

Bully for Science! The FASEB Centennial (1912–2012)



William Jennings Bryan on the podium, ca. 1910. Image courtesy U.S. Library of Congress.

I am not yet convinced that man is a lineal descendant of the lower animals...you may trace your ancestry back to the monkey [but] you shall not connect me with your family tree without more evidence than has yet been produced.

William Jennings Bryan, 1913 (1)

He who would fully treat of man must know at least something of biology, of the science that treats of living, breathing things; and especially of that science of evolution which is inseparably connected with the great name of Darwin.

Theodore Roosevelt, 1910 (2)

The perfection of the process of holding a stable state despite extensive shifts of outer circumstances is not a special gift bestowed on the highest organisms but the consequence of a gradual evolution [over] eons of time.

Walter B. Cannon, FASEB founder, 1914 (3)

[Governor Rick Perry] regards evolution as “a theory that’s out there” and one that’s “got some gaps in it”. He added that in the Lone Star State both creationism and evolution are taught to



Theodore Roosevelt receiving honorary J.D. degree at Oxford, June 7, 1910. Cartoon by *Spy*. Image courtesy Art Resource.

students in public schools. He explained, “I figure you’re smart enough to figure out which one is right”.

The Huffington Post, 2011 (4)

BULLY FOR FASEB

FASEB WAS FOUNDED in the course of an “informal dinner and smoker” at the Colonial Hotel in Cleveland, Ohio, on December 31, 1912. Three representatives, each, of The American Physiological Society (APS), the American Society of Biological Chemists (ASBC), and the American Society for Pharmacology and Experimental Therapeutics (ASPET), agreed to form a federation, founded to “ensure rapid and clear communication among scientists.” (5). Its initial charge was to hold a yearly joint meeting, to publish its proceedings “under one cover”, and to share the expenses of publication “pro rata according to the membership of each society” (6). The Society for Experimental Pathology signed on, and by the time of its first annual meeting in

December 1913, FASEB represented four societies with ~450 members (5).

A century later, FASEB represents 24 scientific societies and speaks for 100,000 members worldwide. We manage meetings that pack the largest convention halls in the country and are responsible for a journal that has hosted papers from Algeria to Vanuatu, Antarctica to Uzbekistan. FASEB also plays a major role in the public sphere: our voice is heard in the halls of government and the widest bands of the spectrum. We champion basic research, scientific freedom, and the principle that “Nothing in Biology Makes Sense Except in the Light of Evolution” (7, 8). In Teddy Roosevelt’s phrase, FASEB speaks from the bully pulpit of science in the public interest.

BULLY FOR DARWIN

Teddy Roosevelt—a life-long Republican, Rough Rider, Governor of New York, and our 26th president (1901–1909)—would have been the first to cry “Bully for FASEB” on our anniversary. Savviest of our presidents since Thomas Jefferson in natural science, Roosevelt recalled that as a Harvard undergraduate, “I fully intended to make science my life-work”. But, having little “desire or ability to be a microscopist and section-cutter”, he reserved his enthusiasm for wide-ranging naturalists such as John James Audubon or Spencer Baird (9). Sure enough, after his career took other turns and after he failed to regain the presidency as head of the Republican/Progressive “Bull Moose” Party in 1912, Roosevelt morphed into a very competent naturalist. In the course of expeditions to Africa and South America on behalf of the American Museum of Natural History, he saw natural selection played out in the field. Close observation of wildlife persuaded him that Darwin and Wallace had gotten it right: those spots and stripes on animals in wood and field were sexual “advertisements” for suitable mates (10). Roosevelt found the fossil record undeniable. In a 1919 scholarly article, he asked, “How Old is Man?” and arrived at an estimate—not unreasonable at the time—of somewhere near 500,000 years for humanoids (11).

DARWIN-BASHING

What a difference between Teddy Roosevelt and the fundamentalists of his day—and ours. William Jennings Bryan and his Populist followers led the ranks of Roosevelt’s political opponents in the 1912 election (12). Bryan, who was to become infamous in the 1926 Scopes trial, subscribed to the notion that all living creatures—extinct or not—roamed the earth together, a theory that has set evangelical hearts aflutter for a century. Bryan popularized the “day-age” theory, i.e., that when Genesis tells us that God created humans and all other animals on the sixth “day”, scripture could have meant either six, 24-h days or ages, and therefore, dinosaurs could have cohabited the earth with man (13). Bryan was a fan of the Seventh-day Adventist George McCready Price, who extrapolated his mistrust of Charles Lyell’s geology to include all of 19th century biology:

