Brightening Biochemistry: Humor, Identity, and Scientific Work at the Sir William Dunn Institute of Biochemistry, 1923–1931

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Abstract: In the 1920s, scientists at the University of Cambridge's Sir William Dunn Institute of Biochemistry made major contributions to the emerging discipline of biochemistry while also devoting considerable time and energy to the production of a humor journal entitled *Brighter Biochemistry*. Although humor is frequently regarded as peripheral to the work of science, the journal provides an opportunity to understand how it contributes to the social infrastructure of scientific communities as modern workplaces. Taking methodological cues from cultural history, ethnography, and humor studies, this essay conducts a close and contextual reading of *Brighter Biochemistry*. This reading demonstrates how humor served as a central means through which members of the Dunn confronted workplace issues, including creating cooperative work teams, responding to gender discrimination, addressing funding anxiety, and defining professional identity. These conclusions provide a new perspective on the well-documented history of the Dunn and also offer a model for how historians of science can approach humor when its traces are encountered in other settings.

In the process of fertilization
The sperm cells display animation
The scene of the door
Of the chemical store
Is moderately good imitation.[1]

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[1] "Store" is shorthand for storeroom. *Brighter Biochemistry*, 1925, no. 3, p. 23.

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This limerick was one of many contributions to *Brighter Biochemistry*, a journal produced from 1923 to 1931 by scientists gathered in the Sir William Dunn Institute of Biochemistry at the University of Cambridge.[2] The interwar institute was a vibrant center of the emerging discipline of biochemistry, and its members garnered numerous academic and professional accolades.[3] Many at the Dunn, however, saved their greatest pride for *Brighter Biochemistry*, which they memorialized as "better than *Punch*," the famed British humor magazine.[4] Yet leafing through the pages of *Brighter Biochemistry*, a modern reader might find this limerick and other contributions held within at turns frivolous, perplexing, or even offensive.

The reactions elicited by this encounter, however, suggest an opportunity. Laboratories and other cooperative worksites for science proliferated in the twentieth century. In these sites a greater and greater share of scientific work proceeded through the coordination of efforts among individuals from different disciplinary and social backgrounds. Even if its scale did not match that of notable "big science" efforts, the production of knowledge in these worksites depended on a functioning social infrastructure to complement its physical infrastructure.[5] The "extralaboratory life" of scientists, including their leisure habits and common cultural norms, provided an important resource for the social organization of scientific research in these settings.[6] Yet the kinds of ethnographic evidence that would be of greatest use for describing the social worlds created by scientists in these moments are not usually preserved within the archives of modern science.

Humor, even when it confounds or offends, presents a promising point of entry for recovering insights about the social life of past communities.[7] Despite its ubiquity, humor has been overlooked as a resource for the history of science. Historians have treated humor as a playful act incidental to the serious task of science. Humor might be a means of starting a speech, scoring a rhetorical point, or showcasing individual brilliance, but few studies have asked whether scientific humor serves

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[2] I reviewed two complete sets of *Brighter Biochemistry* for this essay: one at the University of Cambridge, Department of Biochemistry, Colman Biochemistry Library, and the second at the University of Cambridge Library, Rare Books Room (hereafter cited as **UCL RB**), item CAM.C.11.1.1-8. Since I examined these sets I have become aware of several others preserved in libraries at the University of Cambridge. Outside of Cambridge, isolated copies have found their way into other libraries, as discussed below.

[3] Members of the Dunn Institute published prolifically on topics including enzymology, genetics, organic chemistry, and metabolism, accounting for half of all papers published in the British *Biochemical Journal* during the 1920s. Biochemists trained at the Dunn filled leadership posts at many other biochemistry departments in the following generation and earned memberships in the Royal Society. See A. C. Chibnall, "The Road to Cambridge," *Annual Reviews of Biochemistry*, 1966, 35:16–20; and Robert E. Kohler, *From Medical Chemistry to Biochemistry: The Making of a Biomedical Discipline* (Cambridge: Cambridge Univ. Press, 1982), p. 81.

[4] Joan Mason, "Marjory Stephenson, 1885–1948," in *Cambridge Women: Twelve Portraits*, ed. Carmen Blacker and Edward Shils (Cambridge: Cambridge Univ. Press, 1996), pp. 113, 132n1.

[5] For a sampling of these studies and an overview see Peter Galison, *Image and Logic: A Material Culture of Microphysics* (Chicago: Univ. Chicago Press, 1997), pp. 46–63, 803–807; Sharon Traweek, *Beamtimes and Lifetimes: The World of High Energy Physicists* (Cambridge, Mass.: Harvard Univ. Press, 1988), p. 8; K. Knorr-Cetina, *Epistemic Cultures: How the Sciences Make Knowledge* (Cambridge, Mass.: Harvard Univ. Press, 1999); and Robert E. Kohler, "Lab History: Reflections," *Isis*, 2008, 99:761–768. For the role of culture in shaping these spaces see Liliane Beaulieu, "Bourbaki's Art of Memory," *Osiris*, 1999, *14*:219–251; Mara Beller, "Jocular Commemorations: The Copenhagen Spirit," *Osiris*, 1999, *14*:252–273; and David Kaiser, "The Postwar Suburbanization of American Physics," *American Quarterly*, 2004, 56:851–888. A similar reassessment of how cultural categories such as credit and authorship became more important as scientific work became more collaborative has also taken place. See Mario Biagioli, "The Instability of Authorship: Credit and Responsibility in Contemporary Biomedicine," *FASEB Journal*, 1998, *12*:3–16.

[6] Jenna Tonn, "Extralaboratory Life: Gender Politics and Experimental Biology at Radcliffe College, 1894–1910," *Gender and History*, 2017, 29:329–358; and Sarah Maria Schönbauer, "'From Bench to Stage': How Life Scientists' Leisure Groups Build Collective Self-Care," *Science as Culture*, 26 Jan. 2020, https://doi.org/10.1080/09505431.2020.1713077.

[7] This point was famously made by Robert Darnton, who applied the anthropological theories of Clifford Geertz to cultural history. See Darnton, *The Great Cat Massacre and Other Episodes in French Cultural History* (New York: Basic Books, 1984), p. 78. See also Iddo Tavory, "The Situations of Culture: Humor and the Limits of Measurability," *Theory and Society*, 2014, *43*:275–289.

more than these minor instrumental roles.[8] The survival of *Brighter Biochemistry* provides a useful case to gauge the gains that may accrue from adopting a different approach to scientific humor informed by developments in humor studies.

Befitting a subject which takes so many forms—from anecdotes to zingers and everything in between—humor studies is a capacious field. In the late nineteenth century philosophers and psychologists who concerned themselves with humor grounded their theories in individual mental and physiological processes. The study of these would reveal a universal basis for humor, such as Herbert Spencer's proposal that laughter was the release of accumulated muscular tension.[9] In the 1960s the anthropologist Mary Douglas argued that these approaches failed to account for the fact that humor existed in reference to social relationships. Correspondingly, while humor has some common topics, it retains a high level of specificity to its particular cultural and historical setting.[10]

Humor's anarchic and playful qualities might appear to disrupt stable social arrangements, but following Douglas anthropologists came to understand humor as a conservative social force. By providing a safe way to air grievances and dissipate conflict, humor buffers existing social arrangements against disturbances. More recent theorists working in the "phenomenological," or world-building, approach to humor have gone further to argue that through its contributions to the creation of a shared culture, or *habitus*, humor can participate in the making of new social orders as well as preserving them. The capacity of humor to hold a multiplicity of meanings and cross different registers makes it especially well-suited to fashioning communities in settings where other means of social cohesion—such as power hierarchies or shared norms of behavior—are not yet established.[11]

When the Dunn Institute opened in 1923, its members found themselves on unfamiliar social and intellectual terrain. Biochemistry was a new discipline with ill-defined boundaries. With state and philanthropic support for scientific research on the rise after World War I, many members of the Dunn arrived from social groups unschooled in the culture of Edwardian "High Science" that shaped the lives of scientists trained at Cambridge before the war.[12] The intellectual productivity of the institute's interdisciplinary research in biochemistry would

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[8] G. Nigel Gilbert and Michael Mulkay, "Joking Apart: Some Recommendations Concerning the Analysis of Scientific Culture," *Social Studies of Science*, 1982, *12*:585–613. For other discussions of humor in science see Richard P. Feynman, *"Surely You're Joking Mr. Feynman!": Adventures of a Curious Character as Told to Ralph Leighton*, ed. Edward Hutchings (New York: Norton, 1997); Edwin D. Kilbourne, "Humor in Science," *Proceedings of the American Philosophical Society*, 1996, *140*:338–349; Ralph A. Lewin, "Humor in Scientific Literature," *Bioscience*, 1983, *22*:266–268; Caroline Joan S. Picart, "Scientific Controversy as Farce: The Benveniste-Maddox Counter Trials," *Soc. Stud.* Sci., 1994, *24*:7–37; Martin J. S. Rudwick, "Caricature as a Source for the History of Science: De La Beche's Anti-Lyellian Sketches of 1831," *Isis*, 1975, *66*:534–560; and Jan A. Witkowski, "'Nothing to Laugh at at All': Humor in Biochemical Journals," *Transactions in the Biological Sciences*, 1996, *21*:156–160.

[9] Such individual interpretations of humor date as far back as Aristotle. See Giselinde Kuipers, "The Sociology of Humor," in *The Primer of Humor Research*, ed. Victor Raskin (Berlin: De Gruyter Mouton, 2008), pp. 366–367, 383.

[10] Mary Douglas, "The Social Control of Cognition: Some Factors in Joke Perception," *Man*, 1968, 3:361–376.

[11] Kuipers, "The Sociology of Humor," pp. 380–382; and Giselinde Kuipers, *Good Humor, Bad Taste: A Sociology of the Joke*, 2nd ed. (Berlin: De Gruyter Mouton, 2011), pp. 10–15. See also Mahadev L. Apte, *Humor and Laughter: An Anthropological Approach* (London: Cornell Univ. Press, 1985), pp. 13–29; M. J. Mulkay, *On Humour: Its Nature and Its Place in Modern Society* (Cambridge: Polity, 1988), pp. 153–165; and Jan N. Bremmer and Herman Roodenburg, "Introduction: Humour and History," in *A Cultural History of Humour: From Antiquity to the Present Day*, ed. Jan Bremmer and Herman Roodenburg (Cambridge: Polity, 2005), pp. 2–3.

