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Men of Science: The British Association, Masculinity and the First World War

On the eve of the First World War, the British Association for the Advancement of Science (BAAS) was facing something of an identity crisis. From its origins back in the early 1830s, it had worked hard to raise the public profile of the scientist, challenging long-standing assumptions about the reclusive, unmanly work undertaken by scientists in cloistered universities or isolated private houses.[1] Over several decades, its members had cultivated a particular brand of masculinity based on a notion of scientific independence and freedom from state interference, embodied, above all, in an ideal of scientific internationalism.[2] In practical terms, this meant a sustained attitude of institutional openness to collaborating with and supporting the research of colleagues from other countries. From its first meeting in 1831, the BAAS committed itself explicitly to promoting, not simply the "intercourse of those who cultivate Science in different parts of the British Empire" and "with one another", but also with "foreign philosophers."[3] Foreign or corresponding members formed a vital part of the British Association's institutional life well into the late nineteenth century, providing not only regular updates on scientific progress in their respective countries but functioning as key research partners for British scientists in the BAAS.

From the early 1880s, however, this internationalist stance had been challenged, through an increasing tendency to identify the interests of the BAAS, not so much directly with those of the state, as with those of the British Empire.[4] From 1884, following a particularly difficult few years of public criticism, centred on the purpose of the BAAS, the Association held the first of several "overseas" meetings which were, in reality, all held in the British dominions – in Canada in 1884 and 1897, South Africa in 1905, and Australia in 1914. The activities of the BAAS in an age of popular imperialism began to assume a distinctly imperialist tone. When the First World War broke out, therefore, members of the Association found their

loyalties split, between the old, internationalist ethos, and the more recent focus on imperial unity, which sat rather awkwardly alongside the existing emphasis on science as an international brotherhood.

The circumstances in which many BAAS members learned of the outbreak of war captures this paradox quite nicely. Dozens of them were travelling to Australia by sea where the annual meeting for 1914 was to be held. A key aim of the gathering was certainly to foster imperial unity. It had been the brain child of Sir Charles Lucas, a former Under-Secretary for the Colonies, who hoped to replicate in Australia the success of a previous 'imperial' meeting held in South Africa in 1905 which, it was widely thought, had been deliberately organised to help improve relations in the wake of the Boer War. The Victoria Branch of the Imperial Federation League acted as co-sponsor for the 1914 meeting and the Australian Prime Minister proclaimed "the importance of the event" not simply "for the causes of science, and education", but also for "imperial unity."[5] However, against this needs to be set the fact that among the BAAS members en route to Australia were a large number of German delegates. Germans had been one of the most important groups of "foreign members" since the foundation of the BAAS in 1831.[6] Indeed, German members like the desert geologist, Johannes Walther and the geographer, Albrecht Penck,[7] were among those officially invited by the meeting's Australian sponsors in the hope that they would grace the event with the necessary "éclat".[8]

In the immediate aftermath of the declaration of war, notwithstanding the decision to start a so-called "Patriotic Fund"[9] to raise money for the war, the British Association members in Australia retained their traditional attitude of scientific internationalism. This is shown, for example, in their collective willingness to assist their German colleagues when they found it impossible to retrieve funds from their bank accounts. For example, on 24 August 1914, the BAAS Treasurer, John Perry, tried to convince the Commonwealth Bank of Australia to "negotiate for Herr Professor Dr. E. Goldstein of Berlin his draft on the Dresdner Bank, London, for One hundred and seventy pounds."[10] Eventually, Perry had to have recourse to his

own money to assist Professor Goldstein. He had promised to compensate the Commonwealth Bank of Australia if the Dresdner Bank refused to release funds, which is what happened. We learn something of the sense of loyalty which Perry and the British Association, more widely, felt towards its German members from Perry's correspondence with the British Treasury asking to be compensated for his loss:

> Great difficulty was experienced by some of the Foreign Members on their arrival in Australia in view of the stoppage of funds…I have been compelled to pay under the guarantee I so gave …I venture to suggest that the transaction is hardly one that was intended to be vetoed under the 'Trading with the Enemy' Act and that it should be recognised that the Ass.[Association] was almost in honour bound to do their best to see that their Foreign Members were not left helpless in an English Colony to which they had proceeded at the invitation of the Association.[11]

In the case of Albrecht Penck, the support offered was of greater significance. While he managed to get back to Britain, he was unable to travel back to Berlin for a number of weeks. The Council of the London Geological Society "invited him to enjoy at Burlington House [the office not simply of the Geological Society but also of the British Association] all those privileges to which he was entitled for just as long as it might take to resolve his predicament."[12]

Yet the greatest indication of a continued commitment to Anglo-German friendship was the election of the German-born physicist, Arthur Schuster as the BAAS's next president and this was after war had been declared. It is difficult to gauge popular reaction in Britain to this choice. However, some of the articles covering the event give an insight into the critical attitude which developed in parts of the British press when the announcement was made. An article from the English Review, published in October 1914, accused the BAAS openly of disloyalty and even treason. "Hitherto", it declared, "the British Association has been a British institution in constitution and conduct. It is strange that it should cease to be so and fall under alien control in this year of all years, the 85th of its existence, when we are at war with Germany." The Association's General Committee, it claimed, "thoughtlessly accepted" Schuster as president[13] and that "in justification, we have had the usual talk of science being international."[14] In effect, the article concluded, "Our scientific men have asked us to turn the other cheek to the enemy."[15]