Darwin [Charles] and Weismann [August] were inevitable in view of the wholly unscientific course on which biology entered under the guidance of Buffon and Cuvier...But they have failed, miserably failed. (14)

William Jennings Bryan also supported the ministry of William Bell Riley, a fellow Democrat/Populist, who warned school boards of an “international Jewish-Bolshevik-Darwinist conspiracy to promote evolution in the classroom” (15). During the Populist build-up to the Scopes trial of 1926 in Dayton, Tenn., Riley anticipated Rick Perry’s attack on evolution today as “a theory that’s out there [with] some gaps in it”. Riley warned against evolution in the classroom:

The first and most important reason for its elimination is in the unquestioned fact that evolution is not a science; it is a hypothesis only, a speculation. (15)

Bryan went on to win the Scopes trial, and the state of Tennessee has remained unsure of Darwinian evolution ever since. In April 2011, the Tennessee House passed a bill that shields teachers from being disciplined if they “discuss alternatives to evolution”—not to speak of the equally dubious theory of global warming (16).

But Darwin-bashing is not limited to the Volunteer State. Rep. Ron Paul (R-TX) is running for the presidential nomination of Teddy Roosevelt’s party under the Bryanesque notion that the Lord “created every one of us and created the universe and the precise time and manner and all...” (17). Former Senator Rick Santorum (R-PA) favors teaching intelligent design, as “evolution has generated much continuing controversy” and “has not been widely accepted” (18). Rep. Michele Bachman (R-MN) knows that “there are hundreds and hundreds of scientists, many of them holding Nobel Prizes, who believe in intelligent design” (4). Well, Teddy Roosevelt was the first American Nobel laureate (Peace Prize, 1906, for negotiating the ending of the Russo-Japanese war), and his answer to the Darwin-bashers of his day was:

Any faith sufficiently robust to stand the strain of admitting that the world is not flat and does not move round the sun need have no apprehensions on the score of evolution. (19)

“Bully for Teddy!” we say, as FASEB waves the banner of evolution from its bully pulpit in Bethesda:

“THERE IS NO SCIENTIFIC ALTERNATIVE TO EVOLUTION” (20).

THE FOUNDING FAMILIES

The founders of FASEB were Darwinists from the get-go. A good number had picked up strands of *Darwinism* during postdoctoral study in Jena, Leipzig, and Berlin; others were colleagues of Thomas Hunt Morgan and the fruit-fly geneticists at Columbia University (21).

One of them, Walter Bradford Cannon, had formulated a theory—“homeostasis”—which historians of science have called “just a notch below evolution through natural selection as one of the most influential integrating concepts in biology” (22). Cannon framed homeostasis in the tradition of Ernst Haeckel’s *Darwinism*, a version in which physiology recapitulates phylogeny:

The evidence that homeostasis as seen in mammals is the



Samuel B. Meltzer (1851–1920), FASEB founder, 1912. Image courtesy National Library of Medicine.



Walter B. Cannon (1871–1945), FASEB founder, 1912. Image courtesy National Library of Medicine.

product of an evolutionary process—that only gradually in the evolution of vertebrates has stability of the fluid matrix of the body been acquired—is interestingly paralleled in the development of the individual. (23)

Here's the roster of the nine conferees who met at that smoker in Cleveland:

Physiologists—Samuel J. Meltzer (The Rockefeller Institute for Medical Research), Frederick Schiller Lee (Columbia University), and Walter B. Cannon (Harvard University).

Biochemists—Graham Lusk (Cornell University), William John Gies (Columbia University), and Harry Gideon Wells (Rush Medical College).

Pharmacologists—John Auer (The Rockefeller Institute for Medical Research) Torald Sollmann (Western Reserve University), and Arthur Solomon Loevenhart (University of Wisconsin) (6).

The group went on to dominate the early days of FASEB, as Meltzer became the Federation's first president, Lusk the second, Sollmann the third, Lee the fifth, and Loevenhart the seventh (24). It was a group of peers—a family, one might say—with common social, intellectual, and experimental interests. Almost all had been caught in the vortex of Samuel Meltzer's organizational maelstrom—the man was a veritable FASEB of his own, and many of the organizations he founded continue to call the tune in American biomedical science. Meltzer became a member of APS at its founding in 1888, elected its president in 1913, and in consequence, president of FASEB. He was the founder and president of what is now the American Society for Clinical Investigation, “the

Young Turks” (1901), and was also founder and first president of New York's Harvey Society (1905–1906). Concurrently, he set up The Society for Experimental Biology and Medicine, a clubby seminar that wags called the “Meltzer *Verein*”, as so many of its members had studied and published in the German language. Naturally, Meltzer was its first president, from 1903 to 1905. He was also one of the founders of ASPET in 1908 (25).

