave Mudgett introduced his wife, Judy. Jim introduced his guest, Lee Grenci, a retired professor of meteorology who served for twenty years on "Weather World." Ed Buss asked members to vote on John Golbeck, who was elected unanimously to membership in the club.

Dave Mudgett, applied mathematician, electrical engineer, musician, and lecturer in the College of Information Sciences and Technology, spoke on "Systems Science—Data and Information; Mathematical Modeling, Causality, and Sense-Making; Prediction, Decision-Making, and Control," or "Adventures in Information Science outside its Natural Habitat." His interest is in applied mathematics, applying feedback-control theory to a model-controlled system. He provided an equation for a controlled system. One simplifies the problem by linearizing and applying transfer analysis. Mathematics provides easily evaluated insight into how a system behaves. Frequency response analysis helps to guide design. He showed a generalized feedback control model as a diagram, a deliberately simplified control model of the system (plant) that one is trying to control. Feedback is needed to stabilize an uncontrolled system, or to remedy poor performance. Control actions can make systems worse. How well does the model predict how people behave? Humans aren't usually in the loop. The natural habitat of Classic System/Control Theory. It may be hard to apply this model to other kinds of control systems. Jay Forrester and Dennis Meadows tried to apply this analysis to large human systems. Although their books are Interesting and accessible, they don't tell how to design something. It is hard to predict the future because so many random variables exist, yet one must make forecasts, e.g. manufacturing or sales. Time series analysis uses past data to predict the future, but projections will always lag behind behavior. stock market projections show us that past isn't prologue. Econometric analysis, an alternative, is an art as well as a science for humans are in the loop. People tend to be conservative, we underestimate how long they take to make decisions, corrective measures change the system's dynamics, causing counterintuitive behavior, overreacting to a problem, and individual and organizational goals diverge.

The Forrester ("Bullwhip") effect states that production exceeds real demand, huge inventories become capital sinks, and may destroy a firm, illustrated by the relationship between sales and inventory in the Norwegian pulp industry, Procter & Gamble's output of Pampers, and his own work experience in the 1970s at Chrysler, with its large inventories. He studied lead time, inventory management, and control mechanisms. The studies took time, as did making reports and persuading anyone to act on his report. Boom times lead to pressure to overproduce, regardless of long-term consequences. The firm was biased against cutting production. Even during the 1978-79 economic slowdown, Chrysler still had to maintain high production. Forrester's *Industrial Dynamics* advised management to cut inventory, but it didn't understand mathematics, and the economists were right. The second oil crisis put Chrysler in dire straits. In the1974 crisis it had cut half its engineering staff and more than half of its production workforce, but lost to its competition, for its Volare, Aspen, and Cordoba models failed, yet it raised production, against economists' advice. They repeated these mistakes in 1979: badly made cars filled their inventory. A $1 billion federal bailout in June 1980 saved Chrysler, but it repeated this mistake in December 2005. This recurs, because managers fear if they cut production they will be fired. Overreaction causes excessive production cuts. Manufacturing firms could solve these problems using systems analysis, making mathematical models to predict behavior, based on the economy's performance. However, human behavior is rarely rational, individuals don't act in the firm's interest, and it is hard to extract useful information and prove causality. "Not everything that can be counted counts, and not everything that counts can be counted" wrote William Bruce Cameron. Mathematics isn't just about numbers, e.g. set theory. In his dissertation Dave tried to use mathematics to apply "fuzzy reasoning/control" or adaptive control theory to these problems. Neural learning systems can aid pattern recognition. Network science is used to predict stock market, based on statistical physics. Dave lost interest in control systems in the 1990s, choosing instead to play music and teach mathematics. Many questions followed.

The meeting was adjourned at 8:05 PM.

Next meeting, on 8 March, has Al Turgeon comparing Scottish and American golf courses.

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (8 March 2017)

President Jim Serene called the meeting to order at 6:40 pm. Art announced that our April talk will be given by Walt Ebaugh and urged that future March meetings be scheduled in a week other than during Penn State's spring break, to which the 15 members present agreed. There was no treasurer's report. Al Turgeon introduced his guest, Lou Persic.