This last statement reflects one of the chief problems thrown up by the Association's long-standing reputation for internationalism against the background of war. The decision to prioritize co-operation over conflict, actively helping German colleagues after war had been declared, and choosing a German-born president was treated by parts of the British press as revealing the disloyalty and even unmanly cowardice of the British Association at a time of national crisis. The stance of the BAAS appeared even harder to justify for many commentators in the press given the extremely vocal support of many prominent German university professors, scientists and artists for the military actions of the German army in the early stages of the war.[16] This was despite the fact that many of them had until very recently maintained excellent relations with their British scientific colleagues. The article in the English Review, discussed earlier, made this point explicitly when it referred to many of those German professors now denouncing their British counterparts as liars and enemies as "the petted guest[s] of English homes."[17]

The War as Opportunity

As we have seen, by the early years of the twentieth century, the British Association had rather lost its way. Ridiculed by some for being little more than a society organizing lavish and expensive social activities for scientists, its golden years in the early-to-mid nineteenth century, when major scientific discoveries were announced at its meetings, were widely felt to be firmly in the past. Despite the longstanding internationalism of the organisation, however, many leading figures within the BAAS viewed the First World War as a welcome chance to demonstrate their loyalty and courage to their fellow countrymen.

Traditionally, the BAAS had, from its earliest days, sought to disassociate itself from the controversial spheres of politics and war. This attitude was well captured in a poem composed by William Sotheby on the occasion of the third annual meeting of the Association at Cambridge in 1833:

> But thou, celestial peace, thy olive rear
> That knows no taint of blood, no orphan's tear
> And wreathe thy sons who league to bless mankind
> To spread the conquests of the enlightened mind
> The inert mass of matter to controul/And stamp on all the sovereignty of soul.[18]

For the British Association's preferred independence from the state, we can also cite the 1851 presidential speech of the astronomer, Sir George Biddell Airy. "In Science, as well as in almost everything else", he declared, "our national genius inclines us to prefer voluntary associations of private persons to organizations of any kind dependent on the State."[19]

Yet by the outbreak of the First World War the BAAS was generally seen as no longer fulfilling the vital role it had played in the nineteenth century as the chief arena for the demonstration and public presentation of cutting-edge science in Britain and the Empire. As the mechanical engineer, Henry Selby Hele-Shaw, wrote to Arthur Schuster on 19 August 1915, the British Association "does not form, as once it did, the recognised channel of communicating new discoveries and inventions to the world, and is now generally regarded merely as a Body holding annual meetings in this country and the colonies at which Scientific men can…attend, with their families, social gatherings." Hele-Shaw went so far as to suggest that the war could provide the BAAS with "a fresh lease of life", an opportunity to raise the reputation of science with the British public and reimagine the man of science as a brave and daring hero. Science had the potential, he argued, to become central to national and imperial life and the BAAS must show how "the resources of science" can be applied "directly to handling many of the great problems of the British Empire."[20]

At a more solidly institutional level, the Organising Committee of the Association's Educational Science section released a Memorandum in June 1916 pushing for a sustained campaign for the "Popularisation of Science through Public Lectures." Echoing the concerns of Hele-Shaw, the Education Section of the BAAS (Section L) lamented the dwindling public interest in science in recent years, complaining that it was far "less manifest than a generation ago." Emphasizing one of the original objects of the BAAS, namely to spread knowledge about

science to the wider public, the Memorandum urged that "Much more remains to be done if advantage is to be taken of the opportunity which the War has given of showing that scientific method and thought are essential factors of modern progress." This was true not only for scientific method and thought but also for the man of science. The public at large has considered the scientist as something of an effete and "esoteric" character, the Memorandum reflected; the war now seemed to offer an invaluable opportunity to prove his manliness at a time of national crisis.[21]

Chief among the schemes launched by the BAAS at this time were those seeking to harness the rich natural resources of the Empire to enhance the war effort; such activities provide a classic example of what Gillian Rose has termed "scientific masculinity" or the subordination of (a figuratively female) nature to a (masculine) human will.[22] A new "Committee of Problems After the War" was set up in December 1915 with its first task being to ask all Sections to consider urgently "the future effects of the war upon national and imperial welfare."[23] The Mathematics and Physics Section (A) called for work to take place across the different sections to collect "geographical" and "meteorological" information to inform Britain's "military operations". [24] Anthropology (Section H) declared their wish to obtain ethnographic surveys of Germany's colonies "with a view to possible territorial settlements after the War." [25] Section E (Geography), meanwhile, expressed a wish to organize Britain's colonies more efficiently after the cessation of hostilities.[26]

As the significance of science to the war effort became ever more apparent, prominent figures within the BAAS sought increasingly for ways to maintain the momentum which had developed since the beginning of the war. Early in 1916, the British Association's Section G (Engineering) declared that "One of the most striking facts which has been brought home to the country as the war has proceeded…is, that it is very largely a struggle of scientists and engineers and that the success or failure of a country in warfare is dependent to a large extent on the development of scientific research, and the practical application of the results of this

research." Almost certainly aimed at retaining hard-won government funding, Section G maintained that the "economic struggle which will follow the War will still likewise depend to a great degree on scientific development, and an application of the scientific method to every department of our national life." [27]