[12] Gary Werskey, *The Visible College: The Collective Biography of British Scientific Socialists of the 1930s* (New York: Holt, Rinehart, & Winston, 1979), pp. 20–23; and Andrew Warwick, "Exercising the Student Body: Mathematics and Athleticism in Early Victorian Cambridge," in *The Body Incarnate: Historical Embodiments of Natural Knowledge*, ed. Christopher Lawrence and Steven Shapin (Chicago: Univ. Chicago Press, 1994), pp. 288–326.

hinge on the smooth operation of numerous transient collaborations among members of this new community—a feat that would not be achieved through experimental virtuosity alone.[13]

With the phenomenological approach to humor as our departure point, reconstructing the context of *Brighter Biochemistry* (*BB*) alongside studying its form and content allows us to observe how the Dunn turned to humor as a means of establishing a new social world for biochemistry. Separated from the community that produced *BB* by time, culture, and space, we cannot determine whether all of its contributions sparked laughter, but we can examine its form and content for traces of the scientific lives of its authors and their efforts to build a new form of experimental life at the Dunn. Through humor, members of the Dunn engaged in the process of collectively fashioning their *habitus* as biochemists in parallel with their scientific work.

After placing the Dunn Institute within the broader context of science at the University of Cambridge, I examine three principal ways that humor studies suggests *BB* shaped the social world of the Dunn. First, the varied forms of humor in *BB* were a means of drawing together researchers from different social backgrounds into a communal whole through the production and consumption of the journal. Its humor was a pastiche of traditions drawn from British middle-class culture, Oxbridge colleges, medical schools, and fraternal scientific communities. The content of *BB* itself served two further purposes. Many contributions to *BB* were didactic, initiating new members in the world of being a "bright" biochemist in the midst of ongoing anxieties regarding the operations of the Dunn. Satires and parodies in particular helped the members of the Dunn make sense of the many different types of experiences that they faced in this new social and intellectual workspace. Moreover, other contributions to *BB* served to delineate the identity of biochemistry at the Dunn, demonstrating the elite caliber of the Dunn's biochemists while using ridicule and mockery to attack outsiders who challenged their status. While *BB* might appear to be a playful expression of creativity, it served a serious purpose in establishing and policing the social world of biochemistry at Cambridge.

I. ESTABLISHING THE DUNN COMMUNITY

In the 1920s a new scientific research community formed around biochemistry at the University of Cambridge, spurred by transformations in the structure of scientific research at the institutional and national level. In the early twentieth century, few stand-alone scientific research communities existed at Cambridge. In the absence of official doctoral programs, aspiring research scientists relied upon fellowships awarded through their colleges.[14] Colleges, not the university, served as the gatekeepers of postgraduate scientific research and nurtured small, exclusive groups of male scientists, many of whom were wealthy enough to pursue research without institutional support.[15] Their reluctance to support centralized scientific facilities beyond those intended for undergraduate education further tethered scientific research to individual colleges.[16] After World War I, the British government sought to expand and reorganize its patronage of academic scientific research through new agencies such as the Medical Research Council (MRC) and the Department of Scientific and Industrial Research (DSIR). Philanthropies were also drawn to the

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[13] N. W. Pirie, "Sir Frederick Gowland Hopkins (1861–1947)," in *Comprehensive Biochemistry*, Vol. 35: *Selected Topics in the History of Biochemistry, Personal Recollections*, ed. Giorgio Semenza (Oxford: Elsevier Science, 1983), pp. 124–125.

[14] Trinity College played an especially influential role in providing both the financial and social support for the growth of the Cambridge School of Physiology and the Cavendish Physics Laboratory. See Gerald L. Geison, *Michael Foster and the Cambridge School of Physiology: The Scientific Enterprise in Late Victorian Society* (Princeton, N.J.: Princeton Univ. Press, 1978), pp. 94–115.

[15] Werskey, *Visible College* (cit. n. 12), pp. 20–23.

[16] Christopher Brooke, *A History of the University of Cambridge*, Vol. 4: *1870–1990* (Cambridge: Cambridge Univ. Press, 1993), pp. 153–157, 349–365; and T. E. B. Howarth, *Cambridge between Two Wars* (London: Collins, 1978), pp. 84–87.

potential medical dividends of biological research.[17] Cambridge introduced the research Ph.D. degree in 1919, offering an institutional means of channeling funding from external patrons into support for scientific research untethered to teaching undergraduates.[18]

The most dramatic instance of interest in biochemistry was the bequest of £165,000 that the Scottish trader Sir William Dunn left to the Cambridge Biochemistry Department in 1919, the largest private donation to any field of British science until that time.[19] The head of the department, future Nobel Prize winner Sir Frederick Gowland Hopkins (1861–1947), was well known for his prewar study of "accessory food factors," or vitamins, which embodied the medical advances that many hoped would issue from biochemistry. Spurred by the bequest, Hopkins planned to create an expansive community dedicated to a research program in "dynamic" biochemistry independent from physiology, chemistry, and medicine, its neighboring fields.[20] As one of the Dunn's future directors recalled, Hopkins's ambition stood apart from other biochemistry programs in Britain for its insistence on studying "how it works" rather than "what it is."[21] The department's population grew rapidly from ten in 1919, to forty in 1923, to fifty-eight in 1925. Its population ranged between fifty and sixty until the outbreak of World War II, making it the largest scientific community in Cambridge.[22]

While many denizens of the Dunn still arrived from the male-dominated Oxbridge college system, the availability of external funding allowed researchers from groups often marginalized in Cambridge scientific society—especially women—to play a central role in the Dunn's community. Hopkins's views on coeducation, which were more egalitarian than the Cambridge norm, also fostered the inclusion of women in the Dunn.[23] At a time when the male undergraduates of Cambridge still rioted during occasional votes regarding the admission of women to the university, as they most recently had in 1921, the Dunn offered a comparatively favorable institutional environment for women to practice science.[24] The secretary of the British

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[17] Peter Alter, *The Reluctant Patron: Science and the State in Britain, 1850–1920*, trans. Angela Davies (Oxford: Berg, 1987), pp. 75–190; and Robert E. Kohler, "Walter Fletcher, F. G. Hopkins, and the Dunn Institute of Biochemistry: A Case Study in the Patronage of Science," *Isis*, 1978, *69*:336–340.

[18] Howarth, *Cambridge between Two Wars*, p. 86.

[19] Later raised to £210,000. This sum is equivalent to around £9.2 million today, calculated via measuringworth.com's UK comparison calculator, https://www.measuringworth.com/calculators/ukcompare/ (accessed 20 July 2019). For the bequest award process see Kohler, "Walter Fletcher." By contrast, Ernst Rutherford had also drawn up a £200,000 expansion plan for the prestigious Cavendish Physics Laboratory in 1919 but only obtained funding in the early 1930s. See J. G. Crowther, *The Cavendish Laboratory, 1874–1974* (London: Macmillan, 1974), pp. 185–186.

[20] Harmke Kamminga and Mark Weatherall, "The Making of a Biochemist I: Frederick Gowland Hopkins' Construction of Dynamic Biochemistry," *Medical History*, 1996, *40*:281–285.

[21] Arthur Charles Chibnall, quoted in Harmke Kamminga and Mark Weatherall, *Dynamic Science: Biochemistry in Cambridge, 1898–1949* (Cambridge: Wellcome Unit for the History of Medicine, 1992), p. 50.

[22] Kohler, *From Medical Chemistry to Biochemistry* (cit. n. 3), pp. 82–83. The interwar population of the Cavendish, ranging from 30 to 40, provides a useful contrast. See Crowther, *Cavendish Laboratory* (cit. n. 19), p. 202.

[23] Conceivably, Hopkins held this stance because of his earlier training in London, whose institutions embraced more liberal views on coeducation. See Joseph Needham, "Sir Frederick Gowland Hopkins, O.M., F.R.S. (1861–1947)," *Notes and Records of the Royal Society of London*, 1962, *17*:123–125; and Dorothy M. Needham, "Women in Cambridge Biochemistry," in *Women Scientists: The Road to Liberation*, ed. Derek Fichter (London: Macmillan, 1982), p. 159. The University Senate rejected equal standing for female students in 1920; in the 1930s, there were still objections to the attendance of female academics at college feasts. See Rita McWilliams Tullberg, *Women at Cambridge: A Men's University, though of a Mixed Type* (London: Gollancz, 1973), pp. 182–218. Bans on visitors of the opposite sex in the late evening by many colleges existed into the 1960s. See Brooke, *History of the University of Cambridge* (cit. n. 16), pp. 527–530. After World War II, some London laboratories still excluded female researchers from their common rooms. See Jenifer Glynn, "Rosalind Franklin, 1920–1958," in *Cambridge Women*, ed. Blacker and Shils (cit. n. 4), pp. 278–279.

[24] Rita McWilliams Tullberg, *Women at Cambridge* (Cambridge: Cambridge Univ. Press, 1998), pp. 165–166.

Medical Research Council offered backhanded testimony to the social diversity of the Dunn, complaining that it "bristle[d] with clever young Jews and talkative women."[25]

Despite the fact that the university still prohibited the appointment of women to academic leadership posts, women also played a prominent role in shaping the Dunn's research program.[26] The program in dynamic biochemistry that Hopkins envisioned created patterns of work that cut against the hierarchical working relationships encountered in established scientific disciplines. Researchers at the Dunn formed temporary, horizontally linked, collaborative groups to share their prior training in the techniques of different fields. In this setting, women with expertise in particular areas were able to conceive of and execute their own research projects, frequently directing the efforts of male researchers. This was the path notably followed by bacteriologist Marjory Stephenson and physiologist Dorothy Needham.[27] Stephenson used her status to recruit future doctoral students out of her advanced undergraduate lecture courses on bacterial metabolism.[28]

The opening of the Dunn Institute building in 1923 offered the Cambridge biochemical community a social and symbolic focal point.[29] One member proudly recalled how stylish it appeared in contrast to other Cambridge structures.[30] Six of the eight issues of *BB* carried a picture of its entrance on their covers. Gathering together the scattered members of the department from their three prior buildings, it contained all the resources for an independent, self-contained biochemical laboratory.[31] Afternoon talks in the tea room, where researchers presented work and received critical feedback, were an especially important form of intellectual sociability.[32] However, the new building was also a workplace, host to long hours of labor due to the lengthy and tedious nature of experimental procedures in biochemistry.[33]

In the midst of the gender-segregated Cambridge colleges, the Dunn also held unique appeal as a mixed-gender social space.[34] The high rate of marriage among its first members

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[25] Walter Fletcher to A. V. Hill, 1 Jan. 1927, quoted in Mikuláš Teich, "Dorothy Mary Moyle Needham, 22 September 1896–22 December 1987," *Biographical Memoirs of Fellows of the Royal Society*, 2003, *49*:357.

