Gonville & Caius
UNIVERSITY OF CAMBRIDGE

CONTESTED LEGACIES

R.A. Fisher in retrospect

Exhibition curated by Alex Aylward

CONTESTED LEGACIES

This exhibition examines the life, work, and legacies of Ronald Aylmer Fisher (1890–1962), a former student, Fellow, and President of Gonville and Caius College. In June 2020, following a student-led campaign, the College Council voted to remove a stained-glass window commemorating Fisher from the College dining hall.

The months following saw the publication of a steady trickle of articles and think-pieces from biologists, historians, and science-writers — some defending, and others criticising, the College's decision.

The purpose of this exhibition is not to celebrate nor to condemn, not to make the case that Fisher should or should not be memorialised. Indeed, it seeks to move away from the "balance-sheet" approach of most commentary on the window controversy, wherein Fisher's *good* aspects (his unquestionably important contributions to science) are weighed against the *bad* (his eugenics advocacy and his racism). Such discourse tends to conflate *History* (the scholarly study and interpretation of the past) with *Heritage and Memory*. Decisions regarding the latter — how, who, and what we choose to memorialise — rarely follow straightforwardly from disinterested consideration of the historical facts of the matter.

In every heritage decision, there is an ineliminable and constructive role for the values which the decision-makers hold dear, and which they wish to project out into the world.

Part of the exhibition's aim is to place the recent debates about Fisher's legacy into a longer historical perspective. The global Black Lives Matter movement, and well-publicised decisions to remove the names of prominent eugenists from the University College London campus provided catalysts and precedents for the *#FisherMustFall* campaign of 2020. But controversies surrounding Fisher's eugenics and racial views have a longer history. His views were challenged and critiqued by some of his scientific contemporaries, while historians of science have been shining a light on Fisher's eugenical commitments since the 1970s. The words and actions of the last couple of years, then, can be seen as the latest episode in a long-run story.

Legacies of the past are not static. They change and evolve. This exhibition attempts to capture some of the agency involved in these processes, paying attention to the work done by various parties in building, defending, challenging and critiquing Fisher's legacies.

Dr Alex Aylward

R.A. Fisher in 1912, courtesy of Rare Books & Special Collections, Barr Smith Library at the University of Adelaide

R.A. Fisher in retrospect

Image of the stained glass window commemorating R.A. Fisher designed and made from the work of Prof AWF Edwards by Maria McClafferty.

R.A. Fisher, courtesy of the Master and Fellows of Gonville & Caius College, photographed by Antony Barrington Brown

Eugenics in Cambridge

Eugenics is among the major themes of the exhibition, just as it was a significant aspect of Fisher's life and work.

The University of Cambridge and its Colleges provide a highly appropriate space for reflecting upon the history and legacies of eugenics. Nowadays, eugenics is most strongly associated with the horrors of state-mandated genocide and sterilization in Nazi Germany. However, long before WWII, the harmful ideology of "race improvement" was pervasive in Britain's elite institutions. A century ago, Cambridge was something of an epicentre of the British eugenics movement, boasting the most active student Eugenics Society in the country, and educating and employing some of the country's most prominent eugenists — Fisher included.

Some of the items on display here show the extent to which eugenics was a normalised aspect of intellectual and social life in Cambridge generally, and at Caius in particular. At the same time, we also see that eugenic ideas, and their advocates, have always been met with active resistance. Much work remains to be done in understanding these histories, and addressing their legacies. It is hoped that this exhibition— consisting mostly of local resources, drawn from collections here in Cambridge — can provoke and inform reflections and conversations on these issues.

Case one: Fisher at Caius

Gonville and Caius College, ca. 1909-12

Ronald Aylmer Fisher was born into middling prosperity in Finchley, North London, in February 1890. Educated at Harrow, Fisher's precocious ability in mathematics was in evidence throughout his decorated school career, and he entered Gonville and Caius College on a scholarship in 1909. After taking a first in the Mathematical Tripos in 1912, Fisher stayed in Cambridge an additional year to study statistical mechanics under celebrated physicist and popular science author, Sir James Jeans. This photograph shows the College as it looked during Fisher's time as a student. He would later return to Caius as a Fellow, and serve as College President.