By 1916, the British Association had far fewer detractors and was rarely described any more as effete or esoteric. While, as a body, it was widely "recognised as treating the problems of the day in a scientific manner", this was "at the same time from a practical point of view."[28] To the BAAS and to the wider public, science had to a large extent lost its association with abstract knowledge and become connected with practical application. This change represented a sharp contrast with the public image of the BAAS back in 1914. From an organisation that had become increasingly seen as a relic of a former age, by the war's mid-point, it was able confidently to claim that the very "national welfare" of Britain would "largely depend on the energetic scientific development" of its resources.[29]

However, while growing increasingly close to the British government and embracing the language of nation and empire, the BAAS by no means wholly abandoned internationalism during the war years. Indeed, there were strenuous attempts by individuals and groups to maintain and facilitate international scientific collaboration (including with Germany) during the war itself. In particular, there were suggestions that the BAAS, through its offices at Burlington House in London, might act as a conduit for correspondence with foreign (including German) scientists. On 22 August 1915, Hugh Richardson, secretary of Section L and the distinguished chemist, Sir Henry E. Roscoe, proposed that "all scientific correspondence with foreigners should pass through Burlington House or neutral countries." This proposal was linked explicitly to "the original objects of our Association", in particular, the duty "to promote the intercourse of those who cultivate Science in the different parts of the British Empire with one another and with foreign philosophers…to obtain…a removal of any disadvantages of a public kind which impede its progress [original emphasis]." As Richardson pointed out, there

were already "some authorised arrangements by which brief personal messages…can be transmitted to Germany." Building on this beginning, the BAAS might, with the help of "some society on the continent," such as the Dutch Academy of Sciences at Leiden, want to make arrangements "for the transmission of purely scientific correspondence."[30]

Reshaping Masculine Character through Science Education

During the war itself, however, the priority remained firmly on the need to further embed and augment growing public recognition of the importance of science. Central to this was a widespread campaign to increase public and government interest in scientific instruction across the British education system from primary school to university. The zoologist, E. Ray Lankester, set up an independent committee in the spring of 1916 to investigate what it termed the "neglect of science", not only in Britain's schools and universities but across the various branches of government and the civil service. In its first report, the committee claimed that "[t]he continued existence of this country as a Great Power" required not simply men characterized by "courage, devotion and self-sacrifice" but specifically those who, in addition, had "received a scientific training."[31] Traditional patriotic manliness was no longer enough to sustain Britain's great power status and collective masculinity; scientific knowledge, training and character were now seen as vital too. The committee's report reaffirmed the popular belief that "ignorance" of science among the "highest ministers of state" and "through almost all the public departments of the Civil Service" had been responsible for Britain's poor showing in the early part of the war. This ignorance, the committee concluded, was the result of a longstanding bias against scientific subjects across the various levels of British education including the ancient universities of Oxford and Cambridge which continued to display "an indifferent, not to say, contemptuous attitude towards them."[32]

The work of Lankester's committee and their supporters within the BAAS achieved considerable impact with the government appointing a special committee to investigate the

position of science in the British education system in the middle of 1916. The remit of this new committee, moreover, was targeted specifically at maximising the benefits which science and scientific application could bring to Britain's war effort. Many prominent members of the BAAS and of Lankester's "Neglect of Science" committee were called to give evidence before it.[33] Scientific instruction based on the so-called "literary model" of the ancient universities and principally designed to train educated gentlemen was rejected. According to a report produced by the British Association in 1917 on "Science Teaching in Secondary Schools", teachers ought not "merely to provide information about natural objects and phenomena"[34]; instead, children should be trained "so far as possible in the attitude of discoverer"[35]; men of science themselves must be their models when experimenting in the classroom. The report recommended a number of ways to bring this about, not least, inspiring schoolboys with the heroic examples of famous scientists from the past.[36]

While, according to the report, science education for girls consisted in the "mere imparting of facts," boys should be able to enjoy "a genuine pursuit of knowledge", characterised by "the historic activities of scientific minds working at their best." With the needs of war firmly in the minds of educational reformers, including those within the BAAS, attention focused clearly on the practical application of scientific research. This led to a prioritization of active experimentation as a teaching method, with emphasis on the achievement of practical results rather than findings of merely "academic interest."[37] To increase the enthusiasm of male pupils for science, the report recommended trying to make science lessons more interesting and appealing to boys. "There should be more of the spirit, and less of the valley of dry bones," it declared.[38] One way of approaching this, particularly stressed by the report's authors, was to dedicate a significant amount of lesson time to discussions of the lives, achievements and personalities of the great male scientists of the past.

Through the establishment of school museums and exhibitions depicting the lives of famous men of science, the scientist was to be recast as a peculiarly modern masculine hero.