Jim introduced tonight's speaker, Al Turgeon, speaking on a "Comparison of Scottish and American Approaches to Golf Turf Management." Educated at Rutgers and Michigan State, Al taught at Illinois and Texas A & M before coming to Penn State in 1986 as head of the Agronomy Department and Professor of Turfgrass Management. Having visited golf courses in various parts of the world, Al has long noted the contrast between American and European approaches to golf turf management. The origin of golf is claimed by many countries, including the Netherlands, France, and even China, but it most likely began on Scotland's eastern coast between Peterhead and Edinburgh. "The Links" is a strip of land between the beach and inland farms, its soil being fine washed sand 40-70 cm deep, covered in drier, higher areas by fescues and in wetter, lower parts by browntop bentgrass. Unlike US greens, which are mostly flat, Scottish greens are undulating, with the fescue dominating on the drier mounds and bentgrass in the wetter depressions, reflecting their differential environmental adaptation. Scottish links comprise scattered dunes and intervening greenways where sheep graze, "mowing" and "fertilizing" the grass. In depressions at one end of the greenways, runoff water and nutrients promote denser growth, attracting rabbits, which graze more closely forming the green. The rabbits even create the holes. Thus, a golf course is formed with virtually with no human intervention. Links golf, called the "long game," was played by wealthy farmers during winter when there was more time for leisure. Some of the less wealthy townspeople played "town golf", principally in churchyards, a hazard to passers-by. King James II banned it (along with soccer) in 1457 for the games interfered with archery practice. Al also explained the origin of sand traps, which were hollowed out by sheep for protection against wind and blowing rain. Sheep, as well as scythes, served as "mowers" for many centuries, the first mechanical lawnmower was invented in 1830 by Edwin Budding, a textile engineer. The first role of a greenkeeper was to cut a proper hole, using a knife. These holes varied in diameter and depth. A hole-cutter was invented in 1829, setting the standard diameter at 4.25 inches, and the depth at between 4 and 6 inches.

Ole Tom Morris, the greenkeeper at St Andrew's GC, introduced the practice of sand topdressing, to manage thatch and produce a firm but resilient playing surface on the greens. In an attempt to fertilize the grass more uniformly, sheep manure was dried and pulverized, and mixed with sand, for uniform spreading on the greens by shovel. Spreaders were invented later to ensure a more precise application. With heavy golf traffic on the greens, the turf can eventually deteriorate, requiring replacement of the sod. A greenkeeper can lift the turf and apply sod from another site to replace worn sites. So, the first golf courses were natural ecosystems, requiring few cultural inputs. Eastern Scotland has a temperate, oceanic climate, with light rainfall that varies little from month to month and monthly temps ranging from 36˚ in January to 66˚F in July, ideal for sustaining healthy golf turf. Only a few areas of northwestern Europe and the US Pacific coast possess this type of climate; East Europe, Russia, and most of the US Northeast have temperate continental climates. The first US golf course still in existence is in Yonkers, which has a warm temperate continental climate. Climate stresses here exceed those in Scotland, so US golf courses incur more diseases and thus need more maintenance. Walter Travis, a golf journalist, stated in 1901: *"The climate in this country can hardly be said to lend itself to the growth or development of natural greens of the first rank. The extreme heat and cold are not favorable allies."* To combat the problems encountered in golf turf management in the US, requests were made to the US Department of Agriculture for help. Forage agronomists had to consider how to promote healthier verdure (the grass remaining after mowing) not yield in this new approach t grassland research. Dr. Charles Piper, a USDA agrostologist, was asked to address these challenges. He and his associates initiated turf research at Beltsville, and later developed the Arlington Turf Garden in 1920. (The Garden was destroyed in 1941 to provide land for constructing the Pentagon). In Pennsylvania, Mr. Joseph Valentine, superintendent at the Merion Golf and Cricket Club, asked Penn State President Hetzel in 1928 to start a program of turfgrass research and training for golf course managers. Bert Musser, a red clover breeder, created PSU's turfgrass management program from scratch, authored *Turf Management* (1950), and developed Penncross creeping bentgrass for golf courses. European golf course

managers maintain as natural a system as possible, whereas Americans use improved turfgrasses, irrigation, nutrients, improved soil aeration, and pest control. They seek playability even if the grass gets brown in the summer; Americans try to balance golf course playability with appearance. Al showed slides showing a Scottish course that favors tradition and tolerates weeds compared with an American one that is beautiful, straight, and manicured. We also differ in how we make the rules for playing golf. Which way is better? Don't be judgmental. Questions from the floor: how do Scottish golfers perform in international competition; divots; control of weeds, e.g. wild strawberries;, applying fertilizer and controlling its runoff; comparative number of UK and US golf courses; maintenance costs; declining number of players and GC members; golf as a barometer of economic conditions in the US, China, Korea, Australia, and the Gulf States; usage of the Stimpmeter on the US greens in order to create a faster green; effect of our turf management methods on how golf is played; the emergence of skilled Korean golfers, notably women; the effect of high costs on skiing and golf participation; and advantages of reel vs. power lawnmowers.

