HISTORICAL PERSPECTIVES

Nobel Laureate A. V. Hill and the refugee scholars, 1933–1945

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Rall JA. Nobel Laureate A. V. Hill and the refugee scholars, 1933–1945. Adv Physiol Educ 41: 248–259, 2017; doi:10.1152/advan.00181.2016.—A. V. Hill shared the 1922 Nobel Prize in Physiology or Medicine for his investigation of the energetics of muscular contraction. His scientific work has been well chronicled over many years (Rall JA. Mechanism of Muscular Contraction, 2014). There is the natural tendency to focus solely on an investigator’s scientific achievements. But in the case of Hill, it has been said (Katz B. Biogr Mem Fellows R Soc 24: 71–149, 1978) that “it was his devotion to such wider issues, outside the boundaries of his own research, through which he exerted his most important influence on other people’s lives and on the course of events.” It is A. V. Hill, the man, and his defense of science and of scientists driven from their places of work, which began with the Nazi rise to power in Germany in 1933, that will be explored.

A. V. Hill; refugee scholars; William Beveridge; Society for Protection of Science and Learning; Bernard Katz

The British Physiologist A. V. Hill (1886–1977) (Fig. 1) shared the Nobel Prize for 1922 with Otto Meyerhof of Germany. Hill pioneered a biophysical approach to physiology in publications that spanned 60 yr. He believed deeply in international cooperation and collaboration in research. His nearly 100 research collaborators, or “young friends” as he called them, came from 20 different countries (22). Hill performed numerous leadership duties in many scientific organizations as befitting his stature in science (34). One of the three Nobel Laureates who trained with Hill was Bernard Katz who wrote a scientific biography of Hill a year after Hill’s death. Despite Hill’s scientific achievements and influence, Katz (34), almost apologetically, had this to say about Hill:

In an attempt to present a detailed account of A. V. Hill’s scientific work, his personal character and the great intellectual and moral impact he made on his friends and pupils may tend to get obscured. In fact, committed though he was throughout his life to work in the laboratory, it was his concern for others, the encouragement he gave to young colleagues, his upright defense not only of the cause of science, but of scientific men who had been driven from their places of work and needed help, in short it was his devotion to such wider issues, outside the boundaries of his own research, through which he exerted his most important influence on other people’s lives and on the course of events.

Katz (35) had immense admiration and respect for Hill and has called him the “most naturally upright man I have known.”

It is A. V. Hill, the man, and his defense of science and of scientists driven from their places of work which began with Hitler’s rise to power in Germany in 1933 that will be explored. Besides strength of personality, stature associated with a Nobel Prize, and belief in the international nature of science, Hill had other qualifications that made him uniquely suited to be effective in providing help to these refugee scholars. These qualifications included the following: membership on the executive committee of the Academic Assistance Council (later to become the Society for the Protection of Science and Learning), biological secretary of the Royal Society from 1935 to 1945, and a Member of Parliament (MP) from 1940 to 1945. From 1933 through 1945, Hill utilized all of his abilities to first help save refugee scholars from what he called “the enemies of knowledge” in Germany and elsewhere and then to help free them from internment in England during the war.

A. V. Hill, the Scientist, in the 1930s

The 1930s were productive years scientifically for the Hill laboratory, which generated 96 publications, with Hill’s name on 36 of them (22). Even though Hill usually set research topics for his collaborators and provided necessary equipment, he did not place his name on the subsequent publications unless he had a direct hand in the conduct of the research. Hill’s most well-known publication appeared in 1938. This paper (19), entitled “The heat of shortening and the dynamic constants of muscle,” has been cited over 4,500 times and still is cited today (45). The Hill laboratory closed from 1939 to 1945 because of the war. Even though Hill was fully engaged in research through most of the 1930s, he was also at the same time instrumental in the support of refugee scholars.

Academic Assistance Council 1933–1936

From 1901 to 1932, German scientists won one-third of all of the Nobel Prizes, and 25% of German Laureates were of Jewish descent, despite the fact that no more than 1% of the German population was Jewish. After legal equality was granted in 1869, a growing minority of Jewish families believed that the only solution to their acceptance in wider German society was total assimilation (40). They regarded their Jewish background as religious rather than racial. They converted to Christianity and considered themselves wholly German.

Everything changed when Adolf Hitler became the Chancellor of Germany on January 30, 1933. He quickly abolished the power of the Reichstag and firmly established the dictatorship of the national government. By the beginning of April of 1933, the first steps were taken to exclude Jews from all official
positions in the country (11). The government introduced a law that was designed to rid the state bureaucracy of anyone considered politically or racially unacceptable, mainly leftists and Jews. The law required that officials deemed non-Aryan resign or “retire” immediately. A supplementary decree to the law defined non-Aryan as anyone descended from non-Aryan, particularly Jewish, parent or grandparents. It sufficed if one parent or grandparent was non-Aryan. Since the universities and research institutes in Germany were, for the most part, state bodies, their professors, lecturers, and research workers were state officials and thus subject to the purge decrees. Besides the non-Aryans, officials whose previous political activities did not offer assurance that they will “invariably and unreservedly” support the National State could be dismissed. Soon thereafter the first official dismissal of German academics occurred. By the middle of July 1933, the Nazi Party was declared the sole legal political party, and the right of German citizenship was withdrawn from all “undesirables” and those opponents of Nazism who had fled abroad (11). Of the 65,000 people who fled Germany from 1933 to the end of 1935, 40,000–45,000 were Jews (11). Over 1,300 scholars and scientists were dismissed from German universities and institutes by the middle of 1935 (50). These scholars and scientists also were predominantly Jews.