[26] Recent scholarship indicates that women participated more fully in Victorian and Edwardian Cambridge scientific communities than previously thought, though never with the status they appeared to have enjoyed at the Dunn. See Paula Gould, "Women and the Culture of University Physics in Late Nineteenth-Century Cambridge," *British Journal for the History of Science*, 1997, *30*:127–149; and Marsha L. Richmond, "The 'Domestication' of Heredity: The Familial Organization of Geneticists at Cambridge University, 1895–1910," *Journal of the History of Biology*, 2006, *39*:565–605.

[27] Robert E. Kohler, "Innovation in Normal Science: Bacterial Physiology," *Isis*, 1985, *76*:168–169; Teich, "Dorothy Mary Moyle Needham," p. 358; and D. D. Woods, "Obituary Notice: Marjory Stephenson, 1885–1948," *Biochemical Journal*, 1950, *46*:378.

[28] Biochemistry became a distinct part II subject in the undergraduate Natural Sciences Tripos exams in 1924. See Kohler, *From Medical Chemistry to Biochemistry* (cit. n. 3), p. 84. Malcolm Dixon, Joseph Needham, and Norman Pirie were future staff who took this route. See Woods, "Obituary Notice," p. 378.

[29] For the importance of architecture in stabilizing local scientific communities see Pierre Bourdieu, "The Social Space and the Genesis of Groups," *Theory Soc.*, 1985, *24*:723–744; and Thomas F. Gieryn, "What Buildings Do," *Theory Soc.*, 2002, *31*:35–74.

[30] Malcom Dixon, in a pamphlet entitled "Sir William Dunn Institute of Biochemistry, 1924–1974," p. 4. University of Cambridge Archives, Archives of the Department of Biochemistry (hereafter cited as **UA BCHEM**), item 2/4.

[31] The building had its own boiler (for producing distilled water), lecture halls, private laboratories, wet and dry animal rooms, a library, and a tea room. R. A. Peters, in "Sir William Dunn Institute of Biochemistry," pp. 21–22. UA BCHEM, item 2/4. See also the room assignment plan of the Dunn Institute drawn up by Joseph Needham in 1933. UA BCHEM, item 4/2/8i.

[32] Needham, "Sir Frederick Gowland Hopkins" (cit. n. 23), pp. 150–151. For the transformation of teas into spaces for scientific shoptalk see James A. Secord, "How Scientific Conversation Became Shop Talk," in *Science in the Marketplace: Nineteenth-Century Sites and Experiences*, ed. Aileen Fyfe and Bernard Lightman (Chicago: Univ. Chicago Press, 2007), pp. 48–51.

[33] J. Murray Luck, "Confessions of a Biochemist," *Annu. Rev. Biochem.*, 1981, *50*:11–12; and Werskey, *Visible College* (cit. n. 12), p. 24.

[34] Paul R. Deslandes, *Oxbridge Men: British Masculinity and the Undergraduate Experience, 1850–1920* (Bloomington: Indiana Univ. Press, 2005), pp. 194–207.

earned it the facetious title "Hoppy's Dating Agency."[35] Hopkins alluded to this predisposition in his opening poem for the first issue of *BB* in 1923:

> Yes, A and B
> (That's He and She),
> Toiled hard and toiled quite separately
> . . . These things must be
> A sort of biochemistry
> When bonds are free
> Affinity
> Works its inevitable decree
> . . . But, if you please,
> Dear A's and B's
> Don't *all* seek out affinities.[36]

II. PRODUCING *BRIGHTER BIOCHEMISTRY*

The diversity of the Dunn's community in contrast to the prevailing culture of Cambridge High Science was reflected in the bricolage of British humor traditions that *BB* drew upon. The breadth of these humorous forms encouraged a wide range of participants, whose production and consumption of *BB* contributed to the process of defining the Dunn community.

The first and most prominent tradition *BB* drew upon were those forms of humor found in professional science and medicine. The annual production of rowdy and risqué sketches had been a part of British medical education from the Victorian era onward.[37] The bawdy spirit of fraternal Victorian scientific drinking and dining societies, such as the London Chemical or Quackett Microscopy Clubs, set the tone for annual dinners later held in London by university science departments.[38] At Cambridge, the Cavendish Physical Society invited senior members of the Physics Department to ribald, alcohol-infused holiday dinners. The visiting Russian physicist Pyotr Kapitza described the 1920 holiday dinner in a letter to his mother: "we all ate and drank . . . between the toasts songs from a collection written by the physicists themselves were sung. . . . The lab, physics, and the professors were all serenaded in comical terms. . . . You could do anything you liked at the table—squeal, yell, and so on." Affirming its links to fraternal rituals, Kapitza noted that "there were no ladies at the dinner."[39] The Physical Society produced a text of its songs, the *Post-Prandial Proceedings of the Cavendish Society*, which spanned six editions from 1900 to 1926.[40]

Even before their new building was complete, the Dunn's members followed these precedents and held holiday dinners featuring both humorous speeches by Hopkins and irreverent

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[35] Harmke Kamminga and Mark Weatherall, "The Making of a Biochemist II: The Construction of Frederick Gowland Hopkins' Reputation," *Med. Hist.*, 1996, *40*:427n50.

[36] *BB*, 1923, no. 1, p. 8.

[37] Keir Waddington, "Mayhem and Medical Students: Image, Conduct, and Control in the Victorian and Edwardian London Teaching Hospital," *Social History of Medicine*, 2002, *15*:51–56.

[38] Hannah Gay and Peter Gay, "Brothers in Science: Science and Fraternal Culture in Nineteenth-Century Britain," *History of Science*, 1997, 35:442, 447, 453n90.

[39] Pyotr Kapitza, *Kapitza in Cambridge and Moscow: Life and Letters of a Russian Physicist*, trans. J. W. Borag, P. E. Rubinin, and D. Schoenberg (Oxford: North-Holland, 1990), pp. 138–139.

[40] Crowther, *Cavendish Laboratory* (cit. n. 19), pp. 124–125; and A. A. Robb, *Post-Prandial Proceedings of the Cavendish Society*, 6th ed. (Cambridge: Bows & Bows, 1926).

skits by research students.[41] Rude practical jokes directed by younger members against older members were also a feature of laboratory life—on one occasion the second-highest-ranking member of the Dunn, J. B. S. Haldane, the Reader in Biochemistry, found the sugar cubes for his tea spiked with bitter quinine.[42] Early issues of *BB* appeared in December and included holiday greetings, suggesting a strong link between the carnivalesque performances allowed at these first holiday dinners and the written humor of *BB*.

BB also incorporated elements drawn from a broader world of collegiate publications and middle-class British humor, especially yearbooks. Unlike the songbooks of the Cavendish, it did not preserve a canon of humor for annual repetition. Each issue of *BB* included new contributions memorializing the events of the year. The contributions represented a mixture of illustration, text, and social satire similar to that of widely circulated London humor magazines such as *Punch* or magazines produced by Oxbridge undergraduates.[43] In adopting all of these elements *BB* seems unique among its peers. Members of the Lister Institute of Preventative Medicine in London and the Strangeways Laboratory in Cambridge engaged in practical jokes, but there was no comparable investment of time in a collective publication.[44] Outside of Britain, pantomimes produced by researchers at the Institute of Theoretical Physics in Copenhagen seem to have more in common with the rituals of fraternal clubs. These physicists also produced a humorous publication entitled the *Journal of Jocular Physics*, but it only appeared every decade, in 1935, 1945, and 1955.[45]

BB's volunteer editors devoted considerable time and effort to its preparation, assuming responsibility for laying out each issue, locating printers, and extracting contributions from members of the institute. As in other kinds of work that involved a period of training or apprenticeship, the mundane tasks of editorship fell to junior members—women were better represented as editors than in the laboratory itself. Editing or contributing to *BB* provided a means for those just entering the community of the Dunn, and often Cambridge itself, to integrate themselves into an environment where they were otherwise out of place. Indeed, the two founding editors of *BB*, Judah Quastel and Margaret Whetham, were drawn from the ranks of "clever young Jews and talkative women" whom the secretary of the MRC ruefully noted had found a haven in the Biochemistry Department.[46]

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[41] Judah H. Quastel, "A Short Autobiography," in *Comprehensive Biochemistry*, Vol. 35, ed. Semenza (cit. n. 13), p. 139; and Philip Randle, "Frank George Young: 25 March 1908–20 September 1988," *Biographical Memoirs of Fellows of the Royal Society*, 1990, *36*:591.

[42] Dorothy Needham, in *Sir William Dunn Institute of Biochemistry*, p. 16. UA BCHEM, item 2/4.

[43] Richard Daniel Altick, *Punch: The Lively Youth of a British Institution, 1841–1851* (Columbus: Ohio State Univ. Press, 1997).

[44] Leslie H. Collier, *The Lister Institute of Preventative Medicine: A Concise History* (Bushely Heath, Hertfordshire: Lister Institute of Preventative Medicine, 2000); Lesley A. Hall, "The Strangeways Research Laboratory: Archives in the Contemporary Medical Archives Centre," *Med. Hist.*, 1996, *40*:231–238; and Susan M. Squier, "Life and Death at Strangeways," in *Biotechnology and Culture: Bodies, Anxiety, Ethics* (Bloomington: Indiana Univ. Press, 2000), pp. 33–37. The only similar instance of published scientific humor located is the University of Cambridge Botany Department's *Tea Phytologist*, published in 1934 and 1938, but its tone and form suggest that it was influenced by *BB*, not vice versa. UCL RB, item CAM.B.31.54.

[45] Gino Segre, *Faust in Copenhagen: A Struggle for the Soul of Physics* (New York: Viking, 2007); and Beller, "Jocular Commemorations" (cit. n. 5), p. 252.