Gonville and Caius College Archives

R. H. Lock, Recent Progress in the Study of Variation, Heredity, and Evolution (2nd ed., 1909)

Though his formal studies were in mathematics, Fisher read widely in history, literature, and especially biology. This book is Caius' copy of R. H. Lock's early genetics textbook *Recent Progress in the Study of Variation, Heredity, and Evolution* (2nd ed., 1909). We know that the student Fisher studied this text closely, as evidenced by marginal annotations in his hand (identified by Professor Anthony Edwards). A committed Darwinian since his school days, Fisher encountered the new science of Mendelian genetics at Cambridge (Gregor Mendel's experiments with peas had been "rediscovered" just a decade earlier). Many at the time saw Darwinism and Mendelism as oppositional. Fisher thought otherwise, and in 1918 published a landmark paper which mathematically reconciled the two theories.

Gonville and Caius College Library

W. C. D. Whetham and C. D. Whetham, *An Introduction to Eugenics* (1912)

Alongside his biological interests, Fisher enthusiastically embraced eugenics, a movement which founder Francis Galton described as "the science of improving human stock". Fisher picked up this pamphlet, published in Cambridge, for a shilling in 1912. Formative for Fisher, the Whethams' writings laid emphasis on the so-called differential birth-rate: the observation that the "lower" social classes had more babies than the middle and upper classes. They presented the collapse of civilisations throughout history as a key issue for eugenical study, and Fisher would spend the next twenty years attempting to explain this phenomenon. Fisher would gift W.C.D. Whetham, a Fellow of Trinity College, a complimentary copy of his 1930 book *The Genetical Theory of Natural Selection*.

Cambridge University Department of Genetics

Fisher address to the Caius Arts & Sciences Society, 1912

In 1911, Fisher helped found the Cambridge University Eugenics Society, an active group which hosted public lectures by notable speakers from the London-based Eugenics Education Society (founded in 1907). Fisher would himself address the society on several occasions, and often hosted undergraduate meetings in his college rooms. He was also a member of the Caius Arts and Sciences Society, whose minute book records him speaking on 'Eugenics and Nationalism' on October 19th, 1911. Fisher was far from the only eugenics enthusiast at Caius. Reginald Punnett (1875–1967), a Fellow, was also affiliated with the University Eugenics Society, while a fellow student, J. M. Creed, also addressed the Arts & Sciences Society on the subject in 1912.

Gonville and Caius College Archives

Fisher at the First International Eugenics Congress in London, 1912

Shortly after graduating, Fisher volunteered as a steward at the first International Eugenics Congress, held in London in summer 1912, where this portrait was taken. At this meeting, Fisher met Major Leonard Darwin (1850–1943), son of Charles Darwin and President of the Eugenics Education Society. Major Darwin would become a mentor of sorts to the young Fisher, encouraging his investigations in evolution, heredity, and eugenics, and arranging part-time employment at the Eugenics Education Society's London office.

Courtesy of University of Adelaide Library, Rare Books and Manuscripts

Case two: Fisher, Scientist and Eugenist

***Statistical Methods for Research Workers* (1925)**

Fisher's formidable mathematical abilities eventually saw him hired as a statistician at Rothamsted Experimental Station in Hertfordshire, where he analysed data from long-term agricultural experiments on crop yields. The fourteen years Fisher spent at Rothamsted (1919–1933) were highly productive, and he developed many new statistical tools including significance tests and the now-ubiquitous Analysis of Variance (ANOVA). His first book, *Statistical Methods for Research Workers* (1925), was aimed at "practical men, who want handy methods simply explained". It sold well, going through thirteen editions in Fisher's lifetime. These volumes belong to the library of Cambridge's Genetics Department, where Fisher was Professor from 1943 until his retirement in 1957.

Cambridge University Department of Genetics

Reginald Punnett's copy of *The Genetical Theory of Natural Selection* (1930)

Fisher's second book, *The Genetical Theory of Natural Selection* (1930), gathered together a decade or so of attempts to understand the implications of Mendelian genetics for Darwinian evolutionary theory. Heavily mathematical and densely written, the book would not sell like *Statistical Methods*, but its influence on the fields of population genetics and evolutionary biology has nevertheless been deep and long-lasting. Not all readers appreciated Fisher's mathematical approach. This copy of *The Genetical Theory* belonged to Reginald Punnett (1875–1967), Fisher's predecessor as Cambridge Professor of Genetics, and a staunch Mendelian who was sceptical as to the evolutionary importance of natural selection. Pasted into the back cover is Punnett's own critical review in Nature, in which he questioned Fisher's credentials as a biologist.