Sir William Beveridge1 (1879–1963) (later Lord Beveridge), director of the London School of Economics, was visiting colleagues in Vienna in the spring of 1933 when he became aware of the dismissals of academics in Germany on racial or political grounds (2). On his return to London, he became the chief architect and the prime mover in the establishment of a structure to help the academics dismissed in Germany. The establishment of this structure was no easy task, as Britain was in a state of economic depression, social and political turmoil, and anti-Jewish hostility (70). This structure was called the Academic Assistance Council (AAC) with Lord Rutherford (1871–1937), a Nobel Laureate and the preeminent scientist in Britain, as its president. Space and support were provided by the Royal Society. As originally established, the AAC was not a political organization, but existed only because the German government had violated the freedom that universities have to pursue scholarship without ideological and legal interference. In May of 1933 the existence of the AAC was announced in the newspapers throughout England with an appeal for financial support. According to the announcement (2), the goal of the AAC was to assist scholars, scientists, and investigators “. . . who, on grounds of religion, political opinion or race, were unable to carry on their work in their own country.” Because of the concern about anti-Semitism in Britain, the announcement emphasized that the issue was not a Jewish one alone, since many who suffered or were threatened had no Jewish connection. The announcement was accompanied by a list of some of the most distinguished British scientists and scholars;2 Of the 41 who signed the original appeal for the AAC, 7 either were or would become Nobel Laureates and 17 were fellows of the Royal Society, including A. V. Hill. The list also included economists, lawyers, politicians, historians, and philosophers, some of whom were also high-level university administrators. The announcement ended with the following carefully worded, apolitical statement of purpose of the AAC: “Our action implies no unfriendly feelings to the people of any country; it implies no judgment on forms of government or on any political issue between countries. Our only aims are the relief of suffering and the defence of learning and science.” Thus the primary mission of the AAC was not to protest against injustice but to assist the victims of injustice. The underlying principle of operation of the AAC was that scholars and scientists formed a world society, which should share knowledge, regardless of race and religion, and that the learning and science of those displaced was not the property of any one nation, but belonged to all humankind (1).

The AAC was set up to act as a clearinghouse and center of information to assist displaced scholars to find new positions and to coordinate its work with related organizations that also were being established. Some of these other organizations included the following: The American Emergency Committee for Displaced German (later Foreign) Scholars (10); the Jewish Professional Committee (first called the Jewish Academic

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1 William Beveridge was a British economist and social reformer. He is best known for his 1942 report “Social Insurance and Allied Services” (known as the Beveridge Report), which served as the basis for the post-World War II welfare state (14).

2 In the United States, “learning” or “scholars” are usually taken to include “science” or “scientists.” But in England at the time, the common practice was to distinguish between them (21).
Fig. 2. Esther (Tess) Simpson (1903–1996) joined the Academic Assistance Council in 1933 as an assistant secretary. She became the secretary of the Society for Protection of Science in Learning in 1939. As secretary, she was responsible for interaction with the refugee scholars and their families and preparing dossiers for evaluation of their credentials for academic positions and later for freedom from internment. [Photograph by Lotte Meitner-Graf, 1946, copyright The Lotte Meitner-Graf Archive, University of Leeds Special Collections (Shelf Mark MS 959/1027).]
States. Hill’s exchange with Stark marked a personal turning point in that, rather than just assisting persecuted individual academics, now German universities and Nazi politics were being criticized.

This exchange of letters in Nature had a profound impact on Bernard Katz (1911–2003), a Jew of Polish descent, who at the time was a medical student at the University of Leipzig. After reading the correspondence, Katz (35) found Hill’s personality so attractive that he made every effort to go and work with him as soon as possible. Katz spent 5 yr with Hill, working on the mechanics of muscle contraction. Katz would eventually win the Nobel Prize in Physiology or Medicine in 1970 for his investigations into the mechanism of transmitter release at the neuromuscular junction. He shared the prize with Julius Axelrod and Ulf von Euler. Von Euler also worked in Hill’s laboratory in the 1930s (64). They were not the only Nobel Laureates to work with Hill. Herbert Gasser also received the Nobel Prize in 1944 (12).

The Academic Assistance Council Becomes the Society for the Protection of Science and Learning

At the outset, it was hoped that the AAC would only be necessary temporarily. With the passage of the Nuremberg Laws in September of 1935, excluding Jews from German citizenship or marriage to Germans, the German government increased its persecution of Jewish scholars and Jews in general. As time went on, refugee scholars appeared not only from Germany but also from Austria, Russia, Italy, Portugal, and Spain. It became apparent that there was a need for a permanent body to assist scholars who were victims of political and religious persecutions. In March of 1936, Lord Rutherford (48) announced in the British Medical Journal the formation of this permanent organization called the Society for the Protection of Science and Learning (SPSL). The SPSL would continue to work in cooperation with other organizations to provide information, emergency grants, and fellowships. Anyone could join the society for a small fee. According to Weindling (67):

Hill rapidly saw the need not only to assist individual refugees but also to defend a set of values associated with freedom of thought, social equity, and justice... Hill was a prime mover into transforming the AAC as an organization from a charity for refugee scientists into one standing for the fundamental principles of all academic and research work.

There was another fundamental change. From now, on, the SPSL abandoned the AAC’s policy of refraining from political controversy and became increasingly vocal in promoting the cause of academic freedom by openly criticizing the Nazi and fascist regimes (69).

It didn’t always go smoothly on the home front, as some groups were opposed to the entry of the refugee scholars into Britain. Some of the opposition was anti-Semitic in nature, but others envisioned the foreign scholars taking jobs from Englishmen. In an effort to protect English jobs, the British Medical Association was reluctant to support foreign physicians. Also, the following flyer was distributed in 1939 (52):

National Socialist Students have had enough of the endless campaigns for every country under the sun except our own. They oppose the new campaign of the Society for the Protection of Science and Learning for the admission of refugees to the Universities.

1. The Youth of Britain should be taught by Britons. It must not be taught by politically biased aliens...
2. Places vacant in the Universities should be filled by the Britons who are able. The alien problem should be solved by giving refugees the opportunity and status of nationhood in one of the many remaining fertile and undeveloped parts of the world...
Find the refugees a home ELSEWHERE.