[46] I owe this point regarding the production of *BB* as a means of social integration to Professor Naomi Rogers. Neophyte members of a community or apprentices in other working environments are often inducted into a community through performing mundane or onerous tasks; see Darnton, *The Great Cat Massacre* (cit. n. 7), pp. 86–88. Ethnographic studies of scientific environments as new groups such as women entered suggest that work on projects such as yearbooks serves this role; see Heather Dryburgh, "Work Hard, Play Hard: Women and Professionalization in Engineering-Adapting to the Culture," *Gender and Society*, 1999, *13*:664–682. Only Judah Quastel has been definitively identified as a member of the Dunn Institute with Jewish heritage. Fletcher's remark may reflect a hallmark of discriminatory rhetoric in exaggerating the presence of minority groups. See Quastel, "Short Autobiography" (cit. n. 41).

In the first four issues, the participation rate of the Dunn community remained constant at around 20 percent, which amounted to contributions from ten to twelve members of the institute. Extracting material eventually became more difficult, as the "anti-editorial" of the fifth issue bluntly hinted:

> The Editors are horrid men . . .
> They come and rag, and then they nag
> For poems for their beastly rag
> We wish they'd go away.[47]

Reflecting the energetic efforts of these editors, approximately half of the Dunn's members contributed to the fifth issue. The length of the journal remained constant at sixty-four pages, suggesting that while participation broadened, individual effort declined. Published two months behind schedule in February 1929, the sixth issue provides compelling evidence of *BB*'s importance to the Dunn's collective identity. Both of the editors had been at the Dunn for less than a year. The escalating tempo of laboratory work at the Dunn infringed on time previously devoted to social activities such as *BB*. Their introduction described the near-death of *BB* in the preceding year: "Everyone had been discussing the future of B.B. for weeks and everyone agreed that B.B. must carry on, but each was equally strongly agreed . . . that he (or she) was too busy to be concerned with [editing]." A laboratory-wide meeting had been called to discuss the "fate" of *BB* and appoint its editors.[48]

A new cohort of contributors emerged as older members were overtaken by other responsibilities; the new editors wrote, "Readers will find a large sprinkling of new initials in this issue—in fact, the number of new contributors, chiefly of the younger generation, is quite phenomenal (as is also the failure of some of the older contributors to live up to their promises)."[49] Whereas the editors of the first issue had apologized for "the omissions which have been made from the large quantity of matter which has been submitted to us," the editors of the sixth issue noted that "some people's ideas have taken so long in germinating that they have perforce been omitted."[50] Despite these difficulties, the sixth issue included twenty-one contributors. However, the challenges of soliciting contributions continued to grow. The editors of the seventh issue worried that "we appear to be heading towards a witless and serious laboratory."[51]

The fact that the production of *BB* continued in face of these challenges is a sign that the members of the Dunn understood that participating in *BB* and the construction of their community were intertwined. Hopkins gave *BB* his approval, providing the leading contribution to every issue. While he never directly addressed the purpose of *BB*, a preface he provided for an undergraduate medical publication in 1922 suggests why he might have viewed it favorably: "Its aim . . . should be to awaken in those who have just chosen their career a sense of comradeship—an early realization of that community of interests and ideas which should link together those who are entering upon a great and difficult calling."[52]

Like undergraduate collegiate publications and unlike the inward-facing rituals of other scientific departments, *BB* aimed to broadcast the communal wit of the newly formed Dunn to

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[47] *BB*, 1927, no. 5, p. 4.
[48] *Ibid.*, 1929, no. 6, p. 5.
[49] *Ibid.*
[50] *Ibid.*; see also *BB*, 1923, no. 1, p. 6.
[51] *Ibid.*, 1930, no. 7, p. 5.
[52] Frederick Gowland Hopkins, "Greetings," *Cambridge University Medical Society Magazine*, 1922, *1*:3. UCL RB, item CAM.B.21.13.

readers in Cambridge, Britain, and circles beyond.[53] The first editors of *BB* wrote that they hoped it would serve as a showcase for the "wealth of imagination which constantly pervades our laboratory."[54] Along with the appearance of the Dunn building on the cover, subtler traits tied *BB* to the Dunn community. Printed on the presses of local newspapers, the quality and layout of *BB* mimicked that of the academic *Biochemical Journal*.[55] Covers included a price, suggesting that sales defrayed a part of its production costs.[56] One introduction pled: "We hope you will enjoy what is to come. . . . Please recommend it to your friends and buy a lot of copies."[57]

The most dedicated readership of *BB*, appears to have been found among the undergraduate medical students attending classes in the Dunn.[58] The *Medical Society Magazine* gave *BB*'s first issue a positive review, calling it "one of the most successful humorous publications we have read for some time."[59] London-based medical and scientific publications such as *Nature* and the *Lancet* reviewed *BB*; the latter warned that although "most of the humor is local, and there is an excess of it . . . anyone who has a moderate knowledge of biochemistry and a sense of humor should enjoy it immensely."[60] Copies followed institute members as they traveled away from Cambridge to Yale, Columbia, Oxford, and the University College of London.[61] Nonetheless, it is difficult to gauge how widely read *BB* ever was outside of the Dunn.

BB sought to maintain a sense of privileged membership even in its public display of humor. Contributions were signed with initials rather than names. While a member of the institute would have little trouble identifying these writers, authorship would remain opaque to outsiders—amplifying the sense of the publication as a product of the community rather than specific individuals. Indeed, the inaccessible and "local" nature of the humor may have served this purpose as well.[62] Its members clearly saw the production of *BB* as a mark of distinction. According to one contributor, whereas there was a "Brighter Biochemistry," there was no "Gayer Geology, Funnier Physics, Cheerier Chemistry, Sillier Psychology, Merrier Mineralogy, Heartier Anatomy, Appier Agriculture, Prettier Parasitology, Better Botany, [or] Zingular Zoology."[63]

III. REPRESENTING BRIGHT BIOCHEMISTS

At first glance, the satires and parodies that members of the Dunn directed upon themselves appeared to undermine the institute's leadership or the prestige of biochemistry. Humor theorists have noted, however, that these forms of humor are especially well suited to managing the tensions of a hierarchal social group. Humor's capacity to accommodate multiple meanings sets it apart from prescriptive means of defining a group's worldview through setting codes

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[53] On college publications and projecting identity see Deslandes, *Oxbridge Men* (cit. n. 34), pp. 17–19, 288–289; and Howarth, *Cambridge between Two Wars* (cit. n. 16), pp. 243–244.

[54] *BB*, 1923, no. 1, p. 6.

[55] Either the *Cambridge Chronicle* or *Cambridge Daily News*. I have compared *BB* with contemporaneous printed copies of the *Biochemical Journal* to establish the similarity.

[56] The price varied between two shillings and two shillings sixpence. This is worth approximately £7.50 in contemporary terms as determined from https://www.measuringworth.com (cit. n. 19).

[57] *BB*, no. 6, p. 6. One issue contained a mock ad promising to send its readers a reward "in exchange for 499 covers of this year's BB." This may suggest an upper limit to the number of copies. See *BB*, 1927, no. 5, p. 26.

[58] Eric Baldwin and Joseph Needham, "Selections from Brighter Biochemistry," in *Hopkins and Biochemistry*, ed. Baldwin and Needham (Cambridge: Heffer & Sons, 1949), p. 321.

[59] "Notes and Notices," *Cambridge Univ. Med. Soc. Mag.*, 1924, 3:207. UCL RB, item CAM.B.21.13.

[60] "Brighter Biochemistry," *Lancet*, 1926, *207*(5346):376; and "News and Views," *Nature*, 1931, *128*(3229):490.

[61] Based on a worldcat.org search, most recently completed on 1 July 2020.

[62] Baldwin and Needham, "Selections from Brighter Biochemistry" (cit. n. 58), p. 321. The acronyms have served their intended purpose all too well: only forty-five of the approximately seventy contributors to *BB* are identifiable. All of these were affiliated with the Dunn. On collective and anonymous authorship see Beaulieu, "Bourbaki's Art of Memory" (cit. n. 5).

[63] *BB*, 1925, no. 3, p. 55.

of conduct or the use of disciplinary measures. In the well-known case of carnival, public satire—such as switching heaven for hell—is capable of simultaneously expressing dangerous ideas and affirming a traditional worldview by presenting it back in inverted terms.[64] On a more modest scale, moments of satire or parody can resolve tension between deference toward a workplace's leadership and frustration with its faults by creating momentary openings for dangerous ideas to be expressed.[65] Even as they made jokes at the expense of the Dunn's reputation, satirical representations of the Dunn served to affirm its leadership, define its traditions, and diffuse anxieties regarding the precarious financial conditions that many researchers at the Dunn labored under.

Satire and Hierarchy

The conservative role of satire appears most directly when it targeted members of the laboratory's leadership. While early issues of *BB* contained satires directed at Hopkins, over time these contributions expanded to include other senior male members of the laboratory, including Malcolm Dixon, J. B. S. Haldane, T. S. Hele, and Joseph Needham. Hopkins was the first target of a series called "Confessions," which contained the following arch exchange: "*What is your favourite man's name*? I have no 'favorite man.' *What is your favourite woman's name*? The name of my favourite woman is not the business of this Journal."[66] The "Confessions" accorded a similar treatment to Hele and Needham, lecturers, and Haldane, the reader, whose response to the question, "*What is your favorite recreation*?" was "pretending to be a biochemist," an allusion to his emerging interest in mathematical genetics and his prior training in physiology.[67] *BB* contributions also frequently portrayed Haldane as a heavy drinker. A table of "new" enzymes found in Haldane's laboratory, paired his initials "JBSH" with "Alcohol [-]ase"—the suffix "-ase" denoted an enzyme that catalyzed the metabolism of a compound.[68]

Later in the 1920s, administrative work separated Hopkins from the daily research activity of the Dunn.[69] One verse in a song entitled "Our Glorious Staff" ran:

> Our Prof-ess-or's a sanguine Man;
> He Sees a Goose for Every Swan . . .
> His Line, however, never ran
> On doing much research.[70]

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[64] Mikhail Mikhaĭlovich Bakhtin, *Rabelais and His World*, trans. Hélène Iswolsky (Bloomington: Indiana Univ. Press, 1984). See also Anne Burson-Tolphin, "A 'Travesty Tonight': Satiric Skits in Medicine," *Literature and Medicine*, 1993, *12*:81–110; Paula Findlen, "Between Carnival and Lent: The Scientific Revolution at the Margins of Culture," *Configurations*, 1998, *6*:245–255; Don Handelman, *Models and Mirrors: Towards an Anthropology of Public Events* (Cambridge: Cambridge Univ. Press, 1990), pp. 49–52; and Mulkay, *On Humour* (cit. n. 11), p. 177.

