Ophthalmologists admire Lucien Howe, MD (1848-1928) (Figure 1), for his leadership and philanthropy. During his presidency of the American Ophthalmological Society (AOS), the organization established an award for contributions to ophthalmology, now known as the Howe Medal (Figure 2), one of the highest honors in the specialty. In addition, there are 2 other Howe Medals and a Howe Award, each of which is given at irregular intervals. The American Medical Association’s Lucien Howe Prize Medal in Ophthalmology was first given in 1926. The University of Buffalo (The State University of New York) and the Buffalo Ophthalmological Society have given a Lucien Howe Medal in Ophthalmology since 1928. The Medical Society of the State of New York’s Lucien Howe Award was established in 1906.

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Toward the end of his life, Howe founded a research laboratory at the Massachusetts Eye and Ear Infirmary of Harvard Medical School, which is now named the Howe Laboratory of Ophthalmology, and funded it with gifts totaling approximately $500,000 (in 1920s currency). After more than 50 years of practicing ophthalmology in Buffalo, New York, he moved to Cambridge, Massachusetts, to become the first director of the laboratory. Its library also bears his name. Howe was a leader of several other medical organizations. He held high office in the Medical Society of the State of New York and was chair of the Section of Ophthalmology of the American Medical Association. As a leader he advocated social reform, often through legislative action, but was only partially successful.

This article explores Howe’s influence on the American eugenics movement. It also explores his support of policies for eugenic sterilization and marriage restriction of individuals diagnosed as having hereditary blindness.

Howe was born in the home of his paternal grandfather, a physician in Standish, Maine. Four weeks after he was born, his father, a cavalry officer in the US Army, took the family on a long and harrowing trip overland to Santa Fe, New Mexico. The US Army was defending territory recently obtained in the Mexican-American War (1846-1848) against warring Native American tribes. During his teens, Howe was sent to a monastic school in Kentucky, but the Civil War caused the closing of that institution. He returned to Maine to be a resident student with a Unitarian minister and then followed his older brother to Bowdoin College, graduating in 1870. (Bowdoin later awarded Lucien Howe an honorary Doctor of Science degree.) Like his father, Howe’s brother became an army officer but was killed during an expedition against the Modoc tribe in Oregon. Howe went on to study medicine at Harvard Medical School, Long Island College Hospital, and the Bellevue Hospital Medical College, where he received his medical degree in 1872. After a grand tour of European medical centers, Howe established a practice limited to the eye, ear, nose, and throat in Buf-

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Naples, Italy (1909), for the best additional Ophthalmological Congress in the State of New York to study the ocular muscles and to a 2-volume text on the ocular fundus immediately after death. During the 1890s, abnormalities of the extraocular muscles were believed to cause multiple problems. Howe investigated and wrote articles that were awarded prizes by the Medical Society of the State of New York in 1901 and 1902. His studies led to a 2-volume text on the ocular muscles, which is considered one of the most important ophthalmic books of the 20th century. He was awarded a medal at the International Ophthalmological Congress in Naples, Italy (1909), for the best apparatus displayed, an instrument to measure the force generated by the horizontal ocular muscles.

At the time Howe began his practice, blindness from infectious disease seemed to be increasing rapidly in the United States and abroad. He chaired committees formed by the AOS and the Medical Society of the State of New York to study the problem. President Grover Cleveland, a friend, provided him with a letter of introduction to facilitate his travel to areas of the world where infection was common. Howe went to Egypt and Syria in 1887 and lived with Bedouins in the desert in areas made dangerous by war and disease. Howe's work led to an article on the role of flies as vectors in transmitting ocular infection.

During the early 1880s, the German physician Carl Crede, MD (1819-1892), showed that silver nitrate could prevent ophthalmia neonatorum, the ocular infection in infants caused by gonococcus. The AOS committee chaired by Howe recommended legislation to make reporting cases mandatory, to restrict immigration as a way to prevent the importation of infectious eye diseases, and to reduce public expenditures for blind immigrants. Howe delivered a paper in French on this subject before the French Ophthalmological Society, which made him an honorary vice president. Howe labored for years on this legislation. Although instillation of silver nitrate in the conjunctiva just after birth was known to be effective, few nurses, midwives, or physicians treated newborns in this manner until compelled to do so by law. The draft of the first law was drawn up in Howe's Buffalo office. After many years of defeat in the New York legislature from physicians who wanted neither legal restraints nor political divisions with midwives, the Howe Law was finally passed in 1890 without opposition, and many other states followed.

