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"A Carnival of Destruction": Science, Technology, Literature, & Restraints on War & Weaponry

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About the Author

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Abstract

The period from 1850 to 1914 saw unprecedented scientific and technological advances and unprecedented, multinational conferences attempting to control the use in war of new, and more destructive, technology. Yet World War I made a mockery of the spirit and sometimes the letter of these conferences. As Europeans asked themselves in the wake of the death and destruction wrought by World War I, how could an era of such promise – of such noble, rational declarations of peace, of astounding scientific and technological progress, of glittering international exhibitions – end with a descent into madness? Combining research on pre-World War I arms control, science and technology, science fiction, and ethical movements, I attempt to show how the dissonant character of the era helps to explain the relative failure to control military-technological innovations, and, thus, the failure to prevent the future war prophesied by the new military-science fiction writers.

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On August 12, 1898, Tsar Nicholas II perplexed the powers of Europe with a proposal "[to seek], by means of international discussion, the most effective means of ensuring to all peoples the benefits of a real and lasting peace, and above all of limiting the progressive development of existing armaments."[1] The conference was to be "a happy presage for the century about to open." Thus was born the Hague Peace Conferences of 1899 and 1907. Yet before a third conference could be held, World War I made a mockery of the spirit, and sometimes the letter, of the Hague Conferences. As Europeans asked themselves in the wake of the death and destruction wrought by World War I, how could an era of such promise – of such noble, rational declarations of peace, of astounding scientific and technological progress, of glittering international exhibitions – end with a descent into Hell? Although many historians have addressed this question, an examination of the intersection of technology and the ethics of war and peace can show how the dissonant character of the era helps to explain the relative failure to control military-technological innovations, and, thus, the failure to prevent the future war prophesized by the new military-science fiction writers.

Arms Limitation Treaties before World War I

The first modern agreement to prohibit the use of certain weapons in war was the St. Petersburg Declaration of 1868.[2] Signed by seventeen European nations, the Declaration formally codified the custom of abstaining from weapons that cause unnecessary suffering. The signers of the Declaration claimed to have "fixed the technical limits at which the necessities of war ought to yield to the requirements of humanity."[3] After positing that "the progress of civilization should…alleviate the calamities of war" and that "arms which uselessly aggravate the sufferings of disabled men, or render their death inevitable" exceed the legitimate object of war, the Declaration banned explosive or fulminating bullets under 400 grams. Such bullets explode or fragment on impact, causing horrible and difficult-to-treat wounds. The Russian military had invented such bullets a year earlier but, knowing these bullets would contravene the customary law of war, declined to use them.[4] Not wanting any other country to take advantage of this technology, the Russian government proposed an international ban, the first in a series of international disarmament conferences that the tsarist government would convene.

The most well-known and important attempt at arms limitation was the 1899 Hague Conference on Peace and Disarmament called by Tsar Nicholas II. As in 1868, the initial impetus was to restrict a newly developed

[1] *Instructions to the American Delegates to the Hague Conferences and their Official Reports,* ed. James Brown Scott (Oxford: Oxford UP, 1916): 1-2.

[2] Richard Dean Burns, *The Evolution of Arms Control: from Antiquity to the Nuclear Age* (Santa Barbara: Praeger Security International, 2009): 113.

[3] *Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight*, Saint Petersburg, 29 Nov. 1868, accessed from the Avalon Project, <http://avalon.law.yale.edu>.

[4] Dietrich Schindler and Jiří Toman, *The Laws of Armed Conflicts* (Dordrecht: Martinus Nihjoff, 1988): 102.

weapon Russia did not want used - this time expensive rapid-fire artillery recently acquired by Austria-Hungary and Germany - though a sincere desire to limit the arms race likely mingled with economic interests.[5] The conference included the United States, Brazil, and several Asian countries in addition to European states. However, most delegations were uninterested in arms control, opposing both sweeping restrictions on armaments and narrow prohibitions on new rifles, new explosives, submarines, and other innovations.[6] In the end, only weapons little or never yet used were restricted. The delegations agreed to a five-year ban on "the launching of projectiles and explosives from balloons, or by other new methods of a similar nature."[7] Dum-dum bullets, which are notched, semi-jacketed bullets that flatten on impact, were banned as inhumane, although Britain and the US did not ratify the agreement. Britain claimed it needed dum-dum bullets to stop "fanatical" natives in colonial uprisings and the US would use the same argument in the Philippines.[8] The Hague Conference also prohibited asphyxiating gasses launched by projectile. Again, neither Britain not the US ratified the proposal, with the US arguing poison gas might prove more humane than explosives.[9] The attempts at peaceful settlement of hostilities met with slightly more success, producing most importantly the Permanent Court of Arbitration.