[65] Beller, "Jocular Commemorations" (cit. n. 5), pp. 258–260; and Mulkay, *On Humour*, pp. 214–215. On other instances of workplace humor in this vein see David L. Collinson, "'Engineering Humour': Masculinity, Joking and Conflict in Shop-Floor Relations," *Organization Studies*, 1988, *9*:181–199; Janet Holmes, "Politeness, Power and Provocation: How Humour Functions in the Workplace," *Discourse Studies*, 2000, *2*:159–185; and Steve Linstead, "Jokers Wild: The Importance of Humour in the Maintenance of Organizational Culture," *Sociological Review*, 1985, *33*:741–767.

[66] *BB*, 1927, no. 5, p. 45 (italics in the original).

[67] Order of rank was professor, reader, lecturer. See *BB*, no. 7, p. 21; and N. W. Pirie, "John Burdon Sanderson Haldane, 1892–1964," *Biographical Memoirs of Fellows of the Royal Society*, 1966, *12*:234–235.

[68] *BB*, 1924, no. 2, p. 48. For a summary of Haldane's enzyme research see J. B. S. Haldane, "The Biochemistry of the Individual," in *Perspectives in Biochemistry*, ed. David E. Green and Joseph Needham (Cambridge: Cambridge University Press, 1937), pp. 1–11.

[69] Pirie, "Sir Frederick Gowland Hopkins" (cit. n. 13), p. 125.

[70] *BB*, 1930, no. 7, p. 25.

"Emperor Frederick" appeared as the ruler of "Merrie Bingeland," exclaiming, "Alack! My knowledge of the current literature is woefully behind!" "Merrie Bingeland" also chided Needham for his lengthy three-volume *Chemical Embryology* (1931) with a verse ending, "He never writes too much."[71] These contributions demonstrated the dual capacity of satire. Parodies and satires of the Dunn's leadership allowed some dissatisfaction to surface, but even as younger members of the institute made jokes at the leadership's expense, the jokes themselves affirmed the Dunn's hierarchy.

(Ir)Reverence toward the Past

Hopkins sought to legitimize his research agenda for dynamic biochemistry through defining its historical lineage. Visitors to the Dunn Institute's library encountered carvings of four scientists whose methods purportedly formed the basis of modern biochemistry.[72] Given the centrality of history to Hopkins's vision of biochemistry, it is not surprising that *BB* presented many histories that affirmed his genealogy of biochemistry even as they parodied it. Many contributions took a stance and tone toward their material similar to the popular book *1066 and All That*, a satire of British history that had first been serialized in *Punch*, whose authors invoked anachronism and insouciance toward the milestones of British history taught to schoolchildren.[73] *BB* adopted the same tone toward the history of biochemistry. "How Tryptophane Was Discovered" gave an offhand account of one of Hopkins's signature achievements: "H. said: 'Let's discover tryptophane.' And C. [Sydney Cole, Hopkins's assistant] said: 'Oh, all right, I've got nothing to do just now, let's.'"[74]

The irreverence toward the past expressed in *BB* reflected the broader struggle of a British generation who came of age in the pessimistic cultural moment following World War I to claim an identity for themselves.[75] This struggle was made clear in the chemical and age wordplay in one contribution: "The Problems of Biochemistry Demand FRESH SOLUTIONS. We Have No Use For MOULDY OLD BUFFERS."[76] A description of the "Windwhistle Institute of Fundamental Research," provided an elaborate parody of the veneration accorded to earlier generations of scientists. The institute reflected the historical insights of Professor Windwhistle, which the contribution presented as follows: "All the great magnificent pioneer work was done by Provincial Professors, working in damp cellars with miserably inadequate apparatus, and bearing the burden and heat of the day. He therefore constructed the following crystal-clear syllogism: [1] Fundamental discoveries were made by men forty years ago. [2] Men forty years ago worked in damp cellars. [3] Therefore fundamental discoveries can only be made in damp cellars."[77] The satire followed this logic to reverse the architectural and financial hierarchy of the laboratory. The best posts were those in a basement with meager or no funding and a staff of paid "interrupters" were awarded to "Provincial Lecturers," whereas "London Professors" received the curse of ample financial support and functioning laboratories.[78]

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[71] *Ibid.*, 1931, no. 8, p. 7; and Joseph Needham, *Chemical Embryology* (New York: Macmillan, 1931).

[72] John Mayow (1641–1679, chemistry of respiration), Thomas Graham (1805–1869, colloid chemistry), Justus Liebig (1803–1895, animal chemistry), and Louis Pasteur (1822–1895, microbe theory). See Kamminga and Weatherall, "Making of a Biochemist I" (cit. n. 20), pp. 286–289.

[73] Walter Carruthers Sellar and Robert Julian Yeatman, *1066 and All That: A Memorable History of England Comprising All the Things You Can Remember Including One Hundred and Three Good Things, Five Bad Kings, and Two Genuine Dates* (London: Methuen, 1930), p. xi.

[74] *BB*, 1927, no. 5, p. 29. Tryptophan (an amino acid) was isolated by Hopkins in 1901.

[75] John Lucas, *The Radical Twenties: Aspects of Writing, Politics, and Culture* (Nottingham: Five Leaves, 1997), pp. 1–5.

[76] *BB*, 1931, no. 8, p. 12. "Buffer" was British slang for an older man. *Oxford English Dictionary*, 2nd ed. (1989), s.v. "buffer."

[77] *BB*, 1931, no. 8, p. 13.

[78] *Ibid.*, pp. 13–14.

However, even as these histories appeared to diminish prior scientific accomplishments, their humor served a didactic function. These parodies did not suggest other historical milestones; rather, they enshrined those chosen by Hopkins for the education of newcomers to the Dunn reading *BB*—just as the inversion of heaven and hell during carnival left revelers with the confidence that heaven existed, so too did *BB*'s satires of the past affirm Hopkins's preferred history. From the perspective of stabilizing the Dunn's community, these satirical representations of the past worked just as well to provide a sense of common history as more staid offerings.[79]

Bright Biochemistry

The importance of satirical contributions to *BB* as a means of world building is most apparent in its articulation of "brightness." Despite the playful tone of writing about brightness, this idea was a means of addressing the anxieties that shadowed research at the Dunn and frustration with Hopkins's management, or lack thereof, of the institute's finances. The financial condition of the Dunn's members was far more precarious than the fanfare of its creation suggested. Out of the generous Dunn bequest, only £3,000 was available annually to support around ten research students at a typical salary of £250–£350. The rest was committed to endowments supporting a professorship, a readership, and the laboratory building. The needs of the researchers that Hopkins recruited soon outstripped the available funds.[80] Chagrined, he was forced to request a bailout from the Dunn trustees in 1924.[81] During the 1920s approximately thirty out of fifty researchers received grants from the MRC, DSIR, and private charities.[82] Hopkins himself yoked the importance of these grants to the intellectual brightness of the Dunn, describing the institute as a "mysterious universe" drawing energy from MRC, Beit (charitable fellowship), and DSIR "rays" while its "luminous stars" emitted "B.J. [Biochemical Journal] waves."[83] As a result of this dependence on external funding, members of the Dunn's booming population were frequently uncertain where their future support would come from.[84]

In their self-representation members of the Dunn drew upon the association between brightness and the "bright young things," a well-chronicled youth subculture in Jazz Age London. The participants in this subculture used private language and inside jokes as markers of their exclusivity, but their mores were just as readily parodied by *Punch*.[85] Parties, and the scandalous antics of their participants, were a prominent feature of the mythos cultivated by the bright young things. This also featured in *BB*. An account of the Dunn's Christmas party, told as a parable of an unsupervised animal supply room, found the narrator approaching a shadowy closet: "the door was open, and one could hear a gentle chirruping, with an occasional soft little smack. I went in and turned up the lights. Two pairs of mice jumped apart . . . but a couple of rats remained in close proximity to one another. . . . A brazen pair of Guinea pigs sauntered in and kissed under the mistletoe."[86] The opening editorial in the fifth issue

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[79] Aaron Gurevich, "Bakhtin and His Theory of Carnival," in *A Cultural History of Humour*, ed. Bremmer and Roodenburg (cit. n. 11), p. 57.

[80] Kohler, "Walter Fletcher" (cit. n. 17), pp. 348–351.

[81] F. G. Hopkins to Sir Jeremiah Colman (executor of the Dunn estate), 15 Jan. 1924. UA BCHEM, item 3/3/25.

[82] Memo entitled "Finance of the Biochemical Department Cambridge," attached to a letter from F. G. Hopkins to Jeremiah Colman, 15 Jan. 1924, pp. 8–10. UA BCHEM, item 3/3/26.

[83] *BB*, 1931, no. 8, p. 6.

[84] Quastel, "Short Autobiography" (cit. n. 41), p. 138; and Kohler, *From Medical Chemistry to Biochemistry* (cit. n. 3), p. 5.

[85] D. J. Taylor, *Bright Young People: The Rise and Fall of a Generation, 1918–1940* (London: Vintage Books USA, 2008), pp. 22–23, 127–129.

[86] *BB*, 1925, no. 3, p. 25.

explained that after the marriage of the two editors of the previous year's issue, that "two is company, but three is safer" for the journal's staff. "Either the two editors must be of the same sex, or there must be three editors," but ultimately "in biochemistry you never know what may happen."[87]

Like their bright contemporaries in London, bright biochemists were shadowed by the threat of genteel poverty.[88] Gallows financial humor was common in *BB*. The "Brighter Biochemistry Traveling Fellow" thanked the executors of their fellowship for a "totally inadequate grant."[89] Other contributions expressed a cultivated nonchalance toward financial support and research productivity, such as a story in which the narrator declared that after winning a medical research grant he "possessed . . . considerable leisure . . . except of course for a rather strenuous three weeks or so before the first of June, when . . . [the] annual report was due."[90] The plots of many crime mystery parodies hinged on villains turning to murder in order to improve their odds of obtaining fellowships.[91]

Even as the contributions to *BB* revealed these anxieties, brightness provided a framework for containing them. Members of the Dunn told themselves that the creativity and play of their work was more important than stability. This was the view that Hopkins encouraged. Referring to the practice of "Couéism," the repetition of positive affirmations popular during the 1920s, he urged:

> Be Bright no matter what befall; in spite
> of every departmental jag. Which when your work inclines to lag
> looms over large. To ease your pain
> Read Brighter Biochemistry again.
> And Coué Coué day and night:
> "I will be bright I *will* be bright."[92]

"Biofemina": Humor and the Lives of Women in the Dunn

The women who came to Cambridge to work at the Dunn were especially concerned with brightness and humor. Despite their integration into the scientific and cultural life of the Dunn, women did not exist on equal terms with their male counterparts. Women who pursued biochemistry did so largely outside the existing systems of support developed by the gender-segregated system of colleges at Cambridge. Nor were women appointed to posts supported by the Dunn endowment. As a result of Hopkins's inattentiveness to the Dunn's finances, the most experienced women working in the institute, such as Dorothy Needham and Marjory Stephenson, later two of the first women elected as fellows of the Royal Society, subsisted from year to year on a mélange of temporary grants. Needham recalled that she "existed on one research grant to another, devoid of position, rank, or assured emolument."[93]

The historical record of the Dunn Institute records few contemporaneous reactions to this situation, save that of humor. The participation of women in *BB* was itself remarkable.

