CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (10 January 2018)

Roy Hammerstedt called the meeting to order at 6:45 p.m. Treasury is unchanged; secretary announced the next IATC convention, to which we'll probably have a representative. Ed Buss introduced his guest, Bob Butler. Jim Ultman proposed Scott Kretchmar for membership. He was unanimously approved. Roy plans to convene the executive council in the next few months to consider ways to grow the club. He introduced Gordon DeJong, Professor Emeritus of Sociology and Demography, speaking on "The Changing American Family."

The family as an institution is the bedrock of every society, but where is it headed? He will use US social science data to identify the trends. He was once asked to estimate the number of uninsured child-ren in Pennsylvania, when a House member disputed his definition of "family," insisting that it must include both a father and a mother. Is there now a retreat from marriage in the US? The evidence is mixed. About 90% of young people expect to marry, but significant changes are occurring. The trend in the 18-24 age group is to delay marriage, most likely due to inadequate income. Black women are now, compared with 1940, much less apt to marry by age 40-44, due to high rate of black male incarceration, but whites have changed little. Cohabitation is increasingly common for all educational levels. It may precede marriage, especially for women with less than high school education. Cohabitation is replacing marriage as first live-in romantic relationship. The average length of cohabiting relationship is 3 years, shorter than in Scandinavian countries. For college-educated women, it is increasingly common that cohabitation transitions to marriage; not so for less educated groups. Less educated are motivated by economics; educated women want to be sure of compatibility. Is marriage tending to decouple from childbearing? The share of nonmarital births has risen: 5% in 1960, 40% now. But single mothers are constant; the rise is for cohabiting units.

Blacks, especially single mothers, continue to have the highest rate of nonmarital births. Hispanics' children are born increasingly to cohabiting couples. Career and economic security motivate college-educated women. Hispanics especially want to have children, even in a nonmarital relationship. Public policies have lagged behind these trends, favoring children born within marriage. Divorce rate shot up in the 1970s due to no fault divorce laws, but since then has stabilized. It varies among groups. The baby boom cohort has had a rising divorce rate, even now, but fewer young people get married and more live in a cohabiting relationship. Americans, notably seniors, are more tolerant of divorce and cohabitation. College graduates are most apt to stay married. Do kids in two-parent families (married or cohabiting) fare better than those in other situations? About 40% are in complex family patterns, but others are in a complex family relationship for part of their growing years? Obviously, economic resources matter, as does how much time the parents spend with their kids. Less stress on the kids and more love within the family context matter? The Fragile Families Survey has measured these variables. Much higher material resources exist in two-parent families, married or cohabiting. In a broken family, the stepdad's involvement matters. The secular trend is toward women's getting higher education. Birthrate has fallen in almost all ethnic and income groups, making material resources more available per child. Healthcare has improved, due to CHIP and the ACA.

Questions: effects of three generation families, lower black marriage rates, the neighborhood children grow up in, welfare programs, black women wanting children but not marriage, changing cultural pat-terns for which we lack data, low divorce rate among Chinese Americans, do kids fare better in a toxic marriage or if parent's divorce, how the US birthrate stayed at replacement level (at least until recently), changing cultural norms such as rising acceptance of nonmarital relationships, effect of Social Security laws, and how have longer lifespans changed family dynamics. Meeting adjourned at 8.00. 26 attended.

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (14 February 2018)

Roy Hammerstedt called the meeting to order at 6:55 p.m. Marylee Taylor introduced her guest, Emilie Allan, retired sociologist, who is also a singer. Roy noted that Club membership inches up but we need to recruit more. He sought suggestions; got just one from a member so far. Our Bylaws stipulate that the Executive Council names two committees: Program, chaired by the President-elect, which lines up speakers from within the Club, but a precedent exists for inviting outside speakers, and Nominating, chaired by the President. Roy has read our Club's records. Our membership numbers have varied from 55 down to the usual 30. He has made a list of topic titles during the first ten years, many could be done today. For the election of future officers, Roy recommends lightening the Secretary's workload, but the Treasurer job is pretty easy. He introduced Gary Miller, Executive Director Emeritus of Penn State's World Campus, who spoke on "Toward a Learning Society: The University in the Information Age."