The second Hague Peace Conference was generally a failure. At the prodding of US peace groups and state legislatures, President Theodore Roosevelt called for another international conference on disarmament, which Russia officially convened in 1907.[10] However, at that time Russia was rebuilding its military, devastated by the war with Japan, and was more interested in arbitration than arms limitations. Although the ban on aerial bombing was rescinded, the delegations did agree to one arms limitation measure. After China complained of the number of its ships sunk on collisions with mines from the Russo-Japanese War, the conference forbade naval mines and torpedoes that did not automatically deactivate.[11] WWI precluded a planned third conference.

Change in the 19th Century: New Weapons, New Ideas

The period that saw the first pan-European disarmament conferences also witnessed the greatest military-technological advancements that had yet occurred. Between 1800 and 1914 machine guns replaced muskets, trenches replaced firing lines, and telegraphs replaced

[5] Scott Andrew Keefer, "Building the Palace of Peace: The Hague Conference of 1899 and Arms Control in the Progressive Era," *Journal of the History of International Law* 8.1 (2006): 7-8.
[6] Keefer, 10-2.
[7] Burns, 67; *Hague Declaration [No. IV, 1] to Prohibit for the Term of Five Years the Launching of Projectiles and Explosives from Balloons, and Other Methods of a Similar Nature,* 29 July 1899, accessed from the Avalon Project, <http://avalon.law.yale.edu>.
[8] Burns, 105.
[9] Keefer, 13-4.
[10] Calvin DeArmond Davis, "Theodore Roosevelt and the Pious Fund," *The United States and the Second Hague Peace Conference: American Diplomacy and International Organization 1899-1914* (Durham: Duke UP, 1975): 51-72.
[11] Keefer, 36.

runners.[12] In the first half of the century, most technological improvements were based in craft and driven by trial-and-error, more an influence on than influenced by science. By the second half of the century, however, technology increasingly developed from the practical application of theoretical science. Innovations in steel, explosives, and gun sights came not from tinkering, but from research in metallurgy, chemistry, and optics on an industrial scale.[13] What had been known as the "art of war" became "military science."[14] Realizing that technological and industrial capacity had become the measure of military prowess, governments sought to encourage this capacity through increased military-technical training and incentives for industrial firms that manufactured weapons.[15] Factories and technical colleges were themselves often organized on military models.[16] The continuous management of civilian activities for the benefit of war-making blurred the previously sharp distinction between war and peace and planted the seeds of a military-industrial complex.[17] For writers like the socialist William Morris, the metaphor of the "war-machine" encapsulated this new reality in which warfare and technology marched arm-in-arm, heartlessly and relentlessly.[18] Even ostensibly civilian technologies such as telegraphs and railroads transformed war as surely as did new weaponry, allowing for the coordination of ever-larger armies. The unprecedented pace of technological advancement was one of the two main reasons for the proliferation of treaties on the rules of war from the mid-19th century until World War I.[19] Before the signatures had dried, the new treaties became obsolete.

The other, complementary reason for the rash of ineffective peace conferences was the existence of two opposing movements: the peace movement, along with other internationalists and humanitarians; and a looser group of militarists, nationalists, and imperialists, who clamored for war and aggressive national armament programs.[20] The period from the Franco-Prussian War in 1871 and the Great War in 1914 saw no major conflicts on the European continent; despite or because of this, public and governmental interest in war and peace reached great heights. The core of the peace movement had always been unconventional religious sects such as Quakers, but it received support from diverse groups. It included both free-market capitalists, particularly in Britain, who lauded international commerce as the bulwark of peace for making war too unprofitable, and socialists like Morris, who condemned capitalism for breeding profit-driven wars. The peace movement also