Despite obstacles, by the end of 1938, 550 refugee scholars were permanently placed in 38 different countries and ~330 were temporarily placed in 25 different countries (20). The total number of refugee scholars registered with the SPSL at this time was 1,400 from Germany, 418 from Austria, 140 plus from Italy, and 60 plus from Spain (2). The importance of Hill’s role in the function of the AAC and SPSL can best be summarized by a quote from Beveridge. Beveridge (2) wrote a book describing the work of the AAC entitled, Defence of Free Learning. Beveridge inscribed Hill’s copy of the book in the following way (8): “To AV, more responsible than any other one person for my having anything to write about, by the tireless, incessant work that he gave in defence of free learning. Please believe every word in this inscription.”

Hill accomplished his work on behalf of refugee scholars as an unpaid volunteer, while at the same time directing an internationally renowned research program. Hill, the scientist, attended international physiological congresses in Rome in 1932, in Leningrad-Moscow in 1935, and in Zurich in 1938. Despite his anti-communist feeling, Hill attended the 1935 congress because of his deep respect for the congress president Nobel Laureate Ivan P. Pavlov. However, Hill “drew the line” when he turned down an invitation in late 1935 to attend an international sports medicine congress to be held in association with the 1936 summer Olympics in Berlin. He did so with these words (38):

I am sorry, for I have many German friends, but so long as the German government and people maintain their persecution of our Jewish and other colleagues, it will be altogether distasteful to me, as to most English scientists, to take part in any public scientific function in Germany.

One of Hill’s German friends was Jewish physiological chemist Otto Meyerhof (1884–1951), who shared the Nobel Prize of 1922 with Hill. Meyerhof could trace his family history in Germany back to 1720. Like many other upper-middle-class Jews of his generation, he had a rather limited knowledge and interest in his Jewish heritage (41). He was convinced that the Nazi regime would not last very long. He was the director of the Kaiser Wilhelm Institute of physiology at the University of Heidelberg and stayed in Germany until the summer of 1938. By then his situation had become impossible. He secretly arranged for a position in France. He left Germany with his wife and son in 1938. To protect the deception, Meyerhof told none of his colleagues of his departure. He left behind all of his scientific data and personal possessions. Two years later, the German invasion of France forced the Meyer-

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4 This lecture in its unabridged form and subsequent exchanges in Nature between A. V. Hill and Johannes Stark are gathered together, with comments, by Hill in a book entitled, The Ethical Dilemma of Science and Other Writings. The book also includes other writings by Hill over a 40-yr period (21).

5 Weindling has an interesting personal connection with Hill. Weindling’s mother was forced to leave her school after the Nazi takeover of Austria. She came to Britain on a Kindertransport in January of 1939 and stayed in Highgate with Hill’s family (66).

6 The importance of Hill’s role in the function of the AAC and SPSL can best be summarized by a quote from Beveridge. Beveridge (2) wrote a book describing the work of the AAC entitled, Defence of Free Learning. Beveridge inscribed Hill’s copy of the book in the following way (8): “To AV, more responsible than any other one person for my having anything to write about, by the tireless, incessant work that he gave in defence of free learning. Please believe every word in this inscription.”
hof family to flee once again. Hill contacted the Rockefeller Foundation asking if the foundation could help locate and support a position for Meyerhof in the United States. After a harrowing journey, Meyerhof settled at the University of Pennsylvania where he worked as a research professor sponsored by the Rockefeller Foundation until his death in 1951 (47).

The Coming of War: the Tribunals

The probability of a continued peace with Germany vanished rapidly in 1938 and 1939 (49). In March of 1938, Austria ceased to exist as an independent country, as Germany invaded and incorporated Austria into Nazi Germany (Anschluss of Austria). In September of 1938, the Munich Agreement permitted Germany to annex portions of Czechoslovakia, including the Sudetenland. In response to this agreement, MP Winston Churchill declared in a speech in the House of Commons in October (24): “We have sustained a total and unmitigated defeat . . . And do not suppose that this is the end. It is only the beginning . . .” Prime Minister Neville Chamberlain saw it differently when he said in September, “I believe it is peace in our time,” but just months later he acknowledged that Hitler had deceived him (49). These events were followed in May of 1939 by the “Pact of Steel” signed between Italy and Germany

Britain interned over 30,000 German and Austrian aliens. With some exceptions, they were not released until the end of the war. In retrospect, it was felt that this mass internment was an injustice not to be repeated again. To deal with the situation, in August the British Parliament passed the Emergency Powers (Defense) Act of 1939 enabling “enemy” internment. The Home Office suggested local tribunals to evaluate German and Austrian aliens for possible internment. Over 100 tribunals were to categorize the aliens into classes: A, B, or C. Every German and Austrian alien, male and female, over the age of 16 yr was to be examined and placed in one of the following categories (62):

Class A: Aliens whose loyalty and reliability were doubted and who might constitute a security risk. They were to be arrested for immediate internment.

Class B: Aliens whose loyalty was not absolutely certain and who should be kept under supervision. They were left at liberty but subjected to restrictions. They were not allowed to move further than five miles from their home without police permission or to be in possession of cameras, maps, field glasses, arms, etc.

Class C: All those whose loyalty was not doubted. They were free from restrictions.

The onus was on the aliens to prove their loyalty. The tribunal recommendations were forwarded to the Home Secretary for final disposition.