Science education ought "to direct attention and stimulate interest in scientific greatness and its relation to modern life." Every boy in Britain, no matter which sort of school he attended, "should be given the opportunity of knowing…the lives and works of such men as Galileo and Newton, Faraday and Kelvin, Darwin and Mendel.[39] Citing the efforts of T.H. Huxley and John Tyndall, back in the 1860s, to secure the proper inclusion of scientific instruction into the education provided by Britain's public schools, the report argued that boys from all walks of life should "come into contact again with striking experiments, the history and development of discoveries, the lives of the great, in fact, to the romance of science."

Lessons should give due attention to the importance of science for shaping character; "[l]ectures or exhibits" should be used "to illustrate the life and works of a great investigator – men like Faraday, Dalton, Darwin, Pasteur."[40] Better still would be the creation of permanent "museums" in schools up and down the country containing "a gallery of the world's leading workers and pioneers, that something may be learnt of their lives and what they looked like."[41] Passing on to the next generation information about what male scientists "looked like" assumed considerable significance in the reforms to science education proposed by the report. The BAAS was concerned that boys in Britain tended to view scientists as effeminate characters, residing primarily indoors and shunning hard, physical work. The provision of examples of dynamic, physically strong men of science, engaged in work of direct practical benefit to nation and empire was considered an important method for challenging such preconceptions.

Nor were the reforms proposed limited in intention to recruiting greater numbers of boys to a career in science; the report's authors made the much more general claim that the type of character supposedly represented in the great scientific heroes of the past was precisely that which was wanted among British men in general, particularly against the background of war. [42] Here, once again we encounter the idea of the war as an unprecedented opportunity for science. "Terrible as the present war is", another BAAS report from 1917 proclaimed, "there is no doubt that it has had, and will have, many good results." "To the members of the British

Association," it continued, "it must be more than gratifying to find that at last the value of science is recognised." Above all, though, the report reflected on the likely increase in popular respect for the man of science as a masculine role model and national hero as a result of his raised profile during the war. "The war has done more than give a greater appreciation of science", it claimed, "it has given a chance to men who would not otherwise have made themselves felt in the work of shaping our destiny" and should do much to "remove…prejudices" against scientists.[43]

Adapting to Peacetime: Science as Manly Citizenship

If we turn now to developments after the war, it is important to ask how successful the British Association was in raising public interest in science in general and in the scientist as a masculine role model. Certainly, if a letter written by the Professor of Natural History at Liverpool, W.A. Herdman, to O.J.R. Howarth, Assistant Secretary of the BAAS on 18 December 1918 is any indication, they remained determined to capitalize on the greater prominence they had achieved during the war years. "We should try and make a big beat-up of scientific men," declared Herdman, "and try and have an unusually important meeting for our first after the war."[44] During the 1919 annual meeting at Bournemouth, the BAAS president, the engineer, Charles Algernon Parsons, praised the many "services rendered by the Sciences during the War". [45] At the same gathering, the Association expressed the hope in a communication directed at the Prime Minister and Chancellor of the Exchequer that the British government "recognise[d] that the successful issue of the War has sprung from the efforts of scientific men" and was convinced that "the well-being and security of the nation is dependent on the continuous study of such matters."[46] In future, the BAAS argued, scientists in civil and military fields should work much more closely together; the British navy itself confessed that following the experience of the war it was "keenly alive to the supreme importance of research."[47] Both the British military and scientific establishments admitted the likelihood of a second war in the not too distant future and urged much greater cooperation between university

scientists and the armed forces in preparing for a future conflict.[48] To prevail, Britain must "bring the full scientific knowledge of the country to bear."[49] In this immediate post-war context, men of science were recognised for the first time as being key to the defence and survival of Britain and its empire.

Against this background, the British Association became directly involved in schemes aimed at measuring and improving the strength of "British manhood". Building on a long-standing tradition of collecting statistics related to the physical well-being of the British population, in the Spring of 1919, the BAAS asked the War Office to give them access to a wide range of statistics relating to the health of those men who had joined the armed forces during the war.[50] Sections E (Geography) and H (Anthropology) pushed particularly hard for access to ethnographic studies and charts collected by the Germans "in their former colonies"[51] together with images and data collected by Britain and its allies related to the "age, physique, residence and occupation" of individuals who had applied for travel permits during the war. Such information, it was argued, would allow the BAAS to construct a framework within which British "racial" fitness could be more accurately measured and assessed.[52]

In addition, the early interwar years witnessed a further strengthening of ties between the BAAS and Britain's overseas colonies. In 1921, for example, the BAAS took on responsibility for co-organizing the British Empire Exhibition which was hosted in London in 1924 and 1925. As the Exhibition's organizing council wrote in correspondence with the British Association's President and General Committee: "Every endeavour will be made to illustrate the manifold relations between science in all its branches and imperial development."[53] Indeed, the organizers expressed clearly their ambition to develop further those ties which had been forged between science and the British Empire during the years of war. As the officially produced handbook of the Exhibition declared, the overriding aim of the event was "to create an atmosphere favourable to more rapid and complete trade developments, to show the wealth of our Imperial assets…and to foster the spirit of unity which animated our

peoples during the War." "The lesson learned in the hard school of experience during the War", the handbook continued,