[12] Barton C. Hacker, "Engineering a New Order: Military Institutions, Technical Education, and the Rise of the Industrial State," *Technology and Culture* 34.1 (Jan. 1993): 3.
[13] Maurice Pearton, *The Knowledgeable State: Diplomacy, War and Technology since 1830* (London: Burnett, 1982): 38.
[14] Hacker, 2.
[15] Pearton, 38.
[16] Hacker, 14-17.
[17] Pearton, 12.
[18] Herbert L. Sussman, *Victorians and the Machine: The Literary Response to Technology* (Cambridge: Harvard UP, 1968): 127.
[19] Michael Howard, "*Temperamenta Belli*: Can War Be Controlled?" *Restraints on War,* 9.
[20] Best, "Restraints on War by Land Before 1945," 23.

benefited from an emerging sense of European unity, which fed the international regulation of new technologies like telegraphs, the explosion of international expositions, and scientific and athletic congresses.[21] The movement for war, ubiquitous throughout human history, found new strength in imperialism, nationalism, anarchism, and the "cult" of Napoleon Bonaparte, although even these factors may not seem sufficient to explain the stridency and broad base of the movement.[22] The appearance of a popular press amplified this public debate, but, as one might expect, it leaned toward xenophobia and nationalism and was probably more a force for war than for peace.[23] In fact, newspapers were often outlets for national bloodlust and vindictiveness, eagerly relaying reports on bombardments of enemy civilians sent across the globe by telegraph.[24]

Parallel to the growth of scientific and technical innovations and competing views on peace was the development of another print medium that reflected and influenced the public's ideas about war: military fiction and, in particular, militaristic science fiction. Stories of world destruction wrought by terrible new inventions overlapped with other popular fin-de-siècle genres including conventional invasion, natural disaster, and political terrorism literature.[25] Just as society was torn between peace and war, so too was it torn between belief in a bright future of scientific, material, and moral progress and in a dark future of moral, ecological, and political degradation. It is hard to analyze the effect writers such as H.G. Wells and George Griffith had on the popular attitude toward war and weaponry. On the one hand, their lurid tales of devastating future wars and future weapons gave readers a taste of the horrors that might await humanity if it did not turn from its current path. On the other hand, even those writers who did not explicitly call for war glorified the miraculous technology and perverse grandeur of a future war. At the risk of stepping into the arcane realm of literary criticism, it can be argued that science fiction, like virtually all popular representations of war, did more to stimulate a thirst for blood by portraying war as a vicarious adventure, a "carnival of destruction" in the words of one of Griffith's heroes, than to encourage appeals for peace by warning of war's ever-increasing destructiveness.[26]

Scientific & Technological Dimensions of the Debate Over War

European civilization had long considered peace the natural state of humanity, with war a temporary and regrettable, if inevitable or frequent, deviation. Modern political and military theorists like Carl von Clausewitz may have succeeded in rationalizing war and therefore making it more palatable, but it was not preferable.[27] This underwent a remarkable

[21] Donald Cameron Watt, "Restraints on War in the Air Before 1945," *Restraints on War,* 59.
[22] Geoffrey Best, *Humanity in Warfare* (New York: Columbia UP, 1980): 136.
[23] Best, *Humanity in Warfare,* 138.
[24] Best, "Restraints on War by Land Before 1945," 30.
[25] Laurence Davies, "'The Evils of a Long Peace,'" *Fights of Fancy: Armed Conflict in Science Fiction and Fantasy*, ed. George Slusser and Eric S. Rabkin (Athens, GA: Georgia UP, 1993): 64.
[26] George Griffith, *The Angel of the Revolution: a Tale of the Coming Terror* (London: Tower, 1893).
[27] Best, *Humanity in Warfare,* 129.

change in some quarters during the 19th century with the proliferation of ideologies exalting war over peace.