Cambridge University Department of Genetics

Lancelot Hogben, Genetic Principles in Medicine and Social Science (1931)

The biologist, socialist and anti-eugenist Lancelot Hogben (1895–1975) was another of Fisher's more unsympathetic readers. The two traded blows over the relative importance of nature and nurture in producing biological variation, Hogben insisting that Fisher and other eugenists placed too much emphasis on the former. This is Fisher's personal copy of Hogben's 1931 book *Genetic Principles in Medicine and Social Science*, in which the author insisted further experimental investigations into the causes of human variation were imperative before eugenic intervention could be considered. Exasperated, Fisher complained of being asked to "wait, in solemn hush, outside the laboratory door, until the Professor sees fit to announce that the ultimate truth has at last been revealed".

Cambridge University Department of Genetics

***The Genetical Theory of Natural Selection* (1930)**

The second half of *The Genetical Theory* sets out a grandiose eugenical theory of racial decline and the decay of civilisations, a phenomenon which Fisher attributes to the relative fertility of the lower classes compared with their social, and purportedly biological, superiors. In the closing chapter, Fisher proposes a scheme of eugenic family allowances, designed to boost reproduction among the more "eugenically desirable" classes. It was not unusual in this period for biological texts to cover eugenics, and several reviewers encouraged the "general reader" to bypass the challenging mathematical chapters and move straight to the eugenical portion. Fisher himself asserted in the book's preface that the "deductions respecting Man are strictly inseparable from the more general chapters".

Gonville and Caius College Library

***The Eugenics Review* (July 1935), flagship journal of the Eugenics Society**

Fisher campaigned for his eugenic family allowances throughout the 1930s, but struggled to enlist supporters, even among members of the Eugenics Society. Malthusian fears of overpopulation made many wary of "pro-natalist" policies which might promote population growth, including among the so-called social problem group. Frustrated, Fisher gradually retreated from the Eugenics Society through the 1930s, devoting himself increasingly to the activities of the Galton Eugenics Laboratory at University College London, where Fisher was Professor of Eugenics from 1933 until his move back to Cambridge in 1943. His contribution to this 1935 issue of *The Eugenics Review* details the activities of his lab, while also criticising the Eugenics Society for a perceived lack of support for promising practical proposals, such as his family allowances scheme.

Personal Collection

Campaigning for eugenic family allowances

With little promise of serious support from the Eugenics Society, Fisher increasingly took to the columns of national newspapers to air his eugenical policy ideas. The reformer William Beveridge, whose famous report *Social Insurance and Allied Services* (1942) provided the blueprint for Britain's post-war welfare system, was one notable figure who took an interest in Fisher's proposals. But whereas Fisher argued for a weighted scheme with larger payments for "eugenically desirable" higher earners, Beveridge's report recommended allowances be paid at a flat rate. Eugenists feared that this policy would encourage the lower classes to have more children.

Cambridge University Department of Genetics

Francis Galton, *Hereditary Genius* (1951 [1869])

Disillusioned with its direction and leadership, Fisher resigned from the council of the Eugenics Society in June 1941. Thereafter he rarely wrote or spoke publicly on eugenics, which fell sharply from favour following the end of WWII. One exception to Fisher's relative silence on the matter was a review of this 1951 reprint of Francis Galton's *Hereditary Genius* (first published 1869) which appeared in *The Eugenics Review.* Full of praise for the "studiously impartial" Galton, Fisher celebrated *Hereditary Genius* as "one of the great books of the nineteenth-century".

Cambridge University Department of Genetics

Theodosius Dobzhansky, *Genetics and the Origin of Species* (1937)

All the while, Fisher's work on the genetical theory of evolution was exerting a steady influence among population geneticists and evolutionary biologists. This is Fisher's copy of Theodosius Dobzhansky's *Genetics and the Origin of Species* (1937), seen by many as the watershed publication of the "evolutionary synthesis" which saw Darwinian theory fully integrated with the new genetics. Fisher was a significant influence upon Dobzhansky, who famously stated that "nothing in biology makes sense except in the light of evolution".