The meeting adjourned at 7:45 pm. Our next meeting will be on 12 April.

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (12 April 2017)

Jim Serene called the meeting to order at 6:35 pm. and reported his attendance, with Louise and Art Goldschmidt, at the Region II Meeting held in Millersville, PA, on 1 April. Lee Stout said that the treasury is fine. Art announced that the IATC Convention will take place in Kalamazoo, MI, on 18-21 June. He urged someone else to represent our Club there as he and Louise may not be able to attend. Jim and Louise described the regional meeting, IATC's expectations of a healthy club, Steve Toy's advice on writing an article for the *Torch*, such topics as membership recruitment, outside speakers, websites, and the IATC leadership issue. Ed Buss introduced his guest, Jim Rosenberger, statistician, Penn State faculty member, and Borough Councilor. Lee proposed Lou Persic for membership, who was approved unanimously.

Walt Ebaugh gave his paper: "We are not Downstream from Anywhere." When he came as a child to State College, it had 7,000 inhabitants and an equal number of Penn State students. Its population now exceeds 100,000 and at this rate of growth State College could have 1,000,000 in 70 years. Where will we get the water? We are downstream from no river or stream. We used to get surface water from Tussey Gap, in our case Shingletown Gap. As our population redoubled, the Borough Water Authority drilled wells to get more water. Now our supply comes mainly from the aquifer on the valley floor between Tussey and Bald Eagle Ridges. He showed a slide portraying how water cycles between the atmosphere, precipitation, and groundwater; then a map of North America, then focusing in on our local ridges and gaps. Our water equation: precipitation = runoff + evapotransporation + recharge. What enters the aquifer equals what leaves it via seeps and springs along the valleys. He explained how Spring Creek excelled for trout fishing, but we now pump 10 million gallons per day from that aquifer, one tenth of its natural flux. The Spring Creek aquifer land area is 175 sq mi.; he showed its geologic profile of folded rocks. The surface watershed is 143 sq. mi. He showed a topographic map of the water table surface and a model of the water recharge system, a map of its spring locations and of the municipal supply wells and their capacity. Having earned an MS in hydrogeology and built up a consultancy in that field, he enabled the Borough Water Authority to double its capacity. He now serves on our sewer authority. He noted how our water use has caused streams, such as Slab Cabin Run, to dry up. The Spring Creek Aquifer consists of the upper 400 feet of saturated rock. He showed slides of Spring Creek, also of Bellefonte's Big Spring (now covered), and Spring Creek at its confluence with Bald Eagle Creek. The latter's drainage depends on the amount of rainfall. Spring Creek's flow varies little due to its aquifer, and it is a high-quality cold-water fishery. We are using too much of it, decreasing the flow of headwater tributaries and warming the stream at the sewer plant outfall. Our sewage effluent is too warm for fish. By using micro filtration and reverse osmosis, sewage is converted to drinking water quality, and we should aim toward recycling that water. He provided statistics on how pure recycled water is. We now discharge from the sewer plant 5 million gallons per day; 6 million are permitted, but our system has an actual capacity of 9 million. Ways we now use recycled waste water, including washing uniforms and vehicles, making concrete, heating or cooling buildings, and watering fairways. If we use water wisely, we can avert the desiccation of Slab Cabin Run. We are all in one bathtub: The Spring Creek Aquifer.

Discussion: Gary Petersen noted that water use has declined in the last ten years even as population has grown. Walt noted many economies, such as repair of leaking pipes. Are the benefits of water reuse being researched? Penn State's research projects would not be permitted by PaDEP. Lee recalled how water problems were supposed to limit Penn State's growth. We have raised enrollments at the cost of the fish. Could we pump water from Bellefonte's Big Spring? It discharges is 19 million gallons per day. Water saving shower heads and toilets help limit water use, but this decline won't go on forever. Scott Flipse asked if water supply affects the Toll Brothers' development project. Walt said that it is not a problem. Gary argued that the Toll Brothers' plan safeguarding water supply is the best he has ever seen. Too bad, Walt quipped, that the Susquehanna doesn't run through State College! He cited the saying: dilution is the solution to pollution.

The meeting adjourned at 7:51 pm. Our next meeting, on 10 May, will feature Lee Stout: "History of Beaver Stadium and its Predecessors."