There were other family ties. Early in the 19th century, Americans went to France for training in experimental science, with Lamarck, Cuvier, and Bernard setting the mold. But the Franco-Prussian War of 1870 shifted the center of European science. Harvard's Henry Bowditch, America's first card-carrying physiologist, came to Leipzig in 1871 to study physiology from Karl Ludwig. The German die was cast. Leipzig became a hub of American postdoctoral activity, with Julius Cohnheim, Rudolph Leuckart, and Karl Ludwig playing host to future luminaries of FASEB: Samuel Meltzer, Graham Lusk, John J. Abel, Frederic Schiller Lee, and William Henry Welch (26).

Meltzer had arrived in New York from Berlin in 1884, having trained with Hugo Kronecker, a student of Ludwig's. Walter B. Cannon (APS president, 1914–1916), who was part of the new generation trained entirely in America, confessed that, “I think of myself as being one of Dr. Bowditch's sons, and a grandson of Ludwig” (27).

The year Samuel Meltzer arrived in America, he briefly worked with William Henry Welch at a brand new, well-equipped laboratory, established at University and Bellevue Medical College [*sic*], as the New York University School of Medicine was then called. The Carnegie Laboratory was the

first facility in the United States entirely devoted to research in bacteriology and pathology, and in these lush quarters, Meltzer and Welch came up with a paper on erythrocytes—in German, of course—*Zur Histiophysik der roten Blutkörperchen* (28). Graham Lusk (ASBC president, 1914) was also there; his father was professor of obstetrics at the school and a colleague of Welch's. In 1905, Meltzer attracted a young coworker when he moved to The Rockefeller Institute—John Auer (FASEB executive committee, 1914). Auer married Clara, Meltzer's daughter, herself a Hopkins physician with research interests, and the Meltzer-Auer family published papers together. These ranged from artificial respiration and sympathectomy at The Rockefeller Institute (29, 30) to *Arbacia* oocyte oscillation at the Marine Biological Laboratory (MBL) at Woods Hole (31). Thanks to Walter B. Cannon, physiology flourishes today at the MBL in The Grass Foundation laboratories (32).

The founding families of FASEB were an integral part of the Progressive Era in the United States, an era in which an excess of rampant industrial expansion and greed was curbed by enlightened government action. As FASEB was forming in Cleveland, social progress was also being made in other areas: two seminal years saw the foundation of the modern U.S. Public Health Service (1912); the first state minimum-wage law (Oregon, 1912); the adoption of a graduated, federal income tax (1913); the establishment of the Federal Reserve System (1913); and Jane Addams' appearance at Roosevelt's Republican/Progressive Party convention, waving the banner of Women's suffrage (1912) (33). We honor that era today (34), and we honor our founders, in the words of William Butler Yeats who wrote of his instructors:

*What they undertook to do
They brought to pass;
All things hang like a drop of dew
On a blade of grass.*