Before the tribunals could begin their work, Germany invaded Poland on September 1, 1939, and on September 3 Britain and France declared war on Germany. Sir John Anderson (1882–1958) became the Home Secretary on the day war was declared, and the tribunals began their work during the first week of October. Of over 70,000 people evaluated, only 1% of the now “enemy aliens” or “aliens of enemy origin” were recommended for internment, with nearly 90% of the individuals placed in category C (62). In October of 1939, it was stated in the House of Lords that there would not be mass internment of enemy aliens, but rather some 1,000–1,500 aliens would be interned (13). This hopeful prediction was not to be, as conditions continued to deteriorate rapidly. Of course the refugee scholars in Britain also were now enemy aliens to be evaluated for internment. As the situation evolved, the SPSL, relocated to Cambridge because of the war, with Simpson now the secretary, would have to deal not with refugee scholars coming from other countries, but rather with freeing of refugee scholars from internment in Britain.

A. V. Hill Becomes a Member of Parliament

According to an English tradition, which originated early in the 17th century and continued until 1951, universities were allowed to elect representatives to Parliament. Hill was asked to run as a representative of Cambridge University, and he agreed to run as an “independent conservative” (34). Since University College London was evacuated and Hill’s laboratory closed after September of 1939, Hill had the time to take on the task of an MP. He was elected, by the Cambridge University graduates in February of 1940 with almost double the number of votes received by his opponent (9). Hill’s main interests as a MP included 1) assisting refugees, especially academic refugees, 2) improving public health, and 3) promoting international cooperation (8).

Hill was not able to take office until June because of a war-related mission that had been planned earlier. In 1935, Hill became a member of the Committee for the Scientific Survey of Air Defense chaired by Henry Tizard, the scientific advisor to the Air Ministry (the so-called Tizard Committee). Their principal task was to promote the initiation and development of radar for aircraft detection. Tizard asked Hill to go to the United States and Canada to promote the possibility of exchange of ideas and technology in the war effort. In March of 1940, Hill sailed to America. Upon his return to London in June, Hill generated two reports that advocated free exchange of information with the United States and Canada regarding the development of technology for the war effort. The work of the Tizard Committee and Hill’s mission to the United States are described in detail by Clark (6) and Phelps (44).

Collar the Lot: Mass Internment of Enemy Aliens

During the time when Hill was away from Britain from March to June of 1940, the world situation deteriorated dramatically, and the fate of the enemy aliens worsened (13, 62). In April, only one in 100 people interviewed suggested that the enemy aliens should be interned in mass (36). But public opinion toward the enemy aliens changed rapidly and dramatically when Germany invaded Norway and Denmark in April of 1940. The invasion of Norway was aided internally by a Norwegian Nazi organization, a so-called fifth column.  

6 During World War I, Hill formed and directed an Anti-aircraft Experimental Section within the Munitions Inventions Department. He led more than 100 scientists and mathematicians who learned how to aim supersonic shells to explode near fast-moving targets (63).

7 A fifth column is defined as a group within a country at war who are sympathetic to or working for its enemy. The term dates from the Spanish Civil War.

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cause of the fear of an invasion and a fifth column in Britain, now the press was clambering to “Intern Them All,” “Intern the Lot.” Things only got worse on May 10 when Germany invaded France and the Low Countries (Netherlands, Belgium, and Luxembourg). On the same day, Winston Churchill became the Prime Minister of Britain.

May was a pivotal month for the enemy aliens. During May, a sustained battle occurred within the British government over internment (13). Churchill’s Cabinet wanted all male enemy aliens (regardless of classification) in the southeast of England (where invasion might occur) between ages 16 and 70 yr (later 60 yr) interned. This area included the University of Cambridge and the London School of Economics (now in Cambridge). In the meantime, the London Sunday Chronicle editorial on May 12 stated (62):

Round up every enemy alien; every one of them is a potential fifth columnist, in plain words a traitor. However much he or she may profess to hate the Nazi regime the ties of the Fatherland may prove to be the temptation to betray us. Intern the lot—NOW!

The Home Office secretary Sir John Anderson instructed that all male Germans and Austrians between the ages of 16 and 60 yr in B Class were to be arrested, but he opposed mass internment (62). Internment was then extended to German and Austrian women in category B. However, 60,000 category C enemy aliens remained free. Now only one in 100 of the British population objected to the government’s internment measures, and the majority wished that all aliens should be interned (36). But there was more. On June 10, Italy declared war on Britain and France, and now the Italian aliens in Britain became enemy aliens. Churchill gave the instructions for the mass internment of all Italian men. About 4,500 were arrested and interned (59).

War (1936–1939), when General Emilio Mola, in 1936, leading four columns of troops toward Madrid, declared that he had a fifth column inside the city. The leader of the presumed fifth column in Norway was Vidkun Quisling (1887–1945), a Norwegian politician. A “quisling” in some languages is a person who collaborates with an enemy. In 1945, Quisling was tried for treason and executed (13).

Most were economic immigrants who had been living in England for a long time. By the end of June, the Home Office had agreed to mass internment of enemy aliens, and the mass arrest of category C enemy aliens began. After temporary internment in camps around England, the majority of the enemy aliens were transferred to internment camps on the Isle of Man. The War Cabinet stated that internment in Britain was no longer secure and recommended removal of all enemy aliens to Canada. Churchill was strongly in favor of removing all internees out of the United Kingdom. Canada agreed to accept 7,000 internees and Australia 6,000. In all, ~30,000 enemy aliens were interned during World War II. Less than 4,000 were women, and none of the women was sent overseas (62).

About 5% of these internees were scientists and other scholars. Thus the refugee scholars who accepted asylum in Britain now found themselves imprisoned. Max Perutz (43), a future Nobel Laureate, put it succinctly: “Having first been rejected as a Jew by my native Austria, which I loved, I now found myself rejected as a German by my adopted country.”

Parliament Debates Issues Relating to Internees and Refugees

A. V. Hill’s effective first date as a Member of Parliament was June 13, 1940. Hill’s attitude (8) was that “one’s nuisance value can be much greater if one is an M.P.” During the next 6 mo, there would be four major debates in the House of Commons on enemy aliens (62). The debates centered on government policy and treatment of enemy aliens in the various internment camps. Public opinion started to shift back to a more lenient attitude toward the enemy aliens when on July 2 the Arandora Star, transporting ~1,200 enemy aliens and German prisoners of war from Liverpool to Canada, was sunk by a torpedo from a German submarine with the loss of 650 lives. On July 10, the Dunera started its 2-mo trip to Australia with 2,800 enemy aliens. In the middle of July, indiscriminate internment of enemy aliens was halted (62). In all ~11,000 people were deported.