Respectfully submitted, Art Goldschmdt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (10 May 2017)

Jim Serene called the meeting to order at 7 pm. Asking for comments on Walt Ebaugh's talk, he asked when Penn State or State College will find that the demand for water exceeds its supply and make a decision. Walt answered that we have three water sources and one sewer system. Representatives met for the first time yesterday. Art was instructed to send out info about the IATC candidate's qualifications and policies. Roy Hammerstedt will preside at the June meeting. Mick McKay has agreed to be our Club's VP next year. Lee introduced his wife Dee, who is a spousal member who hasn't been able to come regularly. Jim reported eight members joined in 2016-2017 and he will photograph them afterwards. Roy notes that our club has acquired two thirds of its present membership since 2010. He wants the officers to examine its bylaws and procedures, hoping to recruit many more members. Other clubs are quite different from ours.

Lee Stout spoke about his and Harry West's new book, *Lair of the Lion: A History of Beaver Stadium.* Harry, an engineer, taught a Gen Ed course on the history of structures. For this course he prepared a slide lecture on the history of Beaver Stadium as one example. Lee and Harry met and agreed to write this book: Harry writing on the site and structure; Lee on the spectators and their experience. Penn State's original Beaver Field was behind where Osmond Lab is now. Gov.'r Beaver got an appropriation for the first grandstand, seating 500. Built in 1893, it had a locker room with showers under the stands. Later, Charles Lowry developed Penn State's first campus plan. Athletics were moved away from the campus center to the northwest periphery. By 1908 the college got an appropriation to grade the ground from Hort Woods to the area of what is now Rec Hall and moved the grandstand there. As Penn State played football against larger colleges, it was gradually enlarged to a capacity of 11K, plus temporary bleachers adding 9K. Wooden grandstands are hard to maintain, so steel replaced wood section by section in 1934-39. President Hetzel's "Grand Experiment" led to 9-10 losing seasons in the 1930s, but the team improved during and after World War II. Penn State went to the Cotton Bowl. Rising demand for seating led to adding a section to each end of the stands, also a north end stand that made it a horseshoe. New Beaver Stadium could expand no farther in its location. President Walker, in his strategic plan, decided to relocate it eastward, starting in 1959. The existing structure could be reshaped for easy transfer, but first they built high stands in their new location, fitting in the stepped steel stands below (seating capacity about 40K). In 1977 the stadium was lifted by jacking the stands section by section and enlarging the south stands (new. capacity 76K), all done after the 1977 season and before 1978 season, adding forty rows of concrete stands to form a bowl.

The next major addition in 1999-2001 enclosed the south end and added two decks, new locker and press rooms, the All Sports Museum, Mt. Nittany Club, and suites for the president, legislators and top visitors. Current capacity is. 106,572. Many books cover games and players, but this one treats the spectators' experience. Management of college athletics from 1890s to the 1920s passed from students to alumni. A student manager had huge responsibilities at first, but a "graduate manager" (an alumnus) took over. The coach's role expanded. Faculty's role was to set eligibility rules, and players were often paid by alumni and abused the system in other ways. The president and trustees provided facility but had little control. As Penn State played against stronger teams, many were reluctant to play in State College; larger stadiums were more lucrative. The earliest fans were students and faculty, later alumni and other fans, coming by trains, then cars. Extracurricular activities were evolving. Newspaper coverage began. The lion mascot, marching band and cheerleaders were added. The concept of what it meant to attend a game changed. In the 1930s Penn State experimented with stopping athletic scholarships, recruiting players, scouting opponents, athletes' dorm and training table. No other college followed its lead. Attendance fell and the season was shortened. Revival after WW II. As fans arrived by car, tailgate picnics began. Students no longer dress up for games, but now are more apt to wear school colors. Games are noisier. ESPN says Penn State provides the greatest experience in college football. Penn State, like many other colleges, need athletics to make themselves known, attract student applications, and make up for parsimonious appropriations. Plans exist to expand the stadium. It would now cost a billion dollars to build a new one. Possible renovations: enclose completely, expand outward, change luxury seats, enlarge concession stands, and improve restrooms. May have to reduce seating capacity to widen aisles. Book copies are available from publisher at discount. Discussion ensued about sneaking into Stadium, restricted access now, were anyone's ashes scattered in the stadium, snow crises, early use of radio communication, uncomfortable seating, and nighttime security.

Meeting adjourned at 8:21 pm.

Next meeting 14 June will feature-Scott Flipse: “High Performance Building.”