Cambridge University Department of Genetics

R. A. Fisher, *Smoking. The Cancer Controversy: Some Attempts to Assess the Evidence* (1959)

Though he retreated from eugenical advocacy, Fisher's later career was not unmarked by controversy. This pamphlet collects Fisher's various writings, between 1957 and 1959, on the question of whether smoking causes lung cancer. While Fisher did not deny an association between smoking and cancer, he drew on his authority as a great statistician to challenge the certainty with which public health officials asserted that the former caused the latter. Perhaps, he hypothesised, those in an early or pre-cancerous state might be drawn to the smoking habit for its soothing effect on their irritated lungs. Or more likely, he supposed, both susceptibility to lung cancer and an inclination towards smoking were genetic dispositions; perhaps multiple effects of a single gene or caused by genes "linked" by their chromosomal proximity.

Cambridge University Department of Genetics

Case three: Legacies

Fisher working at his calculating machine (Antony Barrington Brown, 1952), and Fisher cartoon (unknown artist, 1950s)

Fisher's significant contributions to statistics, genetics and evolutionary theory ensured that by the end of his career he was widely considered one of the most important and influential scientists of his generation. As is typical of "great" scientists, his image — white beard, thick glasses — became iconic among his students and admirers. This photograph captures Fisher busy at his calculating machine, while the cartoon depicts Fisher in teaching mode, at the blackboard. On Fisher the teacher, his one-time student Professor Anthony Edwards has reminisced, "He started each lecture with a determined attempt to be comprehensible to us students, but before long he would cease to be aware of our existence and would follow his own thoughts unfettered".

Reproductions found in Genetics Department Archives
Cambridge University Department of Genetics

The Genetical Theory of Natural Selection (1958 & 1999)

Although recognised as an important work from the off, the first edition of The Genetical Theory sold slowly. When its initial print-run of 1500 was eventually exhausted in 1946, the book remained out-of-print until the appearance of a second, slightly revised edition in 1958, published by Dover books. This paperback edition brought Fisher's work to new generation of readers. In the years between editions, eugenics had fallen from favour. Hence, while biologists pored over and celebrated the technical evolutionary discussions of the book's first half, the eugenical portion (which Fisher decided to retain, almost unchanged) was increasingly ignored, or dismissed as a somewhat embarrassing curiosity. In his introduction to the 1999 edition, Fisher's former student Henry Bennett writes that the eugenical chapters had "little apparent influence".

Personal Collection

C. B. Goodhart's obituary of Fisher in *The Caian*

Following his retirement in 1957, Fisher emigrated to Adelaide, South Australia, where he died in 1962. Obituaries and commentaries on his life emphasised his enormous scientific achievements, but were almost invariably silent on his eugenical activities. Like other pre-WWII eugenists, his passionate advocacy for race improvement was conveniently forgotten in the post-war decades. The obituary by ecological geneticist and Caius Fellow Charles B. Goodhart in *The Caian* is something of an exception, then, in openly discussing Fisher's eugenical interests. According to Goodhart, himself a member of the Eugenics Society, Fisher continued to converse enthusiastically on eugenics up until and throughout his tenure as College President in the late 1950s.

Gonville and Caius College Archives

Fisher historicised

Beginning in the 1970s, historians and sociologists of science began to take an interest in Fisher. His status as both leading scientist and committed eugenist made him a promising case-study for examining the role of social and political factors in the production of scientific knowledge. In this 1978 article in *New Scientist*, historian Bernard Norton argued that "Fisher worked as he did *because he was an ardent eugenist*". Over the next few years, Norton and his colleague Donald MacKenzie published various articles and books exploring the influence of Fisher's political views upon his work in statistics and evolutionary theory.