Enemy aliens may have been interned in mass, but they were not going to be released in mass. The question then became: under what conditions would the enemy aliens be released? It was in this climate that Hill made his first remarks as a MP. The Home Office was in the process of generating a Command paper (25) outlining conditions for release of enemy aliens from internment with an emphasis on release of those useful in the war effort. In the House of Commons on July 18, Hill asked Home Secretary Anderson the following question (25):

...in considering the categories of aliens who, in the absence of any suspicion on personal grounds, may be exempt or released from internment, will he interpret work of national importance as including contributions of significance to science and learning?

Anderson replied:

Yes, Sir. I shall be ready to give sympathetic consideration to any case where I am advised by bodies of recognised standing in the sphere of science and learning that an alien’s work is of importance for the promotion of science and learning.

This question and Anderson’s response were pivotal in seeking the freedom of enemy aliens who were scientists and scholars (see below). Eighteen conditions for release were stated in the Command paper of July 1940. There would be two more Command papers to follow, increasing the number of categories to 22 for release of “Civilian Internees of Enemy Nationality.” One of the added categories was in response to became, in 1962, the world famous MRC Laboratory of Molecular Biology (LMB) in Cambridge (45). He was baptized as a Catholic, but his grandparents were Jewish (58).

Four ships carrying a total of 8,115 aliens sailed to Canada from June 21 to July 7, 1940 (62). The Arandora Star was the second ship headed to Canada on July 2, 1940.

Command Papers are Parliamentary Papers presented to the United Kingdom Parliament nominally by command of the Sovereign, but in practice by a Government Minister. These papers are presented before Parliament as conveying information or decisions to which the Government thinks the attention of one or both Houses of Parliament should be drawn (68).
Hill’s question: “outstanding contributions to art, science, learning or letters.”

Hill joined other unrelenting advocates of the enemy aliens among the MPs, including Major Victor Cazalet (1896–1943), Eleanor Rathbone (1872–1946), Colonel Josiah Wedgwood (1872–1943), and Graham White (1880–1965), all experienced MPs. As members of the Parliamentary Committee on Refugees, Rathbone and White visited internment camps to assess the living conditions in the camps (62). A few quotes provide a tenor of some of the discussion during the debates in the House of Commons in the summer of 1940. During the debate on July 10, which lasted nearly 6 h, Major Cazalet (26) called the government policy “totally un-English” and said: “... all unwittingly, they have given some material to the German broadcasters as regards conditions in this country and the fact that we are now starting to pursue the Nazi policy of interning every Jew in the country...” In the House of Commons on July 23 (27), Home Secretary Anderson admitted that mistakes were made in the implementation of internment policy, but that general internment was evitable. He further stated that the government was trying its best to remedy them and to improve conditions, but stressed that for the moment internment had to remain the rule rather than the exception. Colonel Wedgwood sternly took Anderson to task by stating (28): “Is the right hon. Gentleman aware that the statement which he has just made misses the whole point? Instead of having categories to be left out of unjust imprisonment, there should be categories to be retained in imprisonment.” In the Commons debate on August 22 (29), Anderson spoke of “the very greatest reluctance and regret” with which he had departed from the policy that he had declared at the start of the war.

In September of 1940, Francois Lafitte (1913–2002) completed a book entitled The Internment of Aliens (37). Lafitte described what he perceived as the governmental panic in the round-up of political refugees from fascism. He described the often appalling living conditions of their internment. The book was remarkable in that it was a primary source of what happened to the enemy aliens, in his view, during the last half of 1940. The book was published in November of 1940, 9 wk after Lafitte finished writing it, as bombs were falling on London since the start of the London Blitz on September 7. Many years later, Gillman and Gillman (13) followed up Lafitte’s work with an investigation into the internal government debate about internment.

In September of 1940, Hill (21) summarized his feelings about internment in a letter in The Spectator entitled “Our Alien Friends.” He understood that wide internment was necessary but he emphasized that “... no advice was taken from responsible people who knew which of the aliens were our friends...” which he felt was “... in keeping with the previous inability to see who were our enemies.”

On December 3, 1940, Hill gave a powerful speech in the House of Commons (21). He utilized mocking humor to make an important point. He noted that it took 40 days for a letter from an internee on the Isle of Man to reach the Royal Society. Hill, ever the physiologist, calculated that the speed of the letter “works out at a quarter of a mile per hour or less than the speed of a tortoise.” The London Daily Telegraph amusingly challenged Hill’s speed of the tortoise analogy on December 6 (7). The Telegraph stated that experts that they consulted told them that no tortoise could travel that fast. The column cited as proof the speed of a tortoise that won a derby in Oklahoma City. Thus the Telegraph concluded that Hill should withdraw his allegation and make it clear that the Home Secretary’s department “moves three and a half times faster than the speed of a tortoise.” Not one to let good publicity on an important topic go by, not to mention some good fun in the process, Hill’s response was noted in the paper on December 11. Hill said that he was referring to Greek tortoises which move two and a half times faster than the Oklahoma tortoise because of the higher temperature in Greece.11 Obviously, communication was a serious problem for the interned aliens. The reasons for the slow communication seemed to be that the letters from an internment camp had to pass censorship at the camp of origin and then again in Liverpool (62) where there was a backup of 100,000 letters (4).