Howe also advocated legislation to prevent hereditary blindness. In his opinion, the cost of inherited blindness should be borne by the family rather than society. He was appalled that ophthalmologists described cases but did nothing about the problem. This was a pattern he recognized again, probably to his chagrin, in a report of a family that included 8 cases of an undefined form of glaucoma in 3 generations. To eradicate hereditary blindness, Howe supported eugenic sterilization of the blind but believed "the public is not yet ready for it." After the penal logic of bonding a criminal, Howe offered an alternative to sterilization: if an applicant for a marriage license has a blind relative, he or she must post a bond sufficient to support and educate a blind child. Howe's proposal recommended a bond of $14,000 and aimed to limit "the production of defective offspring."

EUGENICS

At the beginning of the 20th century, a substantial segment of the American middle and upper classes believed that scientific advances, especially genetics, could be used to
solve pressing social issues. Specifically, these reformers, known as eugenicsists, thought that American society could be improved through “better breeding,” restricting the reproduction of the “unfit” and encouraging the reproduction of the “fit.” As President Theodore Roosevelt (1858-1919) put it, “I wish very much that the wrong people could be prevented entirely from breeding, and when the evil nature of these people is sufficiently flagrant, this should be done. Criminals should be sterilized, and feeble-minded persons forbidden to leave offspring behind them . . . The emphasis should be laid on getting desirable people to breed.”17 For the first 4 decades of the 20th century, many scientists around the globe supported eugenics, believing it could serve as a vehicle for the biological and social betterment of individuals and societies. In the United States until the 1940s, eugenicsists attracted a wide array of adherents from across the professional and political spectrum, all of whom seemed to hope this new doctrine could usher in a shining modern era of better children, healthier families, and biologically strong and resilient populations. In retrospect, the biases of eugenicsists—whose idea of “better” usually meant the denigration of poor, working class, immigrant, and minority groups—are disturbing and seem to violate cherished American ideals of meritocracy and universal liberty.

The leader of the American eugenics movement was Charles Davenport, PhD (1866-1944). In 1902, Davenport met Sir Francis Galton (1822-1911), Charles Darwin’s cousin and the scientist who coined the word eugenics (meaning “well born”) in 1883. Galton believed that selective breeding could be done for humans just as it had for animals and plants. He thought it possible to create a highly advanced group of people through selective breeding. In England, the main concern of eugenicsists was positive eugenics, i.e., increasing the progeny of the nobility, who tended to have few children. In contrast, in America, eugenicsists focused much more on negative eugenics, i.e., the prevention of reproduction by “undesirables.”

Davenport was the director of 3 institutions at Cold Spring Harbor, New York: the Eugenics Record Office (ERO), the Biological Laboratory of the Brooklyn Institute of Arts and Sciences, and the Station for Experimental Evolution. He was a skillful fundraiser and obtained money for his organizations from 3 major philanthropic sources: the Carnegie Institution for Science, the widow of the railroad entrepreneur Edward H. Harriman, and John D. Rockefeller. These resources placed him in a powerful position within the scientific community. The ERO existed from 1910 until its funding was withdrawn in 1939. The other 2 institutions, the Biological Laboratory and the Station for Experimental Evolution, merged in 1962, and the continuing entity, the Cold Spring Harbor Laboratory, remains an important research facility. James D. Watson (born 1928), the codiscoverer of DNA structure with Francis Crick (1916-2004) and Rosalind Franklin (1920-1958), was director of the Cold Spring Harbor Laboratory for 35 years. He has described American eugenics under the leadership of his predecessor Davenport as “sloppy genetics for the legitimation of class stratification.”18 Although Davenport considered himself a concerned idealist, history has not been as charitable. Instead, scholars view Davenport primarily as “an opinionated mischief maker”19 whose theories of eugenics “led to a dubious sterilization movement and a blatant discriminatory immigration policy in the 1920s that effectively barred eastern and southern Europeans from entering the United States.”