What are universities doing with information technology now and what will be the impact in the years to come? Gary focused on three elements: online learning, open access resources, and social media. Penn State's World Campus has been teaching online since 1998, a pioneer among universities in using the internet for undergraduate and graduate education. Distance education is changing how universities relate to students on and off campus, promoting collaboration among institutions, creating academic alliances to improve teaching and learning, and sharing courses in fields like rarely taught languages. Open educational resources, defined as "high quality teaching, learning, and research materials that are free for people everywhere to use and repurpose." reduce duplication of effort and transfer research findings into practice. This sharing is becoming worldwide; in the US it has flourished in community colleges, increased collaboration between K-12 schools and higher education, and fueled curricular innovation. It is lowering costs for students. Micro-degrees, badges, and certificates now supplement university degrees. It has enabled services to collect data on how students learn from online courses. There is now a working group studying the outcomes of these innovative programs. These innovations are beginning to move us toward a K-14 educational environment and may stimulate changes in the undergraduate curriculum. The social media have enabled institutions to create sustained learning communities focused on specific professions and has the potential to promote formal collaboration among educators, school superintendents, librarians, and various industries and specialists. This should lead to high quality, lifelong education, with major consequences for society.

A lively discussion ensured: What role for teacher-scholars? Will traditional education's socialization benefits vanish? Will it stifle or promote teacher-student interactions? How have Penn State alumni reacted to the World Campus? Does online learning enhance faculty and student collegiality? Will online courses lower the cost of a college education? Will it undercut traditional methods because it is more economical? What is the actual market for online education? What is the value of a degree earned mainly by online education? How do the characteristics of faculty who teach online compare with traditional teachers? Can a good teacher teach well anywhere, if s/he is willing to learn new methods? What about the staff's role in support positions? How has distance teaching of archaeology benefited a neighboring institution? What are the rewards and penalties for professors who must produce research if they must also develop online courses? How do freedom of action and access to worldwide students draw people into academic life, as compared with financial incentives for teaching online courses? Can the success of these innovative methods be measured? Are there studies? Can we recall great professors and their impact? Can a teacher who is always available online do as well? Can online teaching, along with hands-on experience, teach how to do a job better than a lecture?

The meeting adjourned at 8 p.m.

The next program on 14 March: Roger Williams speaking on Evan Pugh. Attendance tonight was 17.

Respectfully submitted, Art Goldschmidt, Secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (14 March 2018)

Roy Hammerstedt called the meeting to order at 6:50 p.m. There were no reports from the treasurer or the secretary. Jim Serene introduced his guest, Vince Gatto, Professor of Italian at Penn State, who is not a potential Club member. Roy stated that his recent emails to all members are intended to save time during our meetings. Our bylaws call for a nominating committee; anyone wishing to volunteer to serve on it should contact Roy. Mick will circulate a volunteer sheet during the April meeting to line up speakers for the 2018-2019 program year. Roy has received brochures from the San Antonio Club advertising the IATC meeting in June 2018. He hopes a member will volunteer to attend. He described his research in the Torch Club archives; many talks from the 1950s and 1960s could be given now.

He introduced Roger Williams, who spoke on his newly published book, *Evan Pugh's Penn State: America's Model Agricultural College,* which provides a full biographical treatment of the mid-nineteenth century scientist-president (1828-64) who forged the nation's first successful higher education institution dedicated to scientific agriculture. Pugh's Agricultural College of Pennsylvania, today's Pennsylvania State University, set a high academic standard, graduating an inaugural class of 11 in 1861 with the nation's first Bachelor of Scientific Agriculture degrees. Pugh also worked with colleagues to push for the passage of the Morrill Land-Grant College Act in 1862. He then quickly engineered the acceptance of the act by the Pennsylvania legislature in April 1863 and the designation of the Agricultural College of Pennsylvania as the act's beneficiary. A year later, Pugh was confronted with stiff political opposition in legislation introduced to repeal the state's acceptance and re-apportion the Morrill Act proceeds to additional colleges and other purposes. Pugh's vision for scientific agriculture went well beyond Pennsylvania. He advocated for a large-scale national system, to include additional agricultural colleges modeled on his "great experiment" in Pennsylvania, subordinate agricultural high schools, a federal department of agricultural, agricultural experiment stations, and the collection of statistics on all things agricultural. Seeking to accelerate the development of the agricultural sciences,