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (14 June 2017)

Roy Hammerstedt called the meeting to order at 6:57 and asked the group to give Jim Serene a round of applause for his service as President. There was no secretary's report. Treasurer Lee Stout announced that our treasury has about $2,500, nearly the same as last year. Lee Stout introduced Carl Sillman; Gordon DeJong introduced Caroline; and Scott Flipse introduced guests including Rachel Flipse, Brian Healy, and Louis Glantz. Jim Rosenberger said he will actually join in September. John Golbeck announced that he will be on sabbatical leave. Roy has reviewed at the behest of the Executive Council the recent impact of many new members, and notes that our members want and expect a crisp Torch evening. Therefore, he proposes that we follow these procedural guidelines–that have evolved: Gathering about 5:30 for general talk and mixing; meal from 6 to 7; Club business/announcements conducted in an informal manner just before the speaker starts his talk at 7; speaker finishes about 7:30; which allows up to 30 minutes for discussion. We should aim to adjourn at or before 8 pm. He then introduced Scott Flipse, who spoke on High-Performance Building of houses.

High-performance houses may vary in size or style, but they must be energy efficient, healthful, comfortable, durable, and resilient. Scott has built houses in Williamsport and Punxsutawney, and two in State College, and plans another to start in 2018. They are similar in construction and vary in size, but all "nearly" high performance. Their cost of heating & cooling is $35-45/month. HERS raters, using software called REScheck and on-site testing, will assign a house a HERS rating, a number from 100 to 0. (HERS is Home Energy Rating Services) "0" means the house will produce as much energy, typically with photovoltaics, as it uses over a year. These are "Net-Zero" houses. A house that scores well enough (HERS 50 or less) that it could reach net-0 with added PV is considered to be "Net-Zero-Ready". How a house actually performs in use can be measured in Energy Use Intensity, i.e. BTU/sf-year. An EUI of 15,000 BTU/sf-yr is also considered to be "Net-Zero-Ready." Scott identified six critical elements of design & construction. The "Envelope" is the assembly that encloses the entire house and consists of 1) a thermal barrier (insulation), 2) an air barrier, 3) a water-resistant barrier (WRB), and 4) a system for managing moisture. "Mechanicals" include 5) a heat pump and 6) a controlled ventilation system. Basics of heat and insulation include the Second Law of Thermodynamics (heat flows from warmer to cooler), thermal resistivity (R value), and thermal transmittance (U value). R values are additive; U is 1/R with units of BTU/hr-sf-deg F. A small area with a low R will dramatically reduce overall effectiveness.

The builder should design the whole envelope as a unit, but doors and windows cause heat loss and one should incorporate those that have highest resistivity. Continuous rigid external insulation (CREI) is essential to boost R, eliminate bridging through framing, and prevent condensation. He showed a house profile with continuously insulated walls, roof, and basement floors using extruded polystyrene foam panels. After external insulation and installation of wires and pipes, one adds cavity insulation in the walls. The air barrier too must be continuous. Sheathing panels must be taped at joints, edges, corner, and penetrations. Air barrier prevents the stack effect (air infiltrating at the base and exfiltrating at the apex), thermal bypass, condensation by moisture-laden air flowing through walls, and indoor air quality (IAQ) degradation by air infiltrating through wall cavities, attics, crawl spaces. He explained how the air barrier is tested and reported in air changes per hour (ACH-50). The WRB prevents leaks into the structure and includes a drainage plane or rainscreen. The moisture control strategy includes prevention of leaks and condensation as above and is enhanced by control of indoor humidity levels via ventilation and dehumidification, and by allowing drying to the interior by avoiding a low-perm vapor barrier (no plastic). The key is to build the envelope right. Then a simple heat source within the envelope, a means for heat distribution, and a ventilation system are all that are needed. A heat pump is the best fit for sizing and efficiency. A distributed, balanced, whole-house, heat-recovery ventilation system will provide fresh air, humidity control, and heat distribution. These measures will result in a high-performance house: energy efficient due to conservation and heat pump technology; healthy and comfortable due to controlled humidity, ventilation, even temperatures, good lighting and quiet, solid construction; durable due to moisture-damage prevention, value to owners prompting maintenance, and "reversibility" allowing updates to prevent obsolescence; resilient due to "passive survivability," remaining habitable even with prolonged loss of power. Few houses are built to HP standards due to costs, real and perceived, industry resistance to change, low recognition of value by appraisers, banks, and consumers, and low energy costs. Questions: Cost of HPB? (8-10 % at most) Does the lack of air exchange increase incidence of illness? (yes, hence ventilation) Benefits of geothermal heating? (works well for

higher loads) Is a double studded wall useful? (yes, but more complex than CREI) How big are his studs? (2x6). How can one reduce radon buildup in tightly insulated houses? (air sealing and sub-slab ventilation through roof).

The meeting adjourned at 7:59 pm.

Respectfully submitted, Art Goldschmidt, secretary