Surprisingly, Davenport’s early work can be considered good contemporary science. He and his wife, also a scientist, published a series of important articles on human heredity, including studies of the color of the iris, skin, and hair. Later, Davenport’s interest in human heredity combined with his class and racial prejudices led him to eugenics. In the 1909 annual report of the Carnegie Institution, he wrote that the applicability of recent knowledge about heredity for human affairs was too obvious to be overlooked.20 In 1911, before his relationship with Howe developed, Davenport published an influential book, Heredity in Relation to Eugenics, in which he devoted an entire section to inherited eye disease.21 In keeping with his eugenic concern about the deleterious social impact of hereditary eye diseases, Davenport offered reproductive advice to individuals with inherited forms of cataract and glaucoma. Davenport also discussed marriages between biological relatives and asserted that mental deficiency is frequent in consanguineous marriages.21(p187) Lucien Howe must have been most interested in Davenport’s statements; he and his wife, née Elizabeth Mehaffey Howe (1860-1942), who were first cousins, never had children.

HOWE’S INFLUENCE ON THE AMERICAN EUGENICS MOVEMENT

In 1915, Howe’s budding interest in questions of heredity prompted him to write to Davenport and ask for data about familial eye disease. He was working on a bibliography of hereditary eye disease and hoped to obtain useful family pedigrees. Davenport offered assistance and asked to republish Howe’s monograph as an ERO bulletin when it was completed. Because Davenport devoted most of his energy to the Station for Experimental Evolution, he delegated further correspondence to his deputy, Harry Laughlin, ScD (1840-1943), the superintendent of the ERO. Laughlin was also a lobbyist to state legislatures on behalf of compulsory sterilization laws and helped create the model eugenic laws later copied by the Nazis. According to science historian Daniel Kevles,22 Laughlin was a hard-line eugenicist who believed that immigrants, racial minorities, and persons with disabilities were tainting the American gene pool with their defective “germ plasm.” In the early 1920s, he held the title of expert eugenics agent and testified repeatedly to the US Congress about the inferiority of racial groups from southern and eastern Europe, ultimately helping to craft the highly restrictive National Origins Act of 1924. Laughlin’s thinking was parallel to that of many of his contemporaries in Nazi Ger-
many. Indeed, Laughlin was given an honorary doctor of medicine degree from the University of Heidelberg in 1936 “in recognition of studies made on human heredity and population analysis and control.”

Laughlin was particularly interested in promoting eugenic sterilization, and he lobbied state legislatures to push for the passage of compulsory sterilization laws that later informed Nazi legislation. In 1918, Howe wrote to Laughlin that World War I and the influenza pandemic slowed scientific progress and thus prevented him from obtaining important German references for his compendium of articles on hereditary eye disease. He described his frustration several months after the armistice with Germany began: “If our President will stop theorizing about a league of nations and hurry up the peace with Germany, I can hope to receive the desired journals and finish the bibliography.”

Laughlin encouraged Howe, writing, “I am sure that the world of medicine and genetics will find in this publication a reference work of permanent value, and not only that but it will be constantly referred to as a source book for students of the problems covered.” The ERO published it in 1921.

Following this correspondence, Laughlin invited Howe to become a member of the Eugenics Research Association, a research and advocacy organization attached to the ERO, and Howe happily joined (Figure 3). By 1927 Howe had risen to presidency of the Eugenics Research Association, an accomplishment that Laughlin applauded, foreseeing a year that would “doubtless be marked by activity on the part of the Association in efforts to prevent hereditary blindness. Certainly no single activity could be more worthy of the society’s works.” During his decade of Eugenics Research Association membership, Howe’s primary goal was to push legislation aimed to reduce hereditary blindness. Howe worked through several organizations to achieve his ambition: the Eugenics Research Association, the AOS, the Medical Society of the State of New York, the National Society to Prevent Blindness, and the Section of Ophthalmology of the American Medical Association. One of Howe’s greatest concerns was what he perceived to be high numbers of people with hereditary blindness in American society. In 1918, when he first had contacted Davenport and Laughlin, Howe had presented a paper on hereditary blindness at the annual meeting of the American Medical Association Section of Ophthalmology. He noted that there were at least 100,000 blind people in the United States and approximately 8000 were blind owing to hereditary causes. Howe wrote, “It is unjust to the blind to allow them to be brought into existence simply to lead miserable lives. It is unjust to taxpayers to be compelled to support them. The longer we delay action to prevent this blindness, the more difficult the problem becomes. A large part, if not all, of this misery and expense could be gradually eradicated by sequestration or by sterilization, if the transmitter of the defect preferred the latter.” Laws permitting sterilization under certain circumstances existed in 12 states and were under consideration in several others; Howe wanted to expand the criteria to include hereditary blindness.