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[87] *Ibid.*, 1931, no. 8, p. 5.
[88] Taylor, *Bright Young People* (cit. n. 85), p. 36.
[89] *BB*, 1924, no. 2, p. 40.
[90] *Ibid.*, 1929, no. 6, p. 16.
[91] *Ibid.*, 1927, no. 5, pp. 14–20; and *ibid.*, 1929, no. 6, pp. 16–28, 48–51.
[92] *Ibid.*, 1924, no. 2, p. 7; and *Oxford English Dictionary*, 2nd ed. (1989), s.v. "Couéism."
[93] Kohler, *From Medical Chemistry to Biochemistry* (cit. n. 3), p. 88; Kohler, "Innovation in Normal Science" (cit. n. 28), pp. 178–179; and Teich, "Dorothy Mary Moyle Needham" (cit. n. 25), pp. 358–359.

In contributions to *BB* women practiced humor in public for a mixed-gender audience, an assertion of equal standing that still drew opprobrium in other quarters of the British scientific and medical establishment.[94] Even as the community of the Dunn took shape, women, who had been admitted to medical training at London Hospital Medical College in 1918, were expelled in 1922 on the putative grounds that exposure to the black humor of medical training made them, in the words of a commentator for *The Times*, "coarse, immodest, and vulgar."[95]

In one of the most striking representations of the economic anxieties women faced, one contributor presented a drawing of a "biofemina" modeling a dress. Upon closer examination, a reader notices that the garment, cut in the fashion of a flapper dress popular with the bright young things, was formed from the burlap of a Henry Tate Company sugar sack—suggesting the model's poverty.[96] (See Figure 1.) Another *BB* contribution presented a parody of Jane Austen novels set in the Dunn, where the prestige of fellowships held replaced concerns for social rank that permeated courtship.[97]

These humorous responses to precarity on the part of the institute's staff, especially women, contained both subversive and conservative elements. On the one hand, they express a barbed critique of Hopkins's administration that might have been difficult to voice through more serious avenues. On the other hand, however, by borrowing from the conventions of bright youth culture to express their concern, these contributions suggested that the appropriate response is not direct protest against their conditions but further self-fashioning as youthful, rebellious, optimistic, and brilliant. The biofemina and other satires provide a window into the anxieties and conflicts that existed within the Dunn even as they also constituted a mechanism through which the Dunn community diffused the power of these destabilizing moments.

IV. DEFENDING THE DUNN

The tone and form of *BB*'s humor changed dramatically when it shifted its focus from the Dunn community to the broader world. Here, *BB*'s humor employed a blunter set of instruments: ridicule, shaming, and racial caricature—forms of humor that were directed downward at outsiders rather than upward at the community's leaders.[98] These forms served to demarcate the identity of the Dunn's biochemical contributors from external groups whose differing expectations of biochemistry challenged the their collective attempt at self-fashioning as a scientific elite.

Visitors

Hopkins's prestige and the magnitude of the Dunn bequest granted Cambridge biochemistry considerable notoriety. While this reputation was useful in drawing further support, it had to be sustained due to the fact that the expense of the Dunn's operations routinely exceeded the income of the bequest. Entertaining official visitors was one part of the effort to seek further support.[99] However, being placed on display threatened to transform the Dunn's researchers into curiosities and diminish the merit of their scientific work. Hopkins mused in *BB*, "It is in the

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[94] Regina Barreca, *Untamed and Unabashed: Essays on Women and Humor in British Literature* (Detroit: Wayne State Univ. Press, 1994), pp. 28–30.
[95] Quoted in Carol Dyhouse, *Students: A Gendered History* (London: Routledge, 2006), pp. 72–73.
[96] *BB*, 1927, no. 5, p. 26.
[97] *Ibid.*, 1927, no. 4, p. 5.
[98] Anthony Corbeill, *Controlling Laughter: Political Humor in the Late Roman Republic* (Princeton, N.J.: Princeton Univ. Press, 1996), pp. 1–13; Kuipers, "The Sociology of Humor" (cit. n. 9), pp. 369–370; and Terry Mizrahi, *Getting Rid of Patients: Contradictions in the Socialization of Physicians* (New Brunswick, N.J.: Rutgers Univ. Press, 1986), p. 41.
[99] Kohler, "Walter Fletcher" (cit. n. 17), pp. 348–349.

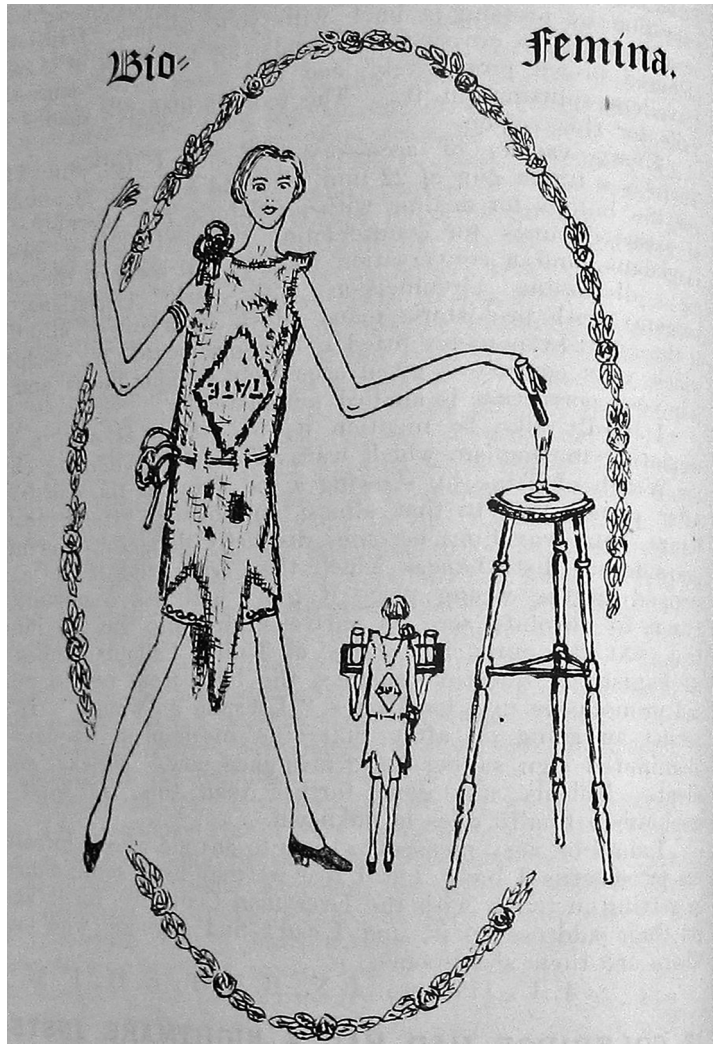

Figure 1. "Biofemina" adopting hair, body type, and dress associated with a Jazz Age flapper. *BB*, 1927, no. 5, p. 26. Courtesy of Whipple Library, Department of History and Philosophy of Science, University of Cambridge.

highest degree unseemly that scientific workers . . . should be treated as so many exhibits. But how can it be helped? Who would care for the hive if he be not shown the bees?"[100]

Contributions showcasing incorrect ways of moving through the Dunn sustained a feeling of privileged membership even as visitors arrived. Parodying visitors' perceptions of the Dunn in *BB* created a close community of those who could claim insider knowledge of the "real" institute while diffusing their unease at becoming objects of observation.[101] One contribution presented the visit of a "very special [newspaper] correspondent" to the Dunn "Biochemical

[100] *BB*, 1927, no. 5, p. 8.

[101] Similar uses of "tours" of the laboratory to reinforce a sense of insider status have been noted in other contexts. Michael Lynch, *Art and Artifact in Laboratory Science: A Study of Shop Work and Shop Talk in a Research Laboratory* (Boston: Routledge & Kegan Paul, 1985), pp. 143–178.

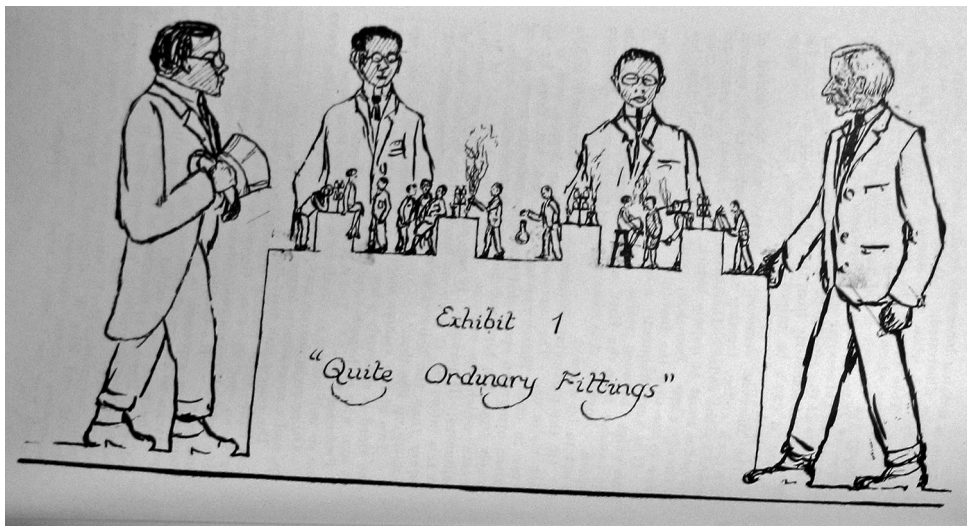

Figure 2. "The Showman's Apology." Hopkins, at right, presents a dollhouse version of the Dunn Institute for inspection by a group of racially caricatured Japanese visitors. *BB*, 1927, no. 5, p. 6. Image from author's collection.