FJ

Gerald Weissmann
Editor-in-Chief
doi:10.1096/fj.12-0101ufm

REFERENCES

- Bryan, W. J. (September 7, 1913) The Prince of Peace Lecture, *The New York Times*, New York, NY
- Roosevelt, T. (1913) Biological analogies in history. In: *The Works of Theodore Roosevelt*, vol. 26 (1926), Charles Scribner & Sons, New York, NY, p. 45
- Cannon, W. B. (1932) *The Wisdom of the Body* (1970), W. W. Norton & Co., New York, NY, p. 23
- (August 18, 2011) Rick Perry: Evolution a Theory That's Out There (video), http://www.huffingtonpost.com/2011/08/18/rick-perry-evolution-video_n_930802.html, Accessed November 2011
- Reynolds, O. E. (1987) The origins of *FASEB J.* and its member societies. *Fed. Proc.* **46**, 223–250
- Auer, J. (1913) The American Society for Pharmacology and Experimental Therapeutics. *Science* **37**, 193–195
- FASEB J.* (2011) <http://www.FASEB.org/Who-We-Are/Centennial-Home-Page.aspx>, Accessed November 2011
- Dobzhansky, T. G. (1973) Nothing in biology makes sense except in the light of evolution. *Amer. Biol. Teacher*. **35**, 125–129
- Roosevelt, T. (1913) *The Autobiography of Theodore Roosevelt*, Charles Scribner & Sons, New York, NY, p. 21
- Roosevelt, T. (1911) Concealing coloration in birds and mammals. In: *The Green Roosevelt* (2010), Z. M. Jack, ed., Cambria, Amherst, NY, p. 239
- Roosevelt, T. (1916) How Old is Man? *National Geographic* **29**, 111–129
- Kazin, M. (2006) *A Godly Hero: The Life of William Jennings Bryan*, Alfred A. Knopf, New York, NY
- Larson, E. J. (1977) *Summer for the Gods: The Scopes Trial and America's Continuing Debate over Science and Religion*, Harvard University Press, Cambridge, MA, p. 44
- Price, G. M. (1911) *The Fundamentals of Geology*, Pacific, Mountain View, CA, p. 56
- Riley, W. B. (April–June 1922) *Christian Fundamentals in School and Church 4* (pamphlet), p. 24 inelevel0
- Sher, A. (April 7, 2011) Tennessee House OKs Bill Shielding Teachers Who Doubt Evolution, Global Warming, <http://timesfreepress.com/news/2011/apr/07/tennessee-house-oks-bill-shielding-teachers-who-do/>, Accessed November 2011
- CBS News Tech (April 29, 2011) Ron Paul: I Don't Accept the Theory of Evolution, <http://www.cbsnews.com/stories/2011/08/29/scitech/main20098876.shtml>, Accessed November 2011
- Santorum, R. (June 13, 2001) *Congressional Record: Proceedings of the 107th Congress*
- Roosevelt, T. (1913) History as literature: the search for truth. In: *The Works of Theodore Roosevelt*, vol. 26 (1926), Charles Scribner & Sons, New York, NY, p. 256
- FASEB J.* (2010) Evolution Educations Resources, <http://www.FASEB.org/Policy-and-Government-Affairs/Science-Policy-Issues/Evolution-Education-Resources.aspx>, Accessed November 2011
- Kandel, E. R. (1999) Thomas Hunt Morgan at Columbia University: Genes, Chromosomes, and the Origins of Modern Biology. *Columbia Magazine*, <http://www.columbia.edu/cu/alumni/Magazine/Morgan/morgan.html>, Accessed November 2011
- Wolfe, E. L., Barger, A. C., and Benison, S. (2000) *Walter B. Cannon: Science and Society*, Harvard University Press, Cambridge, MA, p. 165
- Cannon, W. B. (1932) *The Wisdom of the Body*. W. W. Norton & Co., New York, NY, p. 283
- FASEB J.* (2011) Past Presidents of *FASEB J.*, <http://www1.FASEB.org/fasebhistoric/>, Accessed November 2011
- Meltzer, A. (1987) Samuel James Meltzer, M.D. March 22, 1851–November 7, 1920. *Proc. Soc. Exp. Biol. Med.* **184**, 370–374
- Weissmann, G. (2006) Science goes global. *FASEB J.* **20**, 194–196
- Cannon, W. B. (1927) The history of the physiology department of the Harvard Medical School. *Harvard Med. Alumni Bull.* **1**, 12–19
- Welch, W. H., and Meltzer, S. J. (1884) Zur Histiophysik der rotten Blutkörperchen. *Centralbl. f.d. med. Wissensch.* **22**, 721–723
- Meltzer, S. J., and Auer, J. (1909) Continuous respiration without respiratory movements. *J. Exp. Med.* **11**, 622–625
- Meltzer, S. J., and Meltzer, C. (1903) On a difference in the influence upon inflammation between the section of the sympathetic nerve and the removal of the sympathetic ganglion. *J. Med. Res.* **10**, 135–141
- Meltzer, S. J. (1903) On the effects of agitation on *Arbacia* eggs. *Amer. J. Physiol.* **9**, 252–256
- Zottoli, S. J. (2001) The origins of The Grass Foundation. *Biol. Bull.* **201**, 218–226
- Diner, S. J. (1998) *A Very Different Age: Americans in the Progressive Era*, Hill and Wang, New York, NY, p. 18ff
- Yeats, W. B. (1931) Gratitude to the unknown instructors. In: *The Collected Poems of W. B. Yeats* (1994), Wordsworth Editions, Ware, UK, p. 216

The opinions expressed in editorials, essays, letters to the editor, and other articles comprising the Up Front section are those of the authors and do not necessarily reflect the opinions of FASEB or its constituent societies. The FASEB Journal welcomes all points of view and many voices. We look forward to hearing these in the form of op-ed pieces and/or letters from its readers addressed to journals@faseb.org.