Pugh believed that the nation needed a model agricultural college at the apex of this system. To do all of this, Pugh prepared himself as scientist. Raised in a family of Welsh Quaker farmer-blacksmiths in Chester County, Pa., Pugh patched together an education, founded his own academy, and left in 1853 for advanced study in Germany. After studying in Leipzig, he received his Ph.D. in chemistry from Göttingen in 1856. After additional study in Heidelberg and Paris, he moved to the Rothamsted Agricultural Experiment Station in England. There he conducted an elegant experiment that settled an international controversy on how plants assimilate nitrogen – from the soil rather than the atmosphere. His research earned him a Fellowship in the London Chemical Society and laid the foundations of the modern ammonium nitrate fertilizer industry. His long-held goal, however, was "to develop upon the soil of Pennsylvania the best agricultural college in the world for the agriculture student of America." Thus, he returned to Pennsylvania in 1859 and proceeded to do exactly that, his academic standards being European, not American. He was twice offered the post of chief chemist with the new federal Department of Agriculture, but twice turned it down. A visionary with a driving sense of purpose, he developed in the last year of his life an extensive organizational plan for colleges of agriculture and the mechanic arts, published in the appendix, that reveals the thinking of an academic leader ahead of this time. The tragedy for the Agricultural College of Pennsylvania, and for the emerging scientific agriculture movement in America, is that Evan Pugh died in April 1864 at age 36, the victim of the lingering effects of an accident, a crushing workload, and finally, typhoid fever.

A few questions: how did he finance his education in Europe? Did the Legislature view as excessive the amount he requested to build Old Main? What happened to the early graduates? Did the Civil War affect student retention?

Mick McKay to speak 14 April: "Advancing Technology in our Lifetime."

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (11 April 2018)

Roy Hammerstedt called the meeting to order at 6:50 p.m. The 14 March meeting minutes were accepted. Lee Stout reported that the current balance is $2,325; a year ago it was $2736. Major expenditures have been our meals, IATC dues, printing, and supplies. John Golbeck introduced his guest, Bill Arden, who is interested in astronomy and photography. Lee introduced his guest, Harry West, a retired professor of civil engineering and coauthor of the *Lair of the Lion.* Mick McKay introduced his wife, Joyce. Roy asked for a volunteer to attend this year's IATC Convention in San Antonio and for people to serve on a nominating committee to choose next year's president-elect. Our bylaws also call for a program committee to find 2018-2019 speakers before our June meeting. He seeks a secretary-elect, as the present secretary plans to retire. It would help if each speaker prepared a digest of his talk; then the secretary would not have to type notes. The minutes are now posted on our website. Roy wants to appoint John Vincenti as our webmaster because our Bylaws don't mention this office. Eleven other clubs have websites but fail to update them. A website should be accessible to others. Roy has read our records and Bylaws, which should be updated, and compiled a list of members who have served as president.

He introduced Mick McKay, who spoke on Artificial Intelligence: Advancing Technology in our Lifetime. McKay defined Artificial Intelligence as systems that can make certain decisions on their own. He identified the major inventions in the lifetime of each generation, e.g., the Internet for the millennials. The 1950-1980 timeline was the age of plastics, but also the appearance of card punch, mainframe computers focused on complex calculations. Businesses then neglected AI. When a computer program for language translation was tested, "The spirit is willing, but the flesh is weak" came out as "The vodka was good, but the meat was rotten." Moore's law posits that computer power doubles every 18 months. One cellphone today has power equal to the total available to NASA engineers at the time of the moon shot. Personal computers came out in 1980, laptops around 1989. Experiments with the Deep Blue computer showed that it gradually gained power to tie and then defeat a Grand Master. Driverless cars were first tried. We have steadily raised the number of transistors on one chip from 1 in 1956 to 68 billion in 2017, giving computers the ability to make more choices and move into logical reasoning. By 2010 a computer could learn the rules of Jeopardy and defeat a master. Computers now are learning how to win at poker. New applications facilitate military strategy. We now have robots and driverless trucks. Early topics for AI development included natural language, automatic language translation (>39 languages as of five years ago), computer vision (for crime investigation), and searching information via the Internet.