> – that we ought to take advantage far more than we have done of the many different soil, climates, and possibilities which are to be found in our widespread territories – will be enforced by the exhibition, not at all with the idea of furthering any political policy, or of separating ourselves from the comity of nations, but simply as a measure of self-protection and mutual profit.[54]

One important consequence of this growth of interest in harnessing the natural resources of the British Empire more effectively was the BAAS's development of an educational programme designed primarily to train and retain more scientists for the state. In addition, this programme was designed to cultivate a particular ideal of masculine citizenship among Britain's schoolboys, which had the man of science as its chief exemplar. The inspiration for this programme may be sought in the 1916 "Neglect of Science" Committee established by E. Ray Lankester which we have already looked at. It argued that achieving greater prominence for science across Britain's education system would guarantee that "the professional workers in Science would increase in number and gain in public esteem." "Public opinion," the Committee declared, would then "compel the inclusion of great scientific discoverers and inventors as a matter of course in the Privy Council, and their occupation in the service of the State."[55] Similar conclusions about the need for more passionate and exciting teaching in science subjects had been reached by the BAAS's own report on "Science in Secondary Schools" which was published in 1917. Here, we remember, it was the active teaching of the history of science as a series of exciting heroic biographies of famous scientists which was felt to be most wanting in current scientific instruction in schools across the education system. Once the war was over, the BAAS recommended a series of different schemes intended to improve the situation in schools.

One important method, developed by the BAAS in the years following the end of the war, and designed to raise the interest of boys, especially those from poorer backgrounds, in science, was the creation of schemes of specially selected images (of famous scientists,

scientific discoverers, technologies) for use in school science lessons. In 1920, the BAAS established its "Educational Pictures Committee" which was tasked with the selection, creation and promotion of these series of images for use in schools up and down the country. In the Committee's minutes, we encounter repeated references to the need to select images which convey the desired ideal of the dedicated and industrious patriot-scientist.[56] A portrait of the early nineteenth-century chemist, "John Dalton Collecting Marsh Fire Gas," created by Ford Madox Brown in 1887, was particularly praised as the type of image desired. It was included in a series labelled "Scientific Worthies" and laid emphasis on the practical nature of Dalton's work as a scientist. In the same way, photographs by Herbert Ponting taken as part of the famous British expedition to Antarctica which took place between 1910 and 1913 were recommended for use in schools for their representation of scientists leading brave and daring missions in the name of their country.[57] In an effort to encourage British schoolboys to think of scientists as attractive masculine role models alongside more traditional heroic figures, the "Educational Pictures Committee" promoted the use of a set of portraits styled "Makers of History" which included men of science like the explorer David Livingstone together with great military men like Admiral Nelson.[58] Another scheme, labelled "Pictures of War Work in England" depicting engineers at work constructing different pieces of war machinery was praised by the Committee as providing "excellent examples of the type [of image] required." Pictures devoid of human beings and stirring scenes of practical industry, including a series depicting famous bridges and other architectural forms, were dismissed as "coldly magnificent", without the necessary "human element" required to inspire schoolboys to follow in the footsteps of Britain's scientific heroes.[59]

Adapting to Peacetime: Reviving Internationalism

The tension between their newly strengthened relationship with the British nation and their long-standing attitude of internationalism continued to haunt men of science in the years

immediately following the end of the war. Despite their closer ties to the British government, the early interwar period witnessed a vigorous resurgence of scientific internationalism among BAAS members. Indeed, the Association expended considerable energies in positioning itself as the body primarily responsible for revivifying international exchange in scientific and scholarly relations after the war. Particularly important here was to be the Association's collaboration with the Universities Bureau of the British Empire, a body established back in 1913.[60] Similarly, the BAAS became closely involved with setting up new schemes of international exchange outside the boundaries of the British Empire. In Spring 1919, for example, it played a leading role in establishing a new scheme of student exchange between Britain and Sweden.[61]

Yet, it was to be its active involvement in projects to help reconstruct the devastated world of science and academia in Germany and Austria which most prominently embodied the BAAS's scientific internationalism in the years following the end of the war. During the 1919 meeting at Bournemouth, the Association stressed the "necessity for organising the intellectual classes [of all countries] to maintain and uphold the freedom of science." Moreover, they made clear their view that Britain should play a leading role in this endeavour.[62] Assuming responsibility for reconstructing the science of Europe, and in doing so, defending civilisation itself, shared important similarities with Britain's perception of itself as an imperial power with a duty of protection to its many colonies and dominions across the globe. Yet, crucially, it did not work alone in this task. Working alongside other members of the Conjoint Board of Scientific Societies, the BAAS expressed its desire in the spring of 1920 to achieve "a mitigation…of the appalling conditions which…prevail in the scientific world" in Austria and Germany. It was the common view of British science, they declared, that "there is much to be said for our helping them [Germany and Austria] to…restore normal conditions of life in scientific circles." [63] They read and referred to extensive summaries of articles from German-language newspapers and journals, relating details of the incredibly difficult circumstances in

which Austrian and German men of science were living and attempting to work. Above all, the worsening situation of hyperinflation rendered laboratory equipment, scientific books and journals far too dear to purchase.[64]