Scan of New Scientist, Volume 77, Issue 1100, p. 223

Fisher defended

Former students and admirers rushed to defend Fisher from these accusations of ideological impurity. Reviewing one of MacKenzie's works in the *London Review of Books*, Anthony Edwards took issue with the claim that Fisher's science was politically motivated. Instead, he insisted: "Fisher's eugenics, and indeed the whole of his views on the interaction of genetics and human society manifest in the later chapters of *The Genetical Theory of Natural Selection*, are rooted in his science, and not the other way round. Fisher is not good material for sociologists".

Offprint from the London Review of Books, Personal Collection

Joan Fisher Box, *R. A. Fisher: The Life of A Scientist* (1978)

The first and only full-length biography of Fisher was written by one of his six daughters, and published in 1978. In it, his fascination with eugenics is frankly discussed, if downplayed somewhat as youthful fancy. Box's biography fuelled the mythology surrounding Fisher's "genius". In a passage on the composition of *The Genetical Theory*, she writes: "Fisher seemed to know exactly what he wished to say, holding the whole ordered argument in his head … [O]nce he had set a passage down on paper, he rarely changed a word or needed to rearrange the order or insert omissions. His capacity to hold in mind the numerous details of a complex argument was remarkable, as was his precision in expressing what he meant".

Gonville and Caius College Library

Proposal for the Fisher window (1988), and Programme of Fisher Centenary Meeting (1990)

Professor Anthony Edwards landed on the idea of a commemorative stained-glass window shortly after being elected a Fellow of Caius in 1970. However, college regulations dictated that such proposals could not be considered within twenty years of the death of the Fellow in question. Edwards bided his time, and in 1988 submitted this formal proposal for two windows commemorating Fisher and the mathematician John Venn. As Edwards later put it, the proposal was "approved with enthusiasm". The window, depicting a "Latin square" in a nod to Fisher's work on experimental design, was officially unveiled at a meeting in Caius in February 1990, held to celebrate the centenary of Fisher's birth. The programme shows a packed schedule of talks on aspects of Fisher's work, followed by dinner in hall.

Gonville and Caius College Archives

Petition to remove the Fisher window

Thirty years later, on 7th June 2020, a group of Caius students launched an online petition calling for the removal of the Fisher window. While acknowledging the importance of Fisher's many scientific contributions, the petition cited, among other things, Fisher's eugenical activities and his regressive remarks on race. Many signers added their personal reasons for supporting the campaign. One commented "Cambridge can't be considered a leading institution if it's going to continue to celebrate and commemorate Eugenicists". Another simply wrote "Racists shouldn't be honoured".

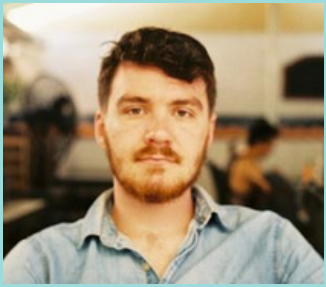
Screenshot from change.org

The Fisher window

Three weeks later, with the petition having amassed over a thousand signatures, Caius College Council voted to remove the window. An official statement read: "The College is now aware of the views and actions of R. A. Fisher in a way that was not fully appreciated in 1989. The College Council was clear that it should no longer honour Fisher the man with a window, which causes such broad offence". The window will remain in the College Archives.

Maria McClafferty, stained and etched glass, 108cm x 49cm, 1989
Gonville and Caius College Archives

CONTESTED LEGACIES R.A. Fisher in retrospect



Dr Alex Aylward is a Departmental Lecturer in the History of Science, Faculty of History, University of Oxford. He joined Oxford in October 2021, after completing a PhD in the Centre for History and Philosophy of Science at the University of Leeds, in which he explored the writing, publication, reception and legacies of R.A. Fisher's celebrated book of 1930, *The Genetical Theory of Natural Selection*.

In the course of his doctoral research Dr Aylward spent time as a visiting scholar at Charles University, Prague, and as Eugene Garfield Pre-Doctoral Fellow at the American Philosophical Society in Philadelphia. Prior to joining Leeds, he received a BA (Natural Sciences) and MPhil (History and Philosophy of Science) from the University of Cambridge.

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This exhibition took place alongside Fisher in the 21st Century, an academic conference held at Gonville & Caius College in April 2022.

Fisher in the 21st Century
Academic Conference

21 – 22 April 2022
Gonville & Caius College, Cambridge

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