Expert systems are appearing that separate reasoning power from the expert's knowledge database: a machine can interact with its operator, consider how likely the rules may be correct, and even use fuzzy logic. Non-expects can operate them. He described how a driverless car works. It outperforms any driver because it perceives road conditions in all directions all of the time, amassing a better safety record than any human, and will dominate long-haul trucking. Some predict that flying cars will be on the market by 2020-21. AI applications: hearing aids, patient care, surgery, body scans, replacing body parts, and outer space transport. Chinese engineers have taken the lead in security applications: smart glasses can identify suspects in a crowd. US uses robots in industry to replace routine human labor. Steel output has risen 38% while using 42% fewer workers. Robots can only do one task at a time so far, but we soon will create a robot that can act like a human. McKay distinguished between artificial intelligence and machine learning. Data can have millions of dimensions, make complex predictions, spot correlations, note corrections, and recall mistakes to avoid. As data grows as evidence, the probability of a hypothesis can increase. McKay showed an artificial neural network, one that may have many layers, leading to a conclusion. Its chances for accuracy tend toward perfection. A computer never forgets what it has learned. Do computers reduce human interactions and privacy? Machines perform tasks better, faster, and at lower cost, so we rely on them more and more. When will the machine equal and surpass human intelligence? 65% of experts polled predicted 2030-2050; only 2% said it will never happen. China, which aspires to take the lead by 2030, is spending more on AI than the US. He compared North American vs. Asian expansion. Russia lags behind. AI can be both good and bad. Stephen Hawking has warned that humanity can be infinitely helped or conceivably destroyed by computers. They grow in power, while their chips constantly decrease in size and cost and transistors gain greater capabilities.

Questions followed: AI can function within a decided framework, but without one, statistical predictions fail,

and errors become more likely. China's computers work on 5G; ours on 4G. Their system is thousands of times faster. We face dangers as computers exceed our understanding and we fall back on learned helplessness, e.g., driverless cars will weaken people's ability to drive. Humans may get paid a salary for doing nothing. Roy announced next month's program:

The meeting adjourned at 8 p.m. 25 members and 3 guests attended.

Richard Held will speak on the world economy in 2050.

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (9 May 2018)

President Roy Hammerstedt called the meeting to order at 6:58. The secretary and treasurer had no reports. Dick Held introduced his guest, Paul OHern. Lee Stout proposed Harry West, a retired Penn State Professor of Civil Engineering, for membership, which was approved unanimously. The IATC urges our Club to send a delegate to its annual convention in San Antonio; both the Association and the Club offer subsidies for travel costs. Any interested member should inform Roy soon. He and Gary Miller, as the Nominating Committee, proposed the following candidates for 2018-19: President McKay, VP (President-elect) Held; Treasurer Stout; Secretary Goldschmidt (with Hammerstedt volunteering himself as secretary-in-training, as no other member was willing). Roy will serve as secretary in 2019-20 and train a successor for 2020-21. The members unanimously elected these officers. Starting tonight, each speaker will give the secretary a summary of his Torch Talk. Roy then introduced Dick Held, who spoke on "The World Economy in 2050."

Dick based his talk on a projection drafted by the London office of Price Waterhouse Coopers, the world's largest consulting firm. Between 1985 and 2015 the main trends were the rapid economic growth of China and India (spurred by high capital investment), the collapse of the Soviet Union, and the lost decade of Japan's economy from 1991 to 2003, followed by a slow recovery. PWC expects a GDP increase between 2015 and 2050 of the US economy from 18 to 41 trillion dollars, China from $20T to $61T, India from $7T to $42T, and Indonesia from $2 to $12T. The countries having the highest GDP in 2050 will be the US, China, and India, which together will make up 50% of the world's total output, followed by 29 other countries producing 35% of the total. PWC predicts the world economy to double by 2037 and triple by 2050. Asian and African countries, such as Indonesia, will gain, relative to the countries of North America, Europe, and Japan. Seven of the world's fastest growing economies will be in Asia and the other three in Africa. Factors for growth include rising working-age population, education and job training, capital investment, and technological progress. The UN estimates that Africa's population will increase by 50%, Asia and the Americas by 20%, but Europe's population will remain stable. Overall world estimates are from 7.8 billion currently to 9.8 B in 2050 to 11.2 B in 2100. Major factors are women's declining fertility rates and rising life expectancy. Although India's GDP will rise more rapidly, the established countries with slower-growing economies, such as the US and China, will rank higher. The US economy is projected to grow at 2% annually. The PWC report identifies the largest risk factors for the worldwide projection would be declining growth of labor productivity due to aging populations, declining rates of investment, and deceleration in technological progress. If all three of these factors occur, the projected overall growth rate would decrease from 3 to 2.4% annually by 2050. The PWC experts differed as to whether this might happen, but all noted the recent low growth in US productivity (1.8% annually) due to low investment, secondarily to the rising number of retirees on Social Security and/or pensions.