What was striking about the months of April to December 1940 was how the government practice regarding internment of enemy aliens changed frequently, almost weekly, and how public opinion regarding internment of enemy aliens also shifted back and forth. But probably most remarkable was that, in the face of war, there were frequent discussions and debates about the future of the interned enemy aliens in Parliament. Ronald Stent (62), a former internee, was the first to provide a coherent account of camp life, including the Isle of Man, Canada, and Australia. He was critical in many ways of government policy and action, but nonetheless had this to say about those debates in the House of Commons in 1940:

During those weeks, when the survival of the island literally hung in the balance, when there were myriads of urgent and complex questions crowding in on government, at that very moment the innate sense of fairness of many public and private people of Britain, their feeling that a grave injustice had been done to a lot ofhapless refugees, forced the government to devote time and effort to problems which were by no means intractable, but which were puny compared with the threat which the country was facing.

By the end of 1940, almost 10,000 internees had been released (13). Also, internees started to return to Britain from Canada and Australia. By the summer of 1942, fewer than 5,000 internees were still on the Isle of Man.

MP Hill detected the thought of talent being wasted. In the House of Commons on May 13, 1941 (30), Hill strongly supported the employment of refugee doctors in Britain and thought that it was appalling that over 1,000 doctors from Europe should be unemployed in Britain during the war. He felt that many of these doctors had great professional knowledge and skill, and to him it seemed to be “pure nonsense” that they should not be used. Ironically these comments came 3 days after the last major and largest raid of the war on London on the night of May 10–11 with nearly 1,500 killed and 1,800 seriously wounded. Even the House of Commons was bombed (65). Hill also argued in the House of Commons for the employment of refugee dentists and admission of women into London medical schools (31).

11 Hill was likely referring to the physiological observation that the speed of muscular contraction increases with a 10° increase in temperature by ~2.5-fold. Thus at a 10° higher temperature, the Greek tortoise would run 2.5 times faster than the Oklahoma City tortoise.
Beside the enemy aliens, MP Eleanor Rathbone also was deeply concerned about the Nazi massacres of Jewish and other victims and wanted the British government to do something about it. In 1943 she published, at her own expense, a 25-page pamphlet entitled Rescue the Perishing (46). It started out with a list of the members of the National Committee for Rescue from Nazi Terror. The long list included A. V. Hill. The appeal included a 12-point program of immediate rescue measures. In a debate on refugees in the House of Commons in 1943, Hill referred to Rathbone as "the patron saint of the refugees" (32). He acknowledged reality but also showed his disdain for British anti-Semitism:

The only way to save those lives and those values is to bring the war as soon as possible to a victorious end . . . . I think it is very necessary to be clear about that. . . . All we can possibly do is to offer help and asylum to those who are able, in one way or another, to get out. . . . It has been urged on the Home Secretary that a danger of anti-Semitism will exist, if more Jews are introduced here. . . . The country is said to be flooded with Jewish refugees; in fact 60,000 or 70,000 have come in since 1933. . . . That is one to 700 of our population, which seems to make a funny sort of flood. . . . It is said that the danger to our national traditions from having so many Jews here must be regarded; but our national traditions must be pretty weak things if people who make up rather less than one per cent of the whole can produce so great an effect.

Rathbone would continue her fight on behalf of enemy aliens and refugees. As late as 1944 she wrote Hill requesting his help with the release of a person still interned (15).

Even though nearly 30,000 enemy aliens were interned in mass before internment was halted in July of 1940, they were not about to be freed in mass. Arguments had to be made for the freedom of internees on an individual basis.

Society for the Protection of Science and Learning Works to Free Refugee Scholars from Internment during World War II

By the time that Hill returned to England on June 13, 1940 from his military mission to the United States and Canada, there was great concern at the SPSL for the future of the enemy alien scientists and other scholars (7). Simpson welcomed Hill back by stating that SPSL "had a great need of you." Mass internment was in progress, and Canada had agreed to accept enemy aliens. As a MP, biological secretary of the Royal Society, and a Nobel Laureate, Hill had the status to exert an influence on government policy regarding the internment of enemy alien scientists and scholars. The Home Office policy on freeing internees was not developed yet. On June 24, Hill wrote to the Home Office (7) requesting that the SPSL be invited to submit a list of those interned aliens J for whom it can vouch for their integrity and 2) it can state that their work is invaluable. The Home Office responded that it would welcome such a list. The Society decided to concentrate first on freeing scientists engaged in work of national importance. Hill then encouraged the President of the Royal Society, Sir William Bragg, to set up a small tribunal to evaluate interned scientists and to advise the Home Office as to whose work was deemed to be of national importance in the war effort. The Committee was set up in July and chaired by Bragg and included Hill (Biological Secretary), A. G. C. Egerton (Physical Secretary), C. G. Darwin (Director of the National Physical Laboratory), and D. M. S. Watson (Agricultural Research Council).

A mechanism now existed to help gain freedom for interned alien scientists. But Hill cautioned Simpson that this work would not be easy, as the reputation of both the Royal Society and the SPSL was at stake. In a letter to Simpson on July 15 (7), Hill emphasized that it was not possible for the Royal Society tribunal to determine whether an internee's work was important by a mere statement of opinion that the work was important. They had to know what the work was, and it had to be convincing. Simpson was the "heart and soul" of the SPSL, and it was through her efforts that dossier were prepared for release of internees. With regard to SPSL applications to the Royal Society tribunal, Simpson dealt directly with Hill. From June to December of 1940, Simpson wrote 61 letters to Hill dealing with the release of refugee scholars (7). Hill responded with 49 letters to her. Many of these letters dealt with queries about individuals, and most required further research and prompt action on the part of Simpson.