Advocates for war as the natural and necessary human condition received a huge boost in 1859 with publication of Charles Darwin's *On the Origins of Species*. To the social Darwinists, life was a struggle of each against all and war the most perfect form of natural selection, purging humanity of the unfit. An 1898 journal article provides the sentiment: "civilisation is making it much too easy to live…A wiser humanitarianism would make it easy for the lower quality of life to die…We have let our brutality die too much."[28] Others, Darwin among them, cautioned that war could have the reverse effect of natural selection because the most fit in society, courageous young men, are the most likely to die.[29]

Technology meshed easily into distortions of evolutionary theory, where it became both the cause and the consequence of biological progress. First, commentators across the spectrum had proposed that technology was the driver of human evolution. In the words of the Victorian novelist Samuel Butler, who was himself highly ambivalent about the interplay of evolution and technology, "[machines] are to be regarded as the mode of development by which human organism is most especially advancing, and every fresh invention is to be considered as an additional member of the resources of the human body."[30] Second, technology could be the indicator of human progress. The anthropologist General Augustus Henry Pitt-Rivers, seeking a classification system for his collection of primitive weapons, suggested that tools themselves progress from the simple to the complex, following Herbert Spencer's evolutionary principle. [31] The tools a nation created located it on linear path of development, regardless of that civilization's time or place. Thus, advanced weaponry, scientific and technological achievement, and the resulting success in war, commerce, and colonial acquisitions could all be pointed to as proof of a nation's natural superiority.[32] The states that dominated others were by definition the most fit, making their domination scientifically justified.

Social Darwinism could, on occasion, take more peaceful forms. Pyotr Kropotkin, the Russian evolutionary theorist and anarcho-communist, argued that cooperation, not competition, was the engine of human progress. In *Mutual Aid: A Factor of Evolution*, he wrote, "the animal species, in which individual struggle has been reduced to its narrowest limits, and the practice of mutual aid has attained the greatest development, are invariably the most numerous, the most prosperous, and the most open to further progress...The unsociable species, on the contrary, are doomed to decay."[33] "One single war," he continued, "—we all know—may be productive of more evil, immediate and subsequent, than hundreds of years of the unchecked action of the mutual-aid principle may be productive of good."

Other advocates for war focused on its psychological and social benefits, rather than the biological. It was a common opinion that war

[28] Quoted in Davies, 62.
[29] Pearton, 98.
[30] Quoted in Sussman, 149.
[31] George Basalla, *The Evolution of Technology* (Cambridge: Cambridge UP, 1988): 17-20.
[32] Pearton, 97-8.
[33] Petr Alekseevich Kropotkin, *Mutual Aid: A Factor of Evolution* (New York: McClure, Philips & Co., 1902): 223, 225.

turned boys into men. For example, a columnist in the *Manchester Sunday Chronicle* wrote in 1898, "the risk of war seems to me an excellent stimulant to a nation; it keeps the national fibre well-strung and its men manly…[T]he war risk is a wholesome antidote to the enervating influence of the gold craze, and the art worship."[34] Yet others desired a great war to sweep away a societal disease, be it materialism, capitalism, feminism, or any other "evil." The naturalist British W.H. Hudson, sick of society's "caste feeling" and "detestable partisanship," wrote on the eve of World War I, "still I hope to live on to see the flame of war brighten in this peace-rotten land. It will look very beautiful to many watchers and have a wonderful purifying effect."[35] A longing for war could be found among the left as well as the right.

Like other literary prophets of future catastrophes, science fiction writers made good use of this scenario, devising new weapons that could both destroy and save the world. Regardless of whether H.G. Wells himself wished for war, his stories display a fascination with it and suggest that permanent peace could come only after a great war.[36] Like the era itself, one could be anti-war and pro-war at the same time. For example, in his 1914 novella *The World Set Free*, scientists discover a radioactive element named Carolinum and use it to make atomic bombs (this novella was the first use of the term). After a war with these weapons devastates the belligerents, a council takes permanent control of all the world's Carolinum, and an age of peace and prosperity ensues.[37]

The war-to-end-all-wars plot is even better illustrated by another prolific socialist science fiction writer, the British author and explorer George Griffith. His very popular 1893 story *The Angel of the Revolution: A Tale of the Coming Terror* features impressive descriptions of heavier-than-air "air-ships," as well as perhaps the first air-to-surface missile. It tells the story of a Jewish anarchist named Natas (Satan spelled backward) who invents an air-ship and leads an army of flying rebels against the Tsar and a host of other enemies. After many lavishly described aerial battles in which millions die, the rebels succeed in bringing the world under the benevolent dictatorship of the Anglo-Saxon Federation, which disarms all states, leaving only its fleet of air-ships to prevent any transgressions. Although the angel of the title explicitly refers to the story's heroine, it also renders the story's air-ships and war-balloons avenging angels punishing humanity for its sins. As British and Federation war-balloons decimate the Ottoman troops, the divine power of the weapons is clear. "They had never met enemies like these before, and brave as lions and yet simple as children, they looked upon them as something more than human, and with one accord they flung away their weapons and raised their hands in supplication to the sky." [38] The final sentence of the novel proclaims the ultimate virtue of this "coming terror": "The last battle has been fought and won, and so there is peace on Earth at last!"