A lively discussion ensued. Questions included effects of climate change, immigration as a factor in US population growth, the unpredictability of national leadership, variable income distribution, countries that formulate plans using these projections, how to compensate for an aging population, whether rising GDP will lead workers to demand higher wages, whether automation will lead to paying some people not to work, as per Mark Zuckerberg's recent proposal, possible differences between free enterprise and managed economies, whether any of us will live to verify or refute these predictions, effects of business cycles, and the probability of countries' economies catching up with China's.

Before closing the meeting, Roy announced Ming Tien's talk, "Drug Addiction: Sociological, Biochemical-Personal Accounts," to be given on 13 June. Mick stated that the Club needs one more member to volunteer to give a paper in 2018-19. Roy pointed out that, if we current members recruit more people to join, we would not have to give papers so often.

The meeting adjourned at 7:55 p.m.

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (13 June 2018)

President Hammerstedt called the meeting to order at 6:50 p.m. Ming Tien introduced his five guests (Steve Beckerman, Don Schule, Michaela Amato, Doug and Marcia Collins).

Roy introduced Ming, a member of his department, who spoke on the biochemical, sociological, and personal aspects of opioid addiction, which is a primary disease of brain reward, motivations, memory, and related circuitry. There are actually many forms of addiction, including various behaviors. Addictive behaviors are detrimental when they interfere with other aspects of one's life. Causes include heredity (drawing on twin studies), ease of access to drugs, personality disorders, and childhood trauma. The pleasure center in the brain, notably the release of dopamine, an important neurotransmitter, leads to reward-driven reinforcement of addiction. Ming described experiments with rats and mice injected with cocaine, heroin, nicotine, or alcohol. Such injections resulted in a greater than 10-fold increase in dopamine in the brain. Dopamine release is associated with the pleasure response. Their euphoric effect reinforces drug use behavior and can overwhelm a good and fruitful life. It is extremely difficult to withdraw from opioids and other drugs. Detox treatment can be medically dangerous, even fatal, to the addict. Ming diagrammed how dopamine release is affected by cocaine, poppy, and synthetic opioids, most notably fentanyl, leading to the death of about 52,000 Americans this year and half a million in the next decade. Opiods can even stop one from breathing. He showed diagrams of how the poppy plant can be processed into heroin and hence Oxycodone and other prescription drugs. Two-thirds of those who have abused these drugs started out with prescription sources. US consumes 99% of world's hydrocodone, 81% of its oxycodone, but as far back as the Civil War we abused morphine.

He showed the correlation over time of opioid prescribing and drug deaths in West Virginia. Four in ten Americans know someone with an opioid addiction. Oxycontin, comparable to heroin and twice as powerful as morphine, was approved in 1995 and is now the world's top-selling painkiller, pushed by pharmaceutical sales representatives. It was hailed as less addictive, but this proved not to be true. A company memo indicated the knowledge of the dangers of addiction, yet the company misled the public into thinking otherwise. Three Purdue Pharma executives were prosecuted and convicted in 2007, yet they continued to market the drug. Purdue can determine which doctors overprescribe the drug and can spot nonmedical users. Two thirds of all opioid addicts started with prescription pills. Fentanyl, 50-100 times more potent than heroin, comes from clandestine labs in China shipped via Mexico. There is no one standard method of rehab treatment. It is estimated that 23 million Americans are addicted to alcohol or drugs. Almost all treatments use the 12-step method, which he described. Families should keep trying to help addicts and not freak out over relapses. His son, a recovering addict, suffered depression in his sophomore year, then studied and worked, but was distressed by deaths of eight addicted friends. His behaviors included stealing, shoplifting, and drug abuse. Since then he has completed an honors degree program in engineering at Penn State. Ming still must take extreme precautions. Treatment after the addict stops using the drug is hard; enabling the loved one is hardest of all. Free will exists, but drugs take control during the addiction period. Behavioral disorders are many times associated with addiction. Our culture assumes that there must be a pill for every problem. We must admit that some pain is good and learn how to cope, but by resorting to pills some people never learn this. Recovery is a lifelong process. There are many support groups for the user and those who love him. The devil is in the details: how can we help the user we love without enabling the user's addiction?