Under Howe’s guidance a questionnaire was sent to institutions for the blind, asking about the number of blind students, the causes of blindness, family history of blindness, and cost of tuition. This survey suggests that Howe hoped to gather information from institutional physicians that could identify inheritance patterns of various eye diseases. For example, the fourth question in the survey asked, “Do the family histories of hereditary or of congenital blindness, or both, furnish data as to the existence of dominant or recessive tendencies in those families, sufficiently well marked to warrant the legal prohibition of a marriage or the sequestration or sterilization of either the man or wife?”

During this period, eugenicists were eager to determine whether a wide range of afflictions, ranging from bona fide medical conditions to behavioral or personality traits, were caused by genes and transmitted in dominant, recessive, or sex-linked patterns. In hindsight, eugenicists’ understanding of human heredity was exceedingly simplistic and far from grasping the complexity of multifactorial inheritance.

Howe hoped to use these data to calculate the “cost of these defects,” a point that he believed would resonate with politicians and legislators. Laughlin told Howe that he hoped that the data would be useful for “practical eugenic purposes in cutting off the descent lines of individuals carrying the potentiality for offspring with seriously handicapping eye defects.” Laughlin agreed with Howe’s plan to have the cost of rearing “defectives” borne by the family: “it presents in very clear and clean cut manner to the average tax payer the problem of paying for social inadequates from the

Figure 3. Eugenics Research Association membership card of Lucien Howe, 1918. Eugenics Record Office records. Courtesy of the American Philosophical Society, Philadelphia, Pennsylvania.
purse of the tax payer.”

Howe continued to advocate against hereditary blindness at the Second International Congress of Eugenics, held at the American Museum of Natural History in New York, New York, from September 22 through 28, 1921. Howe presented a paper on inheritance of eye defects that was well received, helped Laughlin (the chairman of the exhibits committee) create family trees about blindness, and advised Laughlin as to which instruments to display concerning anthropometry of the eye. Given the conference participants’ heterogeneous viewpoints and wariness about too loudly supporting eugenic laws currently being contested in state courts around the country, Howe and Laughlin’s push for eugenic legislation was met with lukewarm support. Nevertheless, Laughlin encouraged Howe to persevere: “Your splendid work and leadership of the committee which seeks practical results, should, I think, certainly not be discouraged by this episode, but proceed along the original lines, seeking to make the Eugenics Research Association and the American Medical Association agencies for verifying to the public the quality of research and the firmness of the proposition set forth.”

Howe wrote to Laughlin that adverse criticism of his legislative plan revealed they had “tried to legislate against too many hereditary defects, some of them difficult to diagnose. It would be better to limit the legislation to hereditary blindness, insanity, epilepsy and possible hereditary syphilis.” (Ironically, Laughlin later developed epilepsy. He drove his car into a tree at Cold Spring Harbor and was fortunate that the tree’s presence kept him from drowning.) Howe realized that he needed more data on cost and legal assistance to draft legislation. Toward this end, he went to Harlan F. Stone (1872-1946), dean of Columbia Law School, who later became the US attorney general and chief justice of the US Supreme Court. Stone must have been sympathetic because he was known to be “troubled by influx to the bar of greater numbers of the unfit.” Stone advised Howe to narrow his focus: “it would be better to concentrate all efforts on the passage of a law for the prevention of blindness than to make the law so broad that it would cover other defects and therefore arouse a good deal of opposition.” The legislation became a class project at Columbia Law School.

Howe believed that the best proposal was the one they considered presenting to the Second International Eugenics Congress on sterilization of “defectives.” Because this had little chance of passage, Howe proposed bonding, ie, posting money to protect society against the cost of raising a blind child. He wrote, “If the hereditary blind whose intended marriage has been adjudged to be dangerous, prefer to go to prison at the expense of the taxpayer that would probably be cheapest for the community and kindest to possible children.” The most important things, Howe continued, are, “First, to have the people learn in some way the dangers of cacogenic [dysgenic] marriages. Second, as other methods of education have thus far proved largely ineffective, it is desirable to have some law, even an imperfect one, which will emphasize the desirability of marriages which are eugenic. Third, in as much as very many surgeons and the majority of legislators are still opposed to sterilization the next best thing is this bonding principle.”