These articles appearing in the German-language press deliberately appealed to the longstanding tradition of scientific internationalism in Britain and other countries when asking for assistance from colleagues (including many former enemies) in other countries. Fritz Haber, who was Director of the Kaiser-Wilhelm-Institute for Physical Chemistry in Berlin, wrote, for example, that, if German scientific institutions were not supported by money and resources from the victors, they would share the fate of "the Venetian palaces, which stand empty, and present to the visitor an interesting picture of past importance." "In former times," he declared, "the culture of Science in Germany was a work of art…But if the continuity of the circle of humanity which devotes itself to the cause of Science is broken, tens of years will not suffice to make good the destruction thereby brought about."[65] The true extent of the devastation was revealed by Professor Everett Skillings when he toured some eleven universities and other scientific institutes in Austria and Germany in the spring of 1920. Skillings conducted his visits on behalf of a new movement wishing to set up an "Anglo-American University Library for Central Europe" to mitigate some of the war's disastrous effects upon German and Austrian scientists. Skillings' report noted the appalling circumstances in which many scienitsts and their families were living: severe malnourishment and even starvation affected many individuals he visited. Yet, it was the cultural and intellectual "famine" which drew Skillings attention most directly. He described "people hungering in mind and soul for contact with the intellectual world outside."[66] "They seem bewildered by despair", he reported, "broken in spirit". "The immediate necessity [was] to inspire hope." Skillings' report makes clear the speed with which ideals of scientific heroism and manliness were changing in the immediate post-war context. While a patriotic ideal cherishing martial success may have been appropriate for wartime, the challenges of peacetime required very different responses. What Skillings and

others connected with "olive branch" projects like the Anglo-American Library offered, were alternative visions of heroism inspired by religious ideals of self-sacrifice and charity. As Skillings phrased it, "The question of helping is quite apart from our attitude towards [the Germans and Austrians] during the War. Here is one of the hardest tests which practical Christianity has to face." [67]

The British Association was actively involved with a variety of different projects proposed with a view to helping Austrian and German colleagues back on their feet.[68] Chief among these was the Anglo-American Library project. The Library's main goal was to begin the monumental task of finding replacement copies of key books, journals and other publications which universities and institutes in Austria and Germany had lost during the war. The symbolic value of the project was also hugely significant as it positioned men of science as key players and architects of the new peacetime world order. As the Library's Executive Committee made clear, the project had lofty goals. They wished for nothing less than an "uplifting of mankind" through "the encouragement of learning." In their minds, the Library symbolised "the outstretched Hand of Fellowship" to Austrian and German scientists.[69] Another committee was set up in May 1920 whose task was to "fix the needs of German science in respect of foreign educational literature, and take care of the disposition of books and exchanges in Germany and Austria." The Library was supposed to "serve as a central point for endeavours towards a rebuilding of the international spirit of culture…to help in reconciling the intellectual world."[70] Through this and other related projects, the BAAS worked hard to establish the scientist in a new and important position in the post-war peace – as the chief agent of cultural and intellectual rapprochement. In the words of the Library's Executive Committee: "The reconciliation among the peoples can only come through the cultivation of mind and spirit and it is clear that the great teachers of the world, by the free interchange of ideas, must be the leaders in such an endeavour."[71]

While these attempts to reengage with and support the reestablishment of German and

Austrian science were genuinely designed to repair the damage of the war, it was also in the national interest of the allies themselves. As the Anglo-American Library's Executive Committee made clear, such initiatives had the potential to function as great propaganda coups, presenting the allies as magnanimous in victory. "By thus taking the initiative in extending the hand of friendship to colleagues in foreign countries", they declared, "whether former enemy countries or not, where the exchange conditions hinder a resumption of study and research, British and American scholars are seizing a timely opportunity of helping to heal the wounds of the war."[72] As we might expect, it did not take long for German and Austrian scientists to respond favourably to these overtures. As one group of Austrian scientists expressed it, the Library's foundation represented "a welcome beginning to the linking up of old associations." They echoed the Executive Committee's call for international donations "so that this great work of international reconciliation and public benefit may at once take effect."[73] As we see from the correspondence and appeals for assistance emanating from German and Austrian scientists in the early interwar period, it was the old language of scientific internationalism which was drawn upon most frequently. As one appeal on behalf of Austrian colleagues declared,

> The brain-workers of Austria appeal to their friends and fellow-workers in all countries…There is imminent danger of our being separated from the scientific and technical world, a thing which would imperil the unity of civilisation…for culture and civilisation are the property of all nations alike, and must be furthered by all.[74]

Appealing to scientists abroad for assistance on 2 December 1920, the Zentralanstalt für Meterologie und Geodynamik at Vienna referred to itself in very similar terms as being "to a certain extent the common property of all civilised nations on earth...in whose survival all are interested."[75]