Questions in the ensuing discussion: What was the key factor that accelerated drug addiction in 1980s? Was oxycontin licensed to just one company? Do we have too many rehab centers? Does the government's war on drugs cost more than medical treatment? Does any chemical treatment exist that can cure addiction? Have we neglected research in "soft sciences," such as psychology and sociology, given the shortcomings of relying on "hard sciences?" How did our historic sugar trade compare with current drug trade? How do addicts obtain drugs on the street?

Roy thanked Ming and announced that our next meeting is in September, when Mick McKay will assume the presidency.

The meeting adjourned at 8 p.m. Attendance tonight was 29 persons.

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (12 September 2018)

President Mick McKay called the meeting to order at 6:50 pm. Bob Hendrickson introduced his guests: Dennis Heitzman, retired director of Counseling and Psychological Services at Penn State, and Jeff Leo, who worked for American Financial Services. Bob Igo introduced his guest, Larry Ragan, who worked for Penn State World Campus. Mick called our attention to the Club's promotional brochure prepared by Webmaster John Vincenti and introduced our new officers: Dick Held as Vice President and Roy Hammerstedt, who will share secretarial duties this year with Art Goldschmidt. Mick will resume the practice of calling on a few members to introduce themselves at each meeting. He and his wife returned in retirement to Penn State, where they first met, and enjoy social dancing and attending lectures and sports events. Lee Stout has long been interested in history and genealogy. Mick then introduced Dean Snow, who spoke on "David Ingram's Long Walk."

Dean Snow discussed David Ingram's long walk in 1568. Historians agree that he was marooned on the Gulf Coast of Mexico in October of that year, and that he and two companions, all illiterate sailors, were rescued by a French ship on the coast of Maine or New Brunswick about a year later. Ingram was interrogated by Francis Walsingham, Queen Elizabeth's secretary and spy master, in 1582 and an account of it was soon published. His interviewers, all gentlemen who placed little credence in Ingram's story, which often combined observations of Africa and Central America with those of eastern America. Since then most historians have dismissed Ingram as a compulsive liar. Dean Snow's careful research of evidence in the original documents, compared with other travel accounts from the 16th century, reveal that Ingram could have walked the 3000 miles in the time available, and that his descriptions of things he saw along the way were not fantasies, however greatly they failed to comport with what educated Elizabethan authorities thought they knew about North America.

One of the striking features of Dean's interesting talk was his attempt to account for David Ingram's reference to strange beasts that he had observed with modern photographs of the unusual animals and plants that correspond to what Ingram had described. Clearly, what the "educated Elizabethan authorities" thought they knew did not measure up to what David Ingram and his two companions saw. Historians have often doubted that three men could have safely walked three thousand miles from the Gulf of Mexico to the Maine coast, but Dean Snow showed how their choice of routes and their engagement in itinerant trading to support themselves and avert any hostility from the native Americans. Dean's talk led to some penetrating questions: how did the three men survive unarmed? How did they choose their route north from Tallahassee, avoiding high mountains and swampy coastlands? What did they wear on their feet? What constitutes a trail and what caused the detailed network of trails (which Dean depicted during his lecture) to vanish after the 16th century? What did the three men trade other than shell beads (which served as currency)? How did they escape from dangerous animals? What kind of tobacco did they find and why did smoking become popular? What provided the prodigious amount of daily caloric intake for the three men during their long walk?

The meeting adjourned at 7:55 p.m. Attendance was 24 members and 3 guests.

The next meeting will take place on 10 October, featuring Ed Klevans, speaking on "Electricity in Society."

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (10 October 2018)

President Mick McKay called the meeting to order at 6:50 p.m. Dick Held introduced his guest, Gary San Julian, a wildlife management expect. Mick urged us to take copies of the brochure to promote our club. He invited Gordon DeJong and Jim Serene to talk briefly about their interests. Art announced that the next IATC convention will take place in Durham, NC, on 20-23 June 2019.