[34] Quoted in Davies, 61.
[35] Quoted in Davies, 61-2.
[36] Arthur Campbell Turner, "Armed Conflict in the Science Fiction of H.G. Wells," *Fights of Fancy*, 71.

[37] H.G. Wells, *The World Set Free* (New York: E.P. Dutton, 1914).

[38] Griffith, *The Angel of the Revolution*. In an unpleasant irony, the first targets of aerial bombing were Arab villagers in the Italo-Turkish War.

Great bloodshed, if lamentable, would be necessary to usher in a golden age. Only the weapons of the future, perhaps even of the near future, could clear away the *ancien regime* and enforce the new order.

Restraints on Weaponry

Even those more moderate voices who agreed that war was a unavoidable evil that ought to be mitigated as far as possible, such as most delegates to the Hague Conferences, differed on the means of mitigation, perhaps especially so when it came to banning particular weapons. What criteria should be used? What makes a weapon inhumane? Just as today, the conflicting influences of politics, security, and ever-changing technology made these very difficult questions,. The British scholar of international law in war T. J. Lawrence summarized the traditional approach to evaluating new weapons in a 1910 edition of his *The Principles of International Law*: "sometimes the ground of objection was their newness, sometimes their secrecy, and sometimes the vastness or cruelty of their destructive force. In one age the cross-bow was anathematized, in another the arquebus, in a third the bayonet. There was a long controversy about red-hot shot till the invention of rifled cannon rendered it obsolete."[39] One could add to this Louis XV's desire that the supposedly rediscovered Greek fire remain a secret, despite its potential use in the Seven Year's War, and many other examples.[40] But these were one-off events not representative of an era in which the mutual embrace of science and technology produced new and potentially transformative weapons at an exponential rate.

Thus, to Lawrence, the 1868 St. Petersburg Declaration brought to the debate sorely missing rationality according to which the only criterion for illegality was the creation of unnecessary suffering.

> "The attempts which have been made to forbid the introduction of new inventions into warfare, or prevent the use of instruments that cause destruction on a large scale, are doomed to failure. Man always has improved his weapons, and always will as long as he has need for them at all...Suffering there must be, as long as there is war. But unnecessary suffering ought to be, and can be, abolished."[41]

Perhaps he would not have been so optimistic had he witnessed the deluge of unnecessary suffering that was WWI.

Military officers, who comprised a large portion of the Hague delegations, hated prohibiting entire classes of weapons.[42] While their real motive may have been to keep all means of destruction available for use in warfare, they often defended new weapons by claiming such innovations were more, not less, humane. A common, effective, and universally applicable argument could be called the ethics of technical efficiency: better weapons meant shorter wars. The Commander-in-Chief of the

[39] Thomas Joseph Lawrence, *The Principles of International Law,* (Boston: D.C. Heath & Co., 1910): 543-7.

[40] Burns, 63.
[41] Lawrence, 547.
[42] Burns, 156.

British Army put it thus at the first Hague Conference:

> Restrictions on scientific inventions deprive a nation of the advantages which accrue from its scientific men and from the productive capacity of its manufacturing establishments.
> It can be proved to the hilt that scientific production of engines of destruction had tended
> (a) to make nations hesitate before going to war;
> (b) to produce the percentages of losses in war;
> (c) to shorten the lengths of campaigns, and thus to reduce to a minimum the sufferings endured by the inhabitants.[43]

Others took the officers' argument to its logical conclusion. In a letter to a friend, Alfred Nobel, echoing the science fiction writers, declared, "I wish I could produce a substance or invent a machine of such frightful efficiency for wholesale destruction that wars should thereby become altogether impossible."[44] Perhaps he would have welcomed atomic bombs.