Laughlin agreed and asked Howe if he could secure the adoption of “marriage laws for the prevention of the production of degenerates . . . you will have deserved the honor of the eugenical world.” He described bonding as “one feature in the general principle which requires each state, community and family to be responsible for its own degenerates.” The alternative, Laughlin continued, was deportation. Laughlin noted that he had been consumed with work on immigration and had not been able to devote his time to eugenics: “It may interest you to know that I had a very interesting hearing before the Committee on Immigration and Naturalization of the House of Representatives on November 21st.” Howe was not active in the immigration issue but certainly agreed with Laughlin. He wrote, “Those efforts in regard to the deportation of aliens are of enormous importance. Although the gains are already great, the ultimate benefits to the nation can hardly be estimated.” These comments show that Howe accepted the many tenets of the mainline eugenics movements in the United States, including the belief that non-Nordic or non-Anglo-Saxon immigrants, above all Italians and Jews, were undesirable and unfit for inclusion into American society.

In addition to adhering to the scientific racism characteristic of American eugenics, Howe lauded the 1927 US Supreme Court decision in Buck v Bell that upheld the constitutionality of compulsory sterilization for “feebleminded” individuals and individuals with other putative mental disorders. The majority opinion (8-1), written by Chief Justice Oliver Wendell Holmes, Jr (1841-1935; served on the Supreme Court 1902-1932), upheld the constitutionality of the sterilization law of Virginia. He wrote, “It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. The principle that sustains compulsory vaccination is broad enough to cover cutting the Fallopian tubes . . . Three generations of imbeciles are enough.” Howe wrote Laughlin that this ruling “concerned the right of states to protect themselves by the sterilization of criminals or others.” He shared with Laughlin the belief that reproductive control of the “feebleminded” should also be applied to individuals with hereditary blindness, and he spent much of the 1920s pushing for the passage of such restrictive policies.

Howe believed that the National Society to Prevent Blindness was opposed to legislation on hereditary blindness for sentimental reasons. He noted that “the facts are on our side, and we may as well take a definite stand now. I am ready to take the inevitable hammering. Your group...
must help me as far as possible to avoid too many mistakes."

The opposition that Howe encountered was more than just sentiment, however. The decade of the 1920s, in which Howe most actively pushed for restrictive laws, in many ways was a watershed era for blind people in America, as special education programs for students and teachers began and the wider dissemination of Braille technologies and radio allowed greater communication.

In 1928, Laughlin congratulated Howe on his 80th birthday: "I have admired you greatly as a man and a friend, and have the greatest respect for your scientific work. Certainly you have made a permanent mark in the development of science, and we shall treasure highly your work in human heredity." Howe thanked Laughlin "for taking the trouble to send your greetings to an old man, who passes probably his last milestone." Howe's prophecy was correct; he died later that year.

**CONCLUSION**

Howe was a pioneer in ophthalmology who advanced the field in clinical care and research. Significantly, he paved the way for important research on the hereditary components of eye diseases and raised awareness of the role of inheritance in certain ophthalmologic conditions. However, Howe's perspicacious intellect also drew him into eugenic concepts that were on the cutting edge of thought at the time. Today we would consider those ideas to be faulty science and biased against people with disabilities, immigrants, and racial minorities. Perhaps Howe's class background, as the son of a New England family proud of its role in forging America through westward Native American wars, inclined him toward early 20th-century eugenic thinking, which celebrated Anglo-Saxon ancestry and sought scientific progress in the name of race betterment. Although by most accounts Howe was an excellent and conscientious physician, providing specialty care to those with debilitating eye diseases, his correspondence to Laughlin expressed a great deal of antipathy toward individuals with hereditary blindness, which he viewed as a biological and economic burden on society. Perhaps Howe's biggest mistake, in retrospect, was to view an individual's potential social contribution solely through the prism of his or her disease. Even as Howe expressed such discriminatory attitudes, he was making major advances in a field that would help to treat humanely and cure patients with a wide array of ophthalmologic disorders. On balance, Howe's contributions to the American eugenics movement appear to have been subtly important, insofar as he helped to expand the category of "undesirables" to include individuals with hereditary blindness and to label these conditions as "defective" along the lines of mental incapacity or insanity. Yet Howe died before the eugenics movement peaked in the United States and did not live to see the atrocities committed in Nazi Germany, so we will never know whether his attitudes would have changed in light of historical events.

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