Not merely abroad, but also at home, the British Association worked hard to promote the male scientist as a leading champion of international reconciliation and architect of the new peacetime world order. Science and the activities of men of science had, after all, been traditionally associated with peaceful, international cooperation. In the new context of peacetime, men of science offered themselves as particularly appropriate masculine role

models for boys growing up in a post-war world. Linking back to the recommendations made in the 1917 report of the BAAS Committee looking into science in secondary schools and proposals put forward by the Educational Pictures Committee in 1920, the years following the end of the war saw the development of alternative ideals of scientific masculinity, all based on the notion of the scientist as the model male citizen. We see this particularly clearly in P.B. Showan's Citizenship and the School, published in 1923 and which made extensive use of the recently published report of the BAAS's "Committee on Training in Citizenship". The report had placed considerable emphasis on the potential significance of science and scientific education in inspiring new models of masculinity and citizenship particularly attuned to the changed circumstances of peacetime. Showan maintained that science's great contribution to the war effort and raised public profile meant that it should now supplant those subjects like history which had traditionally served as inculcators of citizenship values to Britain's children. "[S]chool history at present," he declared,

> is so largely concerned with...kings, rulers, men of war and of action – that there is a danger of over-working the natural sense of hero-worship…but if a civic bias is given to the teaching, and lessons of history are chosen to show the debt that nations owe to men of science and to leaders in peace, then this helpful hero-worship can be directed…The war has altered our conception of patriotism, and at last we see that the true criterion of love of country is applied social service – giving the best to the community in time of peace no less than in war.[76]

"Thus," he argued,

> ...a science master who fails to give his pupils some account of the life and work of the greater scientists…is not making the most of his subject or of his opportunities for imparting knowledge which is of definite value as a preparation for citizenship. Some knowledge of Boyle, Newton, Ohm, Kelvin as men, rather than mere names, must make the subject more interesting, quite apart from any value such knowledge may have in helping a pupil to form a habit of mind which disposes him to judge men's worth in terms of their services to mankind.[77]

By way of illustration, Showan discussed the case of a science teacher at West Square Central School in Southwark, who

> has made cards which are admirably illustrated and designed. Each one shows a picture of a famous scientist, his nationality, birthplace, dates and period, his school and work-place,

> and the discoveries and work for which he was famous. When the work of any of these men of science is under study… then his picture and record are exhibited in the calendar or roll of honour and a short talk is held about him and his work.[78]

Conclusion

The determination of the BAAS to view the outbreak of war as an opportunity for raising the public profile and reputation of science, and their considerable success in doing so, reveals a significant (and largely unacknowledged) achievement. As we discussed at the beginning, the British Association was going through a period of particularly low public esteem in the years immediately preceding the outbreak of war. Once again, scientists were being increasingly seen as impractical, unmanly characters, out of touch with the real world and the tangible applications of scientific research. Within the first two years of war, this state of affairs had altered beyond recognition. Determined to view the war as an opportunity to demonstrate the worth of science and scientists to the British nation at a time of crisis, they went a considerable way towards transforming the public reputation of science and the man of science at the same time.

As the war came to an end, the British Association enjoyed much closer relations with both Britain's government and the country's armed forces. Both admitted publicly for the first time the importance of science and scientific research to the future safety and security of Britain and its Empire. It was clear that in all future conflicts, British men of science would play a key role in the decision-making process. Crucially, though, they succeeded in retaining this greater visibility and more prominent public profile long after the end of the war itself. There is no stronger proof of the ability of the BAAS to adapt itself to changed conditions than its successful refashioning as an organization dedicated to the reestablishment of international intellectual and scientific exchange in peacetime. They succeeded in marrying a new-found national and patriotic significance with their traditional attitude of scientific internationalism. The ideal around which this new vision clustered was that of the scientist as a model of modern,

masculine citizenship. By means of specially designed educational schemes, both within Britain and abroad, which emphasised the peculiar role of the scientist as the guardian and preserver of modern culture, the British Association worked hard to secure the long-term future of science, both in war and peace.

