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## **Auntibiotics: the BBC, penicillin, and the second world war**

Gilbert Shama  
*senior lecturer*

<sup>AI</sup> Department of Chemical Engineering, Loughborough University, Loughborough LE11 3TU

[g.shama@lboro.ac.uk](mailto:g.shama@lboro.ac.uk)

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**Gilbert Shama** considers the BBC's dissemination of the news about penicillin during the second world war

Alexander Fleming published his seminal paper on penicillin in 1929, but the transformation of penicillin into a useful therapeutic agent was to take its virtual rediscovery, some 10 years later, by Howard Florey and his coworkers at Oxford University. The story that followed Florey's entry into the picture was a compelling race against time. Additionally it had the obvious propaganda value of what was, initially, a British success story at a time when there was little good news from the war front. The role of the BBC in disseminating this story has hitherto been overlooked, and the records, though fragmentary in places, add a new dimension to the early history of penicillin.

### **Broadcasts in English**

The first BBC radio broadcast dealing specifically with penicillin was transmitted on 4 September 1942 in a programme entitled *Ariel in Wartime*. The broadcast explained in quite conventional terms what penicillin was, how it was produced, and its potency against bacterial pathogens, but the associated correspondence—unfortunately incomplete—makes for more interesting reading. An internal BBC memo of 1 September said: “There is a good deal of disputed priority involved, the point being that Wright's nominee, Professor Fleming, made the discovery but never followed it up and the actual work has all been done by the Professor of Pathology at Oxford with the help and direction of the MRC [Medical Research Council]”—which all reads very much like a justification for crediting Florey. The “disputed priority” was being played out in the letters pages of the *Times*. A leading article on penicillin had appeared on 27 August and Sir Almroth Wright's (Fleming's boss) saw an opportunity to gain publicity for St Mary's, and wrote a letter that was published on 1 September. In it Wright suggested that the “laurel wreath [for the discovery of penicillin] . . . should be decreed to Professor A Fleming.”

Sir Robert Robinson, Waynflete professor of chemistry at Oxford University, was equally determined that the work done at Oxford should not go unrecognised. His letter published a day later suggested that “a bouquet at least and a handsome one, should be presented to

Professor H W Florey” for separating “therapeutic penicillin” from the complex mixture in which it was produced—something that Fleming had failed to achieve.

The preserved script of the broadcast bears exquisite testament to this unfolding rivalry. The typed lines “Professor Florey, Dr Chain and their colleagues at Oxford, aided by grants from the Medical Research Council and the Rockefeller Foundation have made an intensive study of penicillin” have been scored out in pen, in a move that smacks of a last minute intervention to ensure that the sole name associated with penicillin was that of Alexander Fleming, and that only the laurel wreath, and not the bouquet, was ultimately to be presented. The less contentious interpretation is that the deletion was part of the normal editing process—transmissions were, after all, subject to strict time constraints. But if this were the case, then why those lines in particular and not those dealing with the more technical aspects of penicillin’s action?

A further programme on penicillin was broadcast less than two months later as part of the series *Marching On*. This transmission took the form of a re-enactment. Early on the “Prof” (i.e. Fleming) is made to exclaim “I say, Jones, something’s gone wrong with this culture. Just look at this Petri dish.” Then comes the critical moment: “Just like Newton and his apple and James Watt and the lid of his mother’s kettle, when world discoveries are hanging in the balance.” But there are difficulties; penicillin was difficult to make and it “kept badly,” and for those reasons nothing more was heard of it until war came. The scene then shifts to a committee meeting at the MRC, which eventually concluded that “elaborate apparatus and a skilled team of biochemists” would be required to “investigate” penicillin and that one “can’t expect a medical school to undertake this sort of work.” The chairman wants to know who could. The answer is obvious: “I should suggest Oxford, sir.”

The copy of the script from the Florey archives contains notes in the margins made presumably by Florey himself, such as “not done by Fleming but by Oxford team.” Florey wrote angrily to the BBC. Had the BBC considered whether it was in the public interest to “call attention to a substance of therapeutic value which is unprocurable except in minute amounts” and that this type of publicity had resulted in “a flood of pathetic letters from as far away as Western Australia and Saskatchewan”? Later he comes to the real point. “I am not concerned with the impersonation of Professor Fleming . . . But I wish to assure you that the whole passage about the MRC is a pure invention.” He refrains, evidently with difficulty, from pointing out “other gross inaccuracies.”