Armament Economics

According to the Polish Jewish banker Ivan Bloch, Nobel's wish had already come true. The railroad financier wrote a monumental, six-volume analysis of a future European war, released in Britain in an abridged version in 1899 under the title *Is War Now Impossible?* Bloch argued that war among the European powers had become obsolete. First, the firepower of new technology would push armies to entrenchment, making decisive victories in battle impossible.[45] Second, states would try to overcome the stalemate by putting millions of men in arms. Third, hostilities would settle into a war of economic attrition, leading to "the bankruptcy of nations and the break-up of the whole social organization." "War has become a tribunal which by the very perfection of its own processes and the costliness of its methods can no longer render a decision of any kind." H.G. Wells seemed to agree. His 1903 story *The Land Ironclads* opens with a war correspondent asking a young lieutenant, "And this is war?" "No," the lieutenant replies, "it's Bloch."[46] It may have been Bloch's work that inspired Nicholas II to convene the first Hague Conference.[47] The 1898 Russian circular was quite explicit on the economic value of disarmament, stating, "hundreds of millions are spent in acquiring terrible engines of destruction, which though today regarded as the last word of science are destined tomorrow to lose all value in consequence of some fresh discovery in the same field. National culture, economic progress, and the production of wealth are either paralyzed or perverted in their development."[48]

Peace activists and social reformers embraced the argument that even in peacetime armaments are an unbearable burden on society, robbing the nation of money for the public

[43] Watt, 60-1.
[44] Quoted in Burns, 203.
[45] Niall Ferguson, *The Pity of War* (New York, NY: Basic, 1999): 10.
[46] H.G. Wells, "The Land Ironclads," *Strand Magazine* v. 26 (Jul.-Dec. 1903): 751.
[47] Ferguson, 9-10.
[48] Scott, 2.

good.[49] Furthermore, the rate of expenditures was certain to accelerate continuously. A 1905 publication by the Cobden Club, a group named in honor of peace activist, free-trade supporter, and Parliament member Richard Cobden, describes the vicious circle of military expenditures. "The greater the aggregate force of men or ships, the more numerous are the intellects directed to the use and manufacture of such articles, and the more certain it is that inventions will multiply, and the shorter become the intervals at which changes become necessary."[50] Of course, this claim, too, had a pro-war counterpoint, which argued that arms manufacturing could offset cyclical recessions and that military training instilled discipline that benefitted society and employers.[51]

In 1905 views such as the Cobden Club's were strong enough to elect the Liberal Party to office on a platform of reducing spending on armaments. The party tried to put arms limitation in which Russia had little interest this time around on the agenda of the second Hague Conference, and offered to reduce the construction of British warships.[52] However, Germany, Britain's main rival at sea, refused to negotiate any limitations meant to give Britain permanent naval superiority. Absent an agreement with Germany, domestic politics made it impossible to reduce the number of warships planned, if it ever had been politically feasible.[53]

Of course, herein lies the trouble with arms control. Even when an arms issue remains outside politics, narrow defense interests derail negotiations. For every state that might better its position through arms limitations, another state would suffer a strategic disadvantage.[54] To Baroness Bertha von Suttner, a well-known peace activist who attended the first Hague Conference, having military men negotiate disarmament was like asking cobblers to "deliberate on how men could give up wearing footgear."[55] We have been struggling with the same problem ever since.

Conclusion

The 19th century witnessed unprecedented technological progress, the enduring linkage of science and technology, the birth of science fiction, and the seeds of a military-industrial complex. These advances paralleled and influenced changes in public opinion on war, which manifested itself in two groups, a movement for war and a movement for peace. These were not distinct groups. They both drew on theories of evolution, technological progress, economics, and ethics. They even merged in those authors and authorities who desired war as a means to permanent peace or moral cleansing. Viewed in this context, the proliferation of high-minded disarmament treaties and their failure to prevent the atrocities of WWI may be a little more intelligible.

[49] Andre T. Sidorowicz, "The British Government, the Hague Peace Conference of 1907, and the Armaments Question, *Arms Limitation and Disarmament: Restraints on War, 1899-1939*, ed. B. J. C. McKercher (Westport: Praeger, 1992): 2.
[50] George J. Shaw-Lefevre et al., *The Burden of Armaments: a Plea for Retrenchment* (London: 1905):163-4.
[51] Pearton, 110-1.
[52] Sidorowitz, 2-7.
[53] Sidorowitz, 13.
[54] Keefer, 12.
[55] Keefer, 15.

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