NOTES

[1] For the reputation of the scientist (or natural philosopher) as unmanly, see Steven Shapin, "'A Scholar and a Gentleman': The Problematic Identity of the Scientific Practitioner in Early Modern England", History of Science, 29 (1991), pp. 279-327.
[2] For scientific internationalism in the history of the BAAS, see Giuliano Pancaldi, "Scientific Internationalism and the British Association", in Roy MacLeod and Peter Collins (eds.), The Parliament of Science: The British Association for the Advancement of Science 1831-1981 (Northwood, Middlesex: Science Reviews Ltd., 1981), pp. 145-169.
[3] First Report of the Proceedings, Recommendations and Transactions of the British Association for the Advancement of Science (York: Thomas Wilson and Sons, 1832), p. 42.
[4] See Michael Worboys, "The British Association and Empire: Science and Social Imperialism,1880-1940" in McLeod and Collins (eds.), The Parliament of Science, pp. 170-187.
[5] Bodleian Library, Oxford (hereafter BL), Dep. BAAS 232, p. 63.
[6] For the significance of German BAAS members, see Heather Ellis, "'Intercourse with Foreign Philosophers': Anglo-German Collaboration and the British Association for the Advancement of Science, 1870-1914", in Heather Ellis and Ulrike Kirchberger (eds.), Anglo-German Scholarly Networks in the Long Nineteenth Century (Leiden and Boston: Brill Academic Publishing), pp. 176-193.
[7] BL Dep. BAAS 237, p. 22.
[8] Bodleian Library (afterwards BL) Dep. BAAS 232, p. 167.
[9] See BL Dep. BAAS 237, p. 125.
[10] BL Dep. BAAS 237, p. 111.
[11] BL Dep. BAAS 237, pp. 135-136.
[12] G.L. Herries-Davies (ed.), Whatever is Under the Earth: The Geological Society of London, 1807 to 2007 (Wiltshire, UK: The Cromwell Press, 2007), p. 221.
[13] "A Germano-British Association Meeting and Address", English Review (October 1915), p. 328.
[14] Ibid., 329.
[15] Ibid., 329.
[16] The most famous expression of this support was the so-called "Manifesto of the Ninety-Three", a statement published on 4 October 1914, proclaiming the unequivocal support of ninety-three prominent German academics, scientists and artists for the actions of Germany's armed forces in the war to date.
[17] Ibid., 329.
[18] William Sotheby, Lines Suggested by the Third Meeting of the British Association for the Advancement of Science, held at Cambridge, in June 1833 (London: J. Murray, 1834), p. 3.
[19] Report of the Twenty-First Meeting of the British Association for the Advancement of Science, held at Ipswich in July 1851 (London: J. Murray, 1852), p. li.
[20] BL Dep. BAAS 96, pp. 2-4.
[21] BL Dep. BAAS 96, pp. 62-63.
[22] See Frank Möller and Samu Pehkonen (eds.) Encountering the North: Cultural Geography, International Relations and Northern Landscapes (Aldershot: Ashgate, 2003), p. 129.
[23] BL Dep. BAAS 96, pp. 2-4; 100; 117.
[24] BL Dep. BAAS 96, p. 94-95.
[25] BL Dep. BAAS 96, p. 114.
[26] BL Dep. BAAS 96, p. 100. For more on Section E's (Geography) involvement in the war effort, see Charles Withers, Geography and Science in Britain, 1831-1939: A Study of the British Association for the Advancement of Science (Manchester: Manchester University Press, 2010).
[27] BL Dep. BAAS 96, p. 110.

[28] BL Dep. BAAS 96, p. 111.
[29] BL Dep. BAAS 96, p. 111.
[30] BL Dep. BAAS 96, p. 13.
[31] BL Dep. BAAS 96, p. 196.
[32] BL Dep. BAAS 96, p. 196.
[33] BL Dep. BAAS 96, p. 199.
[34] "Science in Secondary Schools" in Report of the British Association for the Advancement of Science 1917 (London: John Murray, 1918), p. 124.
[35] Citing the words of the chemist, Henry Edward Armstrong given in earlier BAAS reports of 1889 and 1890. 'Science in Secondary Schools', p. 126.
[36] Ibid., 137.
[37] Ibid., 137.
[38] Ibid., 140.
[39] Ibid., 155-156.
[40] Ibid., 157.
[41] Ibid., 158.
[42] Ibid., 173.
[43] Ibid., 228.
[44] BL Dep. BAAS 96, p. 172.
[45] BL Dep. BAAS 96, p. 319.
[46] BL Dep. BAAS 96, p. 331.
[47] BL Dep. BAAS 96, p. 342.
[48] BL Dep. BAAS 96, p. 347.
[49] BL Dep. BAAS 96, p. 358.
[50] BL Dep. BAAS 96, pp. 215; 229-230.
[51] BL Dep. BAAS 96, p. 274.
[52] BL Dep. BAAS 96, pp. 258-259.
[53] BL Dep. BAAS 97, p. 144.
[54] BL Dep. BAAS 97, p. 149.
[55] BL Dep. BAAS 96, p. 196.
[56] BL Dep. BAAS 377, p. 190.
[57] BL Dep. BAAS 377, p. 191.
[58] BL. Dep. BAAS 377, p. 192.
[59] BL Dep. BAAS 377, p. 199.
[60] BL Dep. BAAS 377, p. 111.
[61] BL Dep. BAAS 377, p. 110.
[62] BL Dep. BAAS 377, p. 111.
[63] BL Dep. BAAS 97, p. 4.
[64] For a selection of extracts from the German-language press which the BAAS read, see BL Dep. BAAS 97, pp. 19-31.
[65] Extract from the Berliner Tagesblatt (7 March 1920), BL Dep. BAAS 97, p. 19.
[66] BL Dep. BAAS 97, p. 34.
[67] BL Dep. BAAS 97, p. 42.
[68] The most important individuals connecting the Anglo-American Library project and the BAAS were the physicist and former BAAS President (1909), J.J. Thomson and the physicist, Frederick Alexander Lindemann.
[69] BL Dep. BAAS 97, p. 14.
[70] BL Dep. BAAS 97, p. 14.
[71] BL Dep. BAAS 97, p. 43.
[72] BL Dep. BAAS 97, p. 44.
[73] BL Dep. BAAS 97, p. 44.
[74] BL Dep. BAAS 97, p. 48.
[75] BL Dep. BAAS 97, p. 52. "…bis zu einem gewissem Grade ein Gemeinheit aller kultivierten Nationen der Erde...an dessen Bestand sie alle interessiert sind."
[76] P.B. Showan, Citizenship and the School (Cambridge: Cambridge University Press, 1923), p. 14.
[77] Ibid., 25-6.
[78] Ibid., 26.