Exhibition" as if it were a part of the British Empire Exhibition at Wembley, which took place from 1924 to 1925. The contribution amused by elevating the peripheral features of the building over its laboratories. The correspondent was pleased to announce that there was "*no charge for admission*." The most interesting "exhibit" was the tea room, where "even those whose knowledge of Biochemistry is almost nil [were] permitted to perform a few simple experiments."[102]

One of Hopkins's contributions, entitled "Showman's Apology," used racial stereotypes to draw out and diffuse the tension created by placing the membership of the institute on display. (See Figure 2.) Hopkins reminded his readers that tours by visitors were contrary to the spirit of the Dunn, remarking that "there is nothing bright about such incidents as they are here to be illustrated." As Hopkins was taking his morning coffee, he was beset by "crisis": "Somebody (with letters of introduction), has come to see the Institute!" Although it could often be a Westerner wishing to see Cambridge "between trains," Hopkins chose to emphasize racial difference, making the visitor "an ambassador from the East, with a disconcerting air of infinite leisure." Hopkins resignedly prepared to perform "the function of [a] showman."[103]

Hopkins guided his visitors through the Dunn, starting with the "easiest" room: the lecture theater. Hopkins was able to describe in "banal" terms the undergraduate instruction given by the staff. Once Hopkins encountered the frosted glass doors of the "private" labs, his task worsened. Hopkins agonized; could "he possibly throw open the next . . . door" as one would overturn a rock and "expose such gentle shrinking folk as work within to the Asiatic gaze?" The humor of the Dunn presented another challenge: "mascots . . . and humorously labeled bottles cause anxiety to the Showman. How will Asia take such things? . . . The inscrutability of the East!" In addition to the sites included on the tour, Hopkins mentioned those places that the visitors were *not* shown: the

[102] *BB*, 1924, no. 2, pp. 8–10 (italics in the original). The Empire Exhibition was intended to showcase British industry and for its dominions to promote their products. Its emblem was the "Wembley Lion," whose style the "Dunn Lion" echoes on the cover of two issues of *BB*. See Donald Knight and Alan Sabey, *The Lion Roars at Wembley: British Empire Exhibition, 60th Anniversary, 1924–1925* (New Barnet: D. R. Knight, 1984).
[103] *BB*, 1927, no. 5, p. 5.

basement animal cages and the room behind the "unglazed door" marked "Food Investigations," which was "*never* opened," an allusion to Hopkins's lack of interest in nutrition research.[104]

In Hopkins's contribution, the racial otherness of the visitors and the tension that their gaze inspires in his narrative were a deliberate choice—two scientists from Japan had visited the Biochemistry Department in 1921, the first of a stream of visitors during the 1920s. The fictional tour Hopkins provided offered a means for the members of the Dunn to understand themselves and these visits in relation to their role as emblems of British scientific prowess, just as fictional tours as a whole diffused tension over the intrusions that the Dunn's notoriety invited.[105]

Public Men

Driven by their heavy reliance on funding from the British government, members of the Dunn also displayed preoccupation and frustration with the political classes' appreciation of science, resorting to ridicule when they felt powerless. "If Public Men Took to Biochemistry" created humor by transposing biochemical terminology into political contexts. The Conservative prime minister, worried about the "dangers of foreign protein importation, even in the smallest quantities," while at a "mass meeting of muscle fibres"; a Labor Party leader stated that two planks of his party's platform were "the principle of minimum work, and the levy of fat." Finally, the Bishop of London worried whether any "uncatalysed unions of hemoglobin and oxygen still occurred."[106] Through emphasizing the failure of translation between the spheres of science and politics, this contribution reminded its readers of the absurdity of assuming that politicians could make informed decisions about biochemical research. (See Figure 3.)

Cuts in research funding to the MRC and DSIR in 1930 heightened the tenor of later contributions.[107] In "The Biochemistry of History," one author contemplated the results of switching questions in the natural sciences and history undergraduate final exams. The historians' answers to biochemistry questions confused phosphorous with Bosporus, Mendel with Vandals, and purines with Puritans (readers were not given the scientists' performance on the history exam). The moral that should be drawn was clear: "For it is the men who pass, or just fail to pass, the History Special who afterwards become Cabinet Ministers . . . and have in their keeping . . . the control of finance and policy of scientific research. . . . It is reassuring to see that these men are able to deal promptly and satisfactorily with unexpected scientific problems on such short notice."[108]

Humorous wordplay on subjects dear to the political classes also reflected biochemists' striving to assert their status relative to the long-standing prestige of the humanities in Cambridge academic culture. Their contributions provide an early preview of the physicist C. P. Snow's portrayal of the gulf between the "two cultures" of British science and the humanities after World War II, to the detriment of politicians trained in the humanities.[109] Broadcasting fluency

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[104] *Ibid.*, p. 7.

[105] Paul R. Deslandes, "'The Foreign Element': Newcomers and the Rhetoric of Race, Nation, and Empire in 'Oxbridge' Undergraduate Culture, 1850–1920," *Journal of British Studies*, 1998, 37:54–90; and Kamminga and Weatherall, *Dynamic Science* (cit. n. 21), p. 24.

[106] *BB*, 1923, no. 1, p. 9. Although members of the Dunn, such as Haldane and Needham, later became notorious for their left-wing political positions, the political humor of *BB* ceased at wordplay.

[107] Werskey, *Visible College* (cit. n. 12), p. 39.

[108] *BB*, 1931, no. 8, pp. 26–27.

[109] On the operation of disciplinary hierarchies see Pierre Bourdieu, "The Specificity of the Scientific Field and the Social Conditions of the Progress of Reason," *Social Science Information*, 1975, *14*:19–47. For status of the experimental sciences at Cambridge see Roy MacLeod and Russell Moseley, "The 'Naturals' and Victorian Cambridge: Reflections on the Anatomy of an Elite, 1851–1914," *Oxford Review of Education*, 1980, *6*:188–191; Roy Porter, "The Two Cultures Revisited," *Boundary 2*, 1996, 23:3–8; and Anna K. Mayer, "Reluctant Technocrats: Science Promotion in the Neglect-of-Science Debate of 1916–1918," *Hist. Sci.*, 2005, *43*:139–159.

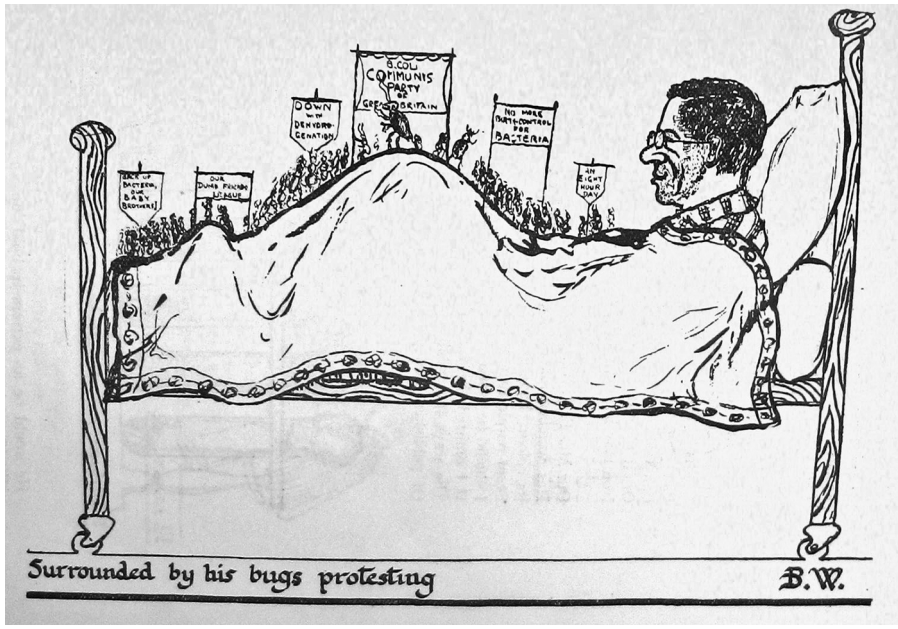

Figure 3. A Dunn bacteriologist "Surrounded by his bugs protesting / For the Work they've done while resting." The signs play on biochemical and political definitions of work—for example, a sign on the right calls for an eight-hour day for bacteria. *BB*, 1925, no. 3, pp. 11, 13. Image from author's collection.

with the vocabulary of politics and history as well as biochemistry through the humor of *BB* aimed to capture the cultural status of other fields by demonstrating the Dunn's unique ability to manipulate multiple registers of meaning through their jokes—thus buttressing their claims to superiority.[110]

Nutrition

Nutrition attracted frequent and blunt attention from the contributors to *BB*. A recurring "Abstracts" section of *BB* showcased the biochemical incompetence of nutritionists through satire of their terminology.[111] The tone of these submissions changed in the last two issues of *BB*. Contributors turned from creating fictional representations toward presenting real articles for the ridicule of *BB*'s readership. One contributor submitted passages from the *Lancet* and the *British Medical Journal* showcasing the lack of intelligence displayed by doctors in discussions of irradiated milk.[112] This might be expected in a setting where undergraduate medical students were referred to as "bone-heads," but doctors were not the only targets.[113] Another set of quotations made use of italics in reprinted abstracts to highlight the errors in experimental procedures of papers published in the *Journal of Physical Chemistry* and the *Journal of Biological Chemistry*. The contributor emphasized that "the following [were] abstracted from

[110] Darnton, *The Great Cat Massacre* (cit. n. 7), pp. 100–101.
[111] This section appeared in issues 2, 4, 6, 7, and 8.
[112] *BB*, 1930, no. 7, p. 46.
[113] *Ibid.*, 1931, no. 8, p. 5; and Mark Weatherall, *Gentlemen, Scientists, and Doctors: Medicine at Cambridge, 1800–1940* (Cambridge: Boydell, 2000), pp. 259–269.

an actual paper" and included the names and institutional affiliations of the authors—unlike satire and parody there was no gloss of fiction.[114]

Nutrition also figured prominently in the fictive correspondence presented in *BB*. Interest in nutrition was singled out as racially other to the white British inhabitants of the Dunn. Emphasizing this point was a long contribution, purportedly a letter from a resident of China, discussing the nutrition of the soybean. The letter traded on innuendo and racial stereotypes. The correspondent had hoped to send their "first born" to study at the Dunn, but that "a dearth of Vitamin E," whose importance to sexual reproduction was the subject of frequent jokes in *BB*, had "prevented the fulfillment of [his] wishes." The remainder of the letter was peppered with poor grammar and malapropisms.[115] The middle of the letter gave a prolix account of the nutritional benefits of the soy bean and concluded with a garbling of nutritional terminology: "You may have made the vitamins as simple as ABC, but unless other letter [*sic*] of the alphabet are to be equally favoured I fear we have little to hope from our . . . [soybean] oils. . . . Perhaps [they] will be found to possess other vital principles, provitamins . . . factors accessory to the accessory factors, who knows?"[116] As with the representation of visitors from Japan in its imaginary tours, the association of inquiries about nutrition with a correspondent represented as racially different, intellectually inferior, and impotent served to draw a clear boundary between the proper interests of the Dunn and nutrition research.