By the end of June, Simpson was deeply concerned that interned scholars who were nonscientists would be sent to Canada or Australia without the opportunity to return. Hill's question to Home Secretary Anderson and his response on July 18 in the House of Commons (see above) led to a formal government policy that opened the door for internees who had made outstanding contributions to art, science, learning, or letters. This edict broadened considerably the grounds for release and established a pathway for the release of refugee scientists and humanists. Sir Frederic Kenyon, Secretary of the British Academy, wrote to Hill on June 22 congratulating him on his success with the Home Office (7). The answer to his question in the House of Commons gave the British Academy exactly what it wanted. The British Academy then set up a tribunal to evaluate interned aliens for release. The tribunals of the Royal Society and the British Academy recommended to the Home Office the release of more than 500 scientists and humanist scholars (53). By March of 1941, most of the refugee scholars had been released, and the pressure on the SPSL office began to ease. By mid-1942, the release of refugee scholars virtually had been completed. The last application for release was made in 1943. Cooper (7) has quoted extensively the correspondence between Simpson and Hill from late June 1940 to March 1941 to provide insight into the efforts and frustrations of the SPSL in seeking freedom for interned refugee scholars. The correspondence makes clear the pivotal roles

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12 In 1929, Eleanor F. Rathbone was elected as an independent MP for the Combined English Universities and served in that position until her sudden death from a stroke in 1946. She was associated with many campaigns for social reform, including women's suffrage, human rights, and refugee issues. In 1938, Rathbone and three other MPs formed the Parliamentary Committee on Refugees. The Committee worked to better conditions in internment camps and to arrange the release of friendly aliens who were interned during the war. Rathbone's work on behalf of refugees and internees has been called her personal "finest hour" (42).

13 In 1939, Hill and Egerton prepared the Central Register of Scientific and Technical Personnel for the Ministry of Labour (34). The purpose was to ensure that, in case of war, the talents of scientific and technical personnel would be utilized appropriately.
played by Simpson and Hill in the freedom-seeking process. By the end of the war, over 2,000 refugee scholars were registered with the society, most of them Germans and Austrians. Refugees also came from Czechoslovakia, Italy, and Spain (8).

Tess Simpson and A. V. Hill had a deep admiration for each other. For Simpson, the SPSL was her life’s work, and she called the refugee scholars her “family of six hundred” (3). Simpson prepared the more than 500 dossiers of interned scientists and humanist scholars that were subsequently evaluated by the various tribunals. Cooper (7) has edited extensive conversations with Simpson, which describe her recollections of the AAC and SPSL. In September of 1940, Hill wrote Simpson to state: “...I can understand how busy you must be. I marvel at what you get done.” (7). Simpson’s respect and admiration for Hill is apparent in a letter that she wrote to him on December 30, 1942 (54):

I would not like to let this year go by without telling you how I appreciate the help you have given this Society. I am not exaggerating when I say that no other individual could have achieved so much in so short a time, not only for refugee scholars, but for anti-Nazi refugees generally.

Hill responded on January 1, 1943 (55) that he was very glad that she had found what he had done helpful. Then Hill added: “Have been glad to do—though not glad that it should need to be done.”

The number of refugee scholars saved through the efforts of the SPSL may seem small compared with the number of refugees. But their cultural impact was enormous. In 1983, Simpson generated a list of refugee scholars and their children who went on to distinction (7). Among others, the list contains the names of 16 Nobel Laureates, 80 fellows of the Royal Society, and 34 fellows of the British Academy. It also is important to understand that, whereas the majority of the refugee scholars did not become Nobel Laureates or fellows of learned societies, they nevertheless contributed to the store of knowledge, culture, and learning in Britain and elsewhere.

How did the interned scientists and scholars view their past experiences? Of course, there is no single opinion. Cesarani and Kushner (5) have provided a general assessment. In their view, the former internees did not want to dwell on their experience for several reasons. Foremost was the desire not to appear ungrateful. There was a sense of debt to the country that had offered them asylum. Also, for some, their position was still vulnerable. For the majority, internment was a short-lived experience. The former internees tended to emphasize the release process as an example of British fairness. Ronald Stent (62) has summarized his criticisms of the internment process. It was not the indiscriminate internment that he criticized but rather the arbitrary way in which it was started, carried out, and then stopped; the petty restrictions; the insensitive news blackout; the delays in family correspondence; the slow progress of the release; the confusion of the overseas deportations; the herding together of refugees and Nazis; the inability to organize useful work inside or outside the camps; and the incarceration of so many who, under the original Home Office instructions, should never have been interned at all.

Thus from 1933 to 1939, the AAC (then the SPSL) helped refugee scholars who “had been driven from their places of work” find asylum and opportunities to continue their work in Britain and elsewhere. Then came the war and internment, and the SPSL responded by seeking freedom for interned scientists and scholars. Looking back at those years, Simpson has said (7) that she was amazed at the wisdom shown by the SPSL Executive Committee because “they were only academics.” Hill has summed up his feelings about those years with the SPSL this way (1): “...those of us who took any part in it are moved with humility as well as pride when a friend, sometimes an eminent friend, reminds us how we got him out of goal [sic]14, or rendered him some other minor service which he has not forgotten, but we have. Tolerance and intellectual freedom cannot be established once for all in human society, but demand continual watchfulness and effort.” In looking over the record, one gets the impression that Hill’s efforts to promote intellectual freedom and to help the refugee scholars were indeed, as Katz (34) has stated, the way in which Hill “exerted his most important influence on other people’s lives and on the course of events.” These years may well have been among the “finest hours” of A. V. Hill, the man.

Going Back to the Laboratory in 1945

In November of 1943, Hill traveled to India on behalf of the Royal Society. He stayed in India until April of 1944 to assess the state of India’s scientific establishment and to generate a report for the Indian Government in August of 1944 with recommendations for improvement (34). Soon after arriving back in London, D-Day commenced on June 6. The first of the V-1 flying bombs (“buzz bombs”) hit England that June, followed by the V-2 long-range rockets in September (65). The war in Europe finally ended when Germany surrendered on May 7 of 1945. The Junior MP representing Cambridge University gave his last speech in Parliament on June 14, 1945 in which he discussed the future of India (33). In looking back over his years in Parliament, Hill expressed his respect for his MP colleagues (21):

Five years in Parliament, particularly in those heroic days (1940–45), cured me—if I needed curing—of any vulgar prejudice against politicians. In fact, for most of my colleagues there I conceived a sincere regard and affection, not only (if I may say so humbly) for their fundamental humanity but also for their devotion to the institutions of Parliament and their sagacious realization that politics is the art and science of practical government.