Mick introduced Ed Klevans, who spoke on "Electricity and Society." Ed earned his BS in electrical engineering at Penn State, did his graduate work in nuclear engineering at Michigan, and returned to teach NE and to conduct research on controlled fusion. His presentation focused on how we produce electricity and then how it gets from the power plant to people's homes and business firms, the electrical grid. Ed presented critical data related to electricity production such as cost, then transitioned to one of the main causes of climate change. We are transitioning from coal to natural gas, which produces less carbon dioxide (CO2). About 20 percent of our production comes from nuclear energy. Hydroelectric power generation is strong in the Northwest. Wind power is increasing but isn't always dependable and hence must be backed up, most often by fossil fuels. Geothermal power is geographically limited. Ed showed a schematic picture of the electrical power grid: the generating station to transformers to power line to transformers to step down voltage to the consumer. The US electrical grid is the world's largest machine, producing $400 billion worth of electricity annually, and valued at almost a trillion dollars. The US has Eastern, Western, and Texas interconnection systems. Its present grid dates from the 1960s. Regulated monopolies, originating from the 1935 Public Utility Holding Act, provided power at modest cost to consumers and a reasonable and reliable return to investors. The system is now less regulated, due to 1980 and 1992 legislation that made electricity cheaper and facilitated long-distance power transmission, but discouraged modernization. Some power companies sold their plants, making electricity a free market commodity, hence the Enron debacle.

Fluctuating natural gas prices have bankrupted some distributors. Nuclear energy produces electricity 92 percent of the time, followed by geothermal at 76 percent, whereas wind only achieves 37 percent and is backed up by fossil fuels. Nuclear energy wouldn't build up CO2 in the atmosphere. Federal and state subsidies lower the cost of wind power. Hydroelectric power costs little. Nuclear power could compete, but its plants are costly and take 6-7 years to build. Both coal and natural gas add CO2 to the atmosphere. Because Trump's administration and our local congressmen deny their effect on climate, hurricanes are becoming become more destructive. Energy return on investment is high for nuclear, low for solar generated energy, which is costly. Germany has abandoned nuclear power. California pushes wind generation and will be relying on battery backup, which is costly and environmentally unsound. Energy sources must exceed the economic threshold. Trump pushes biomass production, which is not economical for power generation. Wind with a backup can supply electricity but the highest economic return is from coal, gas, wind, and nuclear. Ed ranked CO2 emitters: transportation leads but electricity is a close second. Nuclear energy has no greenhouse gas emissions. What is our limit for warming? Even 2 degrees C is too much. Environmentalists don't promote nuclear energy; almost all grants go to renewable energy. Nuclear has been safer than fossil fuels, except at Chernobyl; Three Mile Island caused no deaths or injuries. Can nuclear fusion generate power? Noting a new MIT project, nuclear fusion will have many advantages if it can be done economically. Nuclear waste disposal problem is political, not technical; only the Scandinavians have succeeded. Ed showed a diagram of how nuclear fusion produces energy. High temperatures needed for ignition and generation. Engineers have reached 40% efficiency in containing the hot ionized gas (plasma). France's fusion plant is being built, costing $20 billion dollars and with many construction delays. It will probably take years to build and maintain electrical generation by nuclear fusion.

Questions: Barriers to building nuclear power plants? Construction of some generation plants halted, due to production costs? Public failure to see economic advantages of nuclear power generation? Why are the Ukrainians building a solar power plant? Could deuterium replace tritium for nuclear fusion? Other countries' future plans to generate power? Will adopting LED lightbulbs for illumination reduce power consumption? West Penn Power (First Energy) dropping power generation? Penn State's Nuclear Engineering program? Why does US import nuclear isotopes entirely from foreign countries? Why promote retail consumption of solar power? How do global warming and population growth increase retail demand for electricity? What is "clean coal?" Can

one reduce coal's CO2 emissions? Why use corn for biomass? Germany's experience with renewable energy will be next May's Torch Paper? Coal power generation as a health hazard?

The meeting adjourned at 8 p.m. Attendance: 23 members and one guest.

Next meeting will be on 14 November.