These attacks are all the more striking because a significant amount of nutritional research was underway at the Dunn. What made nutrition such a frequent target? Interest in biochemistry and nutrition hampered Hopkins's and the Dunn's attempts to elevate the scientific status of biochemistry. In 1911, the London *Daily Mail* had publicized some of Hopkins's important research on nutrition before he had communicated it in a scientific journal to further its campaign for enriched "Standard Bread." Hopkins felt that this event had almost ruined the scientific legitimacy of his discovery.[117] This concern continued to follow biochemistry at Cambridge. In the early 1920s one of the Dunn trustees wrote to Hopkins that the nutrition-supplement brand "Virol" mentioned the Cambridge Biochemistry Department in its advertisements and worried that it would be noticed by the *Daily Mail*.[118] In an early "cautionary tale," a biochemist who "rushed into print" was ignominiously discredited by that newspaper.[119]

Although Hopkins's fame as a nutrition researcher (enhanced by a Knighthood in 1925 and a Nobel Prize in 1929) played a vital role in obtaining the Dunn bequest, the new institute members focused not exclusively on nutrition but on the intracellular aspects of metabolic processes, including the study of enzymes, proteins, and bacteria.[120] The applications of biochemistry to health, agriculture, or social reform threatened to deny biochemistry status as an independent discipline practicing "pure," nonapplied science.[121] For example, the "Universal

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[114] *BB*, 1931, no. 8, pp. 34–35.

[115] *Ibid.*, 1927, no. 5, p. 55.

[116] *Ibid.*, p. 57.

[117] Kamminga and Weatherall, "Making of a Biochemist II" (cit. n. 35), p. 417; and Mark Weatherall, "Bread and Newspapers: The Making of 'A Revolution in the Science of Food,'" in *The Science and Culture of Nutrition, 1840–1940*, ed. Andrew Cunningham and Harmke Kamminga (Amsterdam: Editions Rodopi, 1995), pp. 188–193.

[118] Correspondence between Jeremiah Colman and F. G. Hopkins, 24 June 1921. UA BCHEM, item 3/3/4.

[119] *BB*, 1924, no. 2, p. 23.

[120] Kamminga and Weatherall, "Making of a Biochemist II" (cit. n. 35), pp. 423–424.

[121] Harmke Kamminga, "Vitamins and the Dynamics of Molecularization: Biochemistry, Policy, and Industry in Britain, 1914–1939," in *Molecularizing Biology and Medicine: New Practices and Alliances, 1910s–1970s*, ed. Soraya de Chadarevian and Kamminga (Amsterdam: Harwood Academic, 1998), pp. 83–105; and David F. Smith, "Nutrition Science and the Two World Wars," in *Nutrition in Britain: Science, Scientists, and Politics in the Twentieth Century*, ed. Smith (London: Routledge, 1997), pp. 142–165. On British understandings of "pure" or "applied" science see Sabine Clarke, "Pure Science with a Practical Aim: The Meanings of Fundamental Research in Britain, circa 1916–1950," *Isis*, 2010, *101*:285–311.

Testimonial Form," provided a portrait of the "types" of researchers at the Dunn through check boxes while affirming the Dunn's interest in pure science. Whatever its play on the gender of researchers, "he/she/it" or their other differences, the form concluded that the candidate was interested in "science for its own sake."[122]

By adopting a posture that insisted on the intrinsic curiosity and creativity of their work and denigrating other views, the contributors to *BB* sought to separate their discipline from the expectations of the public and the aims of their patrons.[123] Ridicule of nutrition provided a means of asserting biochemistry's autonomy from medicine, industry, and social reformers.[124] By resorting to these blunter forms of humor, *BB* worked to fashion a disciplinary identity for biochemistry independent of demands for its immediate applications, asserting and affirming its cultural status as a pure science.

CONCLUSION

New issues of *BB* ceased to appear after 1931. Nonetheless, it continued to serve a role in the Dunn community. From the late 1930s onward, Festschriften to Hopkins reproduced excerpts from *BB*, generally the lightest satires, to memorialize the interwar atmosphere of the institute. After his death in 1947, longtime members of the Dunn seeking to influence the choice of Hopkins's successor to the chair of biochemistry further elevated these excerpts to define the "Hoppy Tradition" in biochemistry.[125] These efforts at memorialization captured *BB*'s essential role in the Dunn's scientific life, but the excerpts of *BB* reproduced in this process, which concealed its darker aspects, may have convinced other historians to regard the entire publication as equally playful and light.

Despite these efforts, an outsider, the University College London biochemist Frank George Young, became the chair in 1949. Young sought to reorganize the Dunn's operations, which met with resistance from the staff, who turned to humor. As Young's biographer recounted: "Matters came to a head with a revival of the Dunn dinner. The reaction of younger members was expressed in some ribald lines in the annual Christmas pantomime. That was the end of the Dunn dinner and, thus fortified, [he] proceeded to drop Sir William from the notepaper. Thus was born . . . a new era."[126]

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[122] *BB*, 1931, no. 8, p. 18. On scientific personae see Lorraine Daston and H. Otto Sibum, "Introduction: Scientific Personae and Their Histories," *Science in Context*, 2003, *16*(1–2):1–8.

[123] A similar transformation in self-representation regarding ties to applied science emerged in the United States after World War II, where physicists adopted a more carefree public persona to ameliorate their ties to the military-industrial complex. See Paul Forman, "Social Niche and Self-Image of the American Physicist," in *Proceedings of the International Conference on the Restructuring of the Physical Sciences in Europe and the United States, 1945–1960*, ed. Michelangelo de Maria, Mario Grilli, and Fabio Sebastani (Rome: World Scientific, 1989), pp. 96–104. I thank Bruno Strasser for bringing this reference to my attention.

[124] Many of Hopkins's original patrons were frustrated that he had directed research away from nutrition. A separate Dunn Nutritional Laboratory was established with MRC backing in 1927. See Mark Weatherall, "The Foundation and Early Years of the Dunn Nutritional Laboratory," in *Nutrition in Britain*, ed. Smith (cit. n. 121), p. 35.

[125] Kamminga and Weatherall, "Making of a Biochemist II" (cit. n. 35), pp. 429–432. On politics of memory and commemoration see Pnina G. Abir-Am, "Introduction," *Osiris*, 1999, *14*:1–33. For examples of these accounts see Malcolm Dixon, "Sir F. Gowland Hopkins, O.M., F.R.S.," *Nature*, 1947, *160*:44–47; David E. Green and Joseph Needham, "Introduction," in *Perspectives in Biochemistry*, ed. Green and Needham (cit. n. 68), p. ix; Dorothy M. Needham and Needham, "Sir F. G. Hopkins' Personal Influence and Characteristics," in *Hopkins and Biochemistry*, ed. Baldwin and Needham (cit. n. 58), pp. 111–122; Needham, "Sir Frederick Gowland Hopkins" (cit. n. 23); Quastel, "Short Autobiography" (cit. n. 41), pp. 137–150; R. A. Peters, "The Faith of a Master in Biochemistry," *Biochem. J.*, 1959, *71*:1–9; Pirie, "Sir Frederick Gowland Hopkins" (cit. n. 13); Marjory Stephenson, "Sir F. G. Hopkins' Teaching and Scientific Influence," in *Hopkins and Biochemistry*, ed. Baldwin and Needham, pp. 27–38; and Stephenson, "Frederick Gowland Hopkins, 1861–1947," *Biochem. J.*, 1948, *42*:161–169.

[126] Randle, "Frank George Young" (cit. n. 41), p. 591.

Our encounter with *BB* should expand our appreciation of humor's potential as a resource for understanding the social worlds of scientific work. Scientific worksites, like all worksites, embrace tensions, stresses, and conflicts over wages, working hours, sexuality, and many other matters. Humor in its different forms is a core element of the infrequently documented processes that help stabilize the social infrastructure of these knowledge production sites.[127] Moreover, the generation of particular types of humor may address the specific intellectual and social challenges of particular scientific workplaces. *BB* was a means not only of achieving social cohesion, but also of practicing and demonstrating the successful habits of mind associated with dynamic biochemistry, such as the ability to recombine ideas from different sources in novel ways. The hybrid humor of *BB* supported the hybrid practice of biochemistry—the two were parts of the same habitus.[128] While we might be tempted to laugh it off, humor is a serious part of modern science.

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[127] Tonn, "Extralaboratory Life" (cit. n. 6). This may be thought of as a form of "infrapolitics" as discussed in James C. Scott, *Domination and the Arts of Resistance: Hidden Transcripts* (New Haven, Conn.: Yale Univ. Press, 1990), p. 200.

[128] On humor as cultural habitus see Kuipers, *Good Humor, Bad Taste* (cit. n. 11), p. 14. On disciplinary thought styles see Timothy Lenoir, *Instituting Science: The Cultural Production of Scientific Disciplines* (Stanford, Calif.: Stanford Univ. Press, 1997), pp. 60–61; and David Travis, "On the Construction of Creativity: The 'Memory Transfer' Phenomenon and the Importance of Being Ernest," in *The Social Process of Scientific Investigation*, ed. Karin D. Knorr, Roger Krohn, and Richard Whitley (London: Reidel, 1980), pp. 171–173.