In November of 1945 Hill completed his 10-yr term as biological secretary of the Royal Society.

In late 1945 Hill, now 59 yr old and away from research for 5 and 1/2 yr, had considerable trepidation about his ability to contribute to scientific thought because his mind had become “scientifically rusty” (34). But contribute he did for over 20 more years. By the late spring of 1946, his University College London laboratory was functional once again. Hill’s enthusiasm for research had not abated. He mentioned with pleasure that he celebrated his 60th birthday by obtaining the first records of muscle energy liberation using a cathode-ray oscilloscope (22). This means of recording was much faster than any made before, and opened up new experimental possibilities. His first post-war publications appeared in 1948 and then

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14 “Gaol” is a British term for jail. In the original quotation in Bentwich (1), “gaol” is spelled incorrectly as “goal”.

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continuously thereafter through 1964 (22). Of the total 68 publications during that time, Hill was the sole author on 43 of these papers. University College London set up its own biophysics department in the autumn of 1951 with Hill as its head until December when he “retired” at age 65. After 4 yr in the Royal Australian Air Force as a radar officer, Bernard Katz returned to University College London as an assistant research director at Hill’s invitation. In fact, he and his wife lived for 2 yr at the top of Hill’s house in Highgate. Katz became the head of the newly created biophysics department in 1952. Hill (22) then generated a monograph entitled *Traits and Trials in Physiology*, in which he provided comments on each of his over 200 publications. Finally, at 84 yr of age, Hill ended his scientific endeavors by “gathering up the threads” with a monograph entitled *First and Last Experiments in Muscle Mechanics* (23). Katz (34) has described Hill’s post-war scientific work in detail. One cannot help but wonder how the tranquility of the laboratory compared with the turbulence of Parliament during the war.

*Continual Promotion of International Cooperation in Science*

Hill maintained his international commitment to intellectual freedom after the war as he served as the chairman of the Executive Committee of SPSL from 1946 to 1956 and then served as the president from 1956 to 1963 (67). In 1978, Simpson retired as secretary of the SPSL. The SPSL evolved into the Council for Assisting Refugee Academics (CARA) in 1999 and then into the Council for At-Risk Academics (CARA) in 2014, which is active today (www.cara.ngo). Thus CARA can trace its existence continuously back to the AAC of 1933.15

*Hill Receives Many Honors after the War*

After the war, A. V. Hill received 10 honorary degrees and other awards. Some of these awards included the Companion of Honor for outstanding service of national importance (1946), the Medal of Freedom (U.S.A.) in honor of his civilian service during WWII (1947), the Copley Medal from the Royal Society for outstanding achievements in research (1948), and the Legion of d’Honneur (France) (1950). For a full list, see Katz (34).

In December of 1966, former refugee scholars showed their gratitude to Hill by honoring him on his 80th birthday. On the occasion organizer William S. Feldberg stated: “never before . . . have so many people sat down together who spoke English in so many different dialects” (8). Of course Hill was asked to give a speech. He said that he spoke for all of those who were proud to have been a part of helping the refugee scholars from 1933 to 1941. Hill emphasized that the “proudest of all” should be Esther Simpson who was in attendance at the banquet. He went on to discuss the notion of gratitude which was the prime motive of the party (8).16

I know that personally I deserve only a small part of it, but someone had to be spokesman for those who deserve the rest. I found in the dictionary a pleasant definition of gratitude: ‘respectful sympathetic affection’. It does not suggest any sense of obligation and it can be mutual between parties involved. I like it very much. One can have a strong sympathetic affection for a person whom one has had the honour and joy of helping in time of need. Indeed, in this case, it is mixed with admiration for the courage and good humour with which they met their difficulties, so making ours easier.

In 1970, the famous German physiologist Hans H. Weber (1896–1974), who remained in Germany throughout the war, wrote to Simpson to request some information about Hill (56). In the letter, he said: “…I think it necessary to mention all merits of A. V. as the scientist who probably did the most of all scientists in the world in favour of the Jewish people of Germany.”

*In the End*

Esther Simpson was proud to be invited to A. V. Hill’s 90th birthday celebration organized by Bernard Katz. She wrote to Hill on September 26, 1976 (57):

Looking forward to your ninetieth birthday I look back, with so much gratitude, on our long friendship. I think of the immeasurable help you have given to innumerable people at times of anguish and stress, and not only to ‘our’ scholars and their families. With wonder I think of your great kindness to me over the years, of your unobtrusive thoughtfulness and consideration—and of your humour, which enlivened so many sessions of our various committees. . . . I have no really adequate way of expressing my appreciation, and that of countless others, for all you have meant in our lives, so I just thank you, and hope we shall celebrate many more of your birthdays . . .

Simpson’s last letter to Hill was written on April 21, 1977. It ended a 40-yr correspondence between two old friends. Hill died on June 3, 1977 at 91 yr of age, and Simpson died on November 19, 1996 at 93 yr of age.

In the end, this extraordinary story of the refugee scholars turns out well. This is true largely because of the quick action of William Beveridge to create the Academic Assistance Council and the sustained, unrelenting commitment of A. V. Hill and Tess Simpson to the refugee scholars and to the principles of free learning. But one still is left with Hill’s cautionary comment (1): “Tolerance and intellectual freedom cannot be established once for all in human society, but demand continual watchfulness and effort.”

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AUTHOR CONTRIBUTIONS

J.A.R. conceived and designed the research; performed research; analyzed data; interpreted results of research; prepared figures; drafted manuscript; edited and revised manuscript; approved final version of manuscript.

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