Respectfully submitted, Art Goldschmidt, secretary

CENTRAL PENNSYLVANIA TORCH CLUB MINUTES (14 November 2018)

Mick McKay called the meeting to order at 6:10 p.m. Secretary and Treasurer gave brief reports. Mick asked the members who had brought guests to introduce them. These included Craig Weidemann, a Penn State vice president; Bob Carline, a retired fisheries manager; Martha Anderson, a dance instructor; Larry Ragan, who in turn introduced his guests, John and Jan Dillon (retired journalism professor and retired director of outreach and analytics, respectively); and Mike Bezilla (author and administrator). Larry Ragan (who formerly worked at the Penn State World Campus) and Mike Bezilla were proposed for membership; both were approved unanimously. Roger also invited everyone to an event at Forefathers Book Shop on Sunday, the 18th, involving himself and two other members. After dinner the meeting resumed at 7:15. Mick passed out a summary of Roy's paper and introduced John Vincenti, who has updated and improved our Club website, which includes an audioform welcome, featuring President Mick, photos of the club officers, our brochure, the application form, and an IATC link, copies of past minutes, and a list of past presidents. Website Checker gives it a 93% rating. It is on Facebook, Google, and Bing. Most visitors to our website are not Club members.

He urges members to write articles for the website, Mick introduced Roy Hammerstedt, who spoke on "Crony Capitalism: Here and There, Now and Then." Roy defined "crony capitalism" as an economy in which businesses thrive not as a result of risk, but rather as a return on money amassed through a nexus between a business class and the political class. His presentation centered on personal experiences of its effects, from his childhood in northern Minnesota to current entrepreneurial activities. He related the early role of Duluth as a port, the region's extraction and shipment of minerals, the effect of building the St. Lawrence Seaway that facilitated exports but led to the rise of competing iron industries when a hundred-day strike in 1959 killed Duluth's ore exporting and steel industry. Instead of iron, Duluth exported its young people, including Roy.

Sugar, a protected US industry for three centuries, is an example of crony capitalism: if you want to make money, choose an addictive product, restrict access, and control prices. Sugar promoted colonialism and slavery. A molasses tax sparked the American revolution. One of our new government's early acts was to enact a sugar import tariff. US-subsidized sugar production and consumption led to other manufacturing such as the mason jar, chocolate candy, vending machines, soda, and such sugar substitutes as saccharin, aspartame, and sucralose. Controversy over sugar's health effects, compared with substitutes, goes back longer than a century, the 1958 Delaney Amendment, later repealed, barred scientific discretion from evaluating the health effects of sugar vs substitutes, and was applied to limiting the sale of the latter. This posed an intellectual crisis for Roy, who had been reared to care about the purity of science. Recent farm bills continue to raise the price of sugar, which is used in many manufactured foods. The average American consumes more than 150 lbs of sugar (which is deleterious to health) per year. This is an example of crony capitalism at its worst.

The Interstate highway system is viewed as the cleanest public works project ever, but it enabled Representative Bud Shuster, working with Tip O'Neill, to build the Bud Shuster Bypass to his adopted hometown of Everett. This continued with the 1991 Highway Bill, worth millions to central PA, leading to I-99, called the Bud Shuster Highway. Investigation of conflicts of interest led Shuster not to run again for office. This, too, illustrates the negative effects of crony capitalism.

Roy described his creation of an animal healthcare enterprise to serve the US dairy industry. It is developing ties with the EU, China, and India. The Corrupt Practices Act (1978) is needed, but it discourages entrepreneurs. Crony capitalism can exploit companies if they aren't careful. A larger question is how government should interact with industry. One answer is to abolish all regulations. But what if they are intended to protect consumers in ways that they cannot protect themselves? Historical examples include the impairment or death of babies caused by Thalidomide, acid rainfall, acid drainage from mines, and fracking. But how much regulation is needed? Furthermore, what if there's a national need that can't be met by private enterprise alone. Would any company build a $1B fighter plane on speculation? Would private enterprise make a new flu vaccine every year without sustaining funds for the necessary research? Roy praised Eisenhower's 1961 warning about the military industrial complex and stated concerns about the future of universities dependent on federal funds.

A limited discussion followed, and the meeting adjourned at 8:10 pm. Attendance: 27 members and 7 guests.

The next program on 12 December will feature Walt Ebaugh, speaking on a timely topic: “We Are Degrading Spring Creek in Taking our Water Supply: What Can We Do?”

Respectfully submitted, Art Goldschmidt, Secretary

December minutes not available.