Questions were demanded at the BBC, as an internal memo from a beleaguered employee, dated 4 November 1942, shows: “Mr Johnstone Abraham the well known Harley Street

surgeon undertook to write this script . . . as he was familiar with the subject and friendly with the discoverer of penicillin, Dr Alexander Fleming. He obtained all the material from this script from Dr Fleming himself and later Dr Fleming read the script and agreed to its being broadcast . . . He also explained . . . that while the research group working at Oxford had done an enormous amount of work in confirming Dr Fleming's discovery and purifying penicillin, the story was of Fleming's own discovery and who should know more of this subject than Dr Fleming himself."

A week later Cecil Graves, the joint director general, wrote to Florey coolly informing him that "it was felt that in dealing with the story of the discovery of penicillin we could safely rely on the authoritative guidance of Dr Fleming."

If the broadcast made on 20 December 1943 by Howard Florey himself was an attempt to restore the balance, it was a long time in coming. Florey could hardly avoid mentioning Fleming's "important observation," but chose to commence his broadcast with reference to Pasteur who "discovered more than 60 years ago that certain micro-organisms . . . can produce something that will stop the growth of other germs."

Fleming has been criticised for failing to recognise penicillin's clinical potential, but Florey makes specific mention in his broadcast to the fact that Fleming had used dressings impregnated with crude penicillin. Fleming himself made a radio broadcast on 7 April 1944. The broadcast is remarkable for two things. The first is its opening statement: "Moulds are allotted by botanists a very humble place in the vegetable kingdom"—a statement that presaged the elevation not only of a particular humble mould but also of Fleming himself. Fleming was at the time on the threshold of scientific stardom. In May 1944 his portrait would appear on the front cover of *Time* magazine. The second interesting feature is that neither Florey nor the group at Oxford receives a single mention. Instead, an abstract reference is made to the combined efforts of the mould and "the skilled chemist" in bringing penicillin to humanity.

### **European service broadcasts**

Although the belligerents on both sides during the second world war took extensive steps to obtain and disseminate scientific publications produced by their enemies,[1] scientists in occupied Europe were essentially starved of access to material from the UK and US. News about penicillin did, none the less, reach them. One possible source was the mould culture collection in Baarn, the Netherlands, to which a number of German agencies addressed themselves, beginning in the autumn of 1942, with demands for cultures of *Penicillium notatum*. [2] Smuggled copies of journals from neutral countries also provided information

and there is even an incident of leaflets dropped by the Royal Air Force that describe penicillin.[3] Added to these sources of information were foreign language broadcasts of the BBC.

Bernard Sureau of the Pasteur Institute has left an account of an attempt, centred on the institute, to produce penicillin. He attributes the beginning of their programme to a BBC transmission made in autumn 1943. However, recent evidence suggests that the work at the institute seems to have started before this time.[4] None the less, a broadcast was made on 29 September 1943, and it could well be the one that Sureau had in mind.

In contrast to broadcasts made in English, this particular transmission was clearly aimed at medical professionals. It was evidently not the first such broadcast, for it begins: “We have on a number of previous occasions spoken about penicillin.” It goes on to quote from recently published US work and cites survival statistics in comparing penicillin with traditional treatments based on serum. Ultimately the researchers at the Pasteur Institute only succeeded in making small quantities of penicillin, even with industrial help.

Broadcasts were also made in other languages, but unfortunately none of their scripts has survived. However, research in the company archives of Leo Pharmaceuticals of Copenhagen has shown that Professor K A Jensen of Copenhagen University heard a BBC Danish language broadcast and that this was instrumental in starting the small scale production of penicillin. In addition, research conducted into clandestine manufacture of antibiotics in the Netherlands shows that workers in Delft heard Dutch language transmissions on penicillin from which they too were able to obtain useful information.[5]

### **And finally**

BBC radio broadcasts contained a reasonably high level of technical information, and from the physical evidence of the scripts themselves seem not to have incurred the intervention of the censors.

Press reports of the time were sometimes irresponsible in handling the matter of penicillin’s unavailability for civilian use. By contrast, the BBC was strenuous in its attempts to assuage the resultant public frustration. Even before Florey’s angry outburst, the corporation had begun to broadcast the message that penicillin would remain in short supply until it could be synthesised by chemists, and that until then its use would be restricted to military ones. It was then believed that manufacture of penicillin using mould would only ever provide a temporary solution to the problem of mass production.

The objectives of the European services’ broadcasts were completely different. In this case the transmissions were aimed largely at a medical audience and attempted to help them

maintain their professionalism. In a few cases they may have supplied technical information to scientists in occupied Europe striving to produce penicillin.

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