with missing references (page 90, Moreno and Moriyón 2002 is missing from the reference list and page 113, Smith et al. 2002 is also omitted from the reference list) and missing words (such as the number of years ago that the erythritol catabolic pathway was elucidated, page 232), detract from the overall high quality of this book.

Despite these minor criticisms, the book should be highly recommended to those wanting to gain an in depth knowledge of this field. The book contains significant recent advances including some as yet unpublished findings for which the authors should be commended.

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Penicillin Man: Alexander Fleming and the Antibiotic Revolution

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‘That’s funny’, said Fleming on looking at the original penicillin plate. That’s not so funny thought this reviewer on learning there was another biography of Fleming.

When Kevin Brown became archivist to St Mary’s Hospital in 1989 he decided, perhaps naïvely, ‘to avoid doing anything at all connected with Fleming.’ Fortunately, he changed his mind. One reason was a feeling that earlier biographies were too polarized, for or against Fleming, and an independent more balanced approach was needed. Whether this was possible for the St Mary’s archivist even if he was an Oxford graduate, readers must decide. I think he has succeeded, partly by giving a preponderance of facts over opinions, both meticulously collected. Notes and the bibliography take up nearly a third of the book. The illustrations include fascinating silhouettes showing the staff of the Inoculation Department in 1920. Of earlier biographies, Ludovici’s (1952) was full of praise, and that by André Maurois, influenced by Lady Fleming, even more so. Howard Hughes’ small one (1974) had the advantage of being by someone who had worked with Fleming. Macfarlane’s weightier one (1984) made a conscious effort to be fair but is clearly by a Florey admirer. In reality there was enough glory for all.

Fleming’s life and the main events of the discovery and development of penicillin are well known and generally accepted. Compared with Almroth Wright, his chief for most of his working life, Fleming sometimes seemed colourless. Indeed, Lady Fleming rebuked Maurois for giving too much prominence to Wright in his early drafts. Brown covers Fleming’s private and public life, the Oxford Group and the underlying science. He also describes many of the institutions involved and the massive administrative, industrial and commercial efforts needed to produce enough penicillin during World War Two. This complex approach is clearly presented in sufficient detail for the reader to feel he is taking part in the developing process; satisfactory for all, essential for the majority who are not familiar with the intricacies, and intrigues, of medical and scientific research, especially when national prestige, fame and money are involved. Then as now, there was a belief in the value of an autocrat, and in 1943 a penicillin coordinator was appointed who was at least partially successful in boosting production. Nowadays, he would be called a penicillin czar, a curious title since the czars, though undoubtedly autocratic, were seldom efficient. Brown does not let this colourful background distract from the well known problems which are the highlights of the story.

Where did the spore come from and how? What were the dynamics of growth on the famous plate? The plate itself later went with Fleming’s papers to the British Library, then to the British Museum. In 1978, I was working on the papers preparing for the fiftieth anniversary exhibition at St Mary’s when the librarian asked if I could explain an odd object they had in the strong room. The plate was dried up and fragile but the essentials were recognizable and the Museum lent it to us for the exhibition. On returning it, we gave some urgent advice on its preservation. I don’t know whether they took it as the only exhibit on public view is a model.

Was Fleming a great scientist or just lucky? But he was lucky twice, discovering in the same way lysozyme in 1922 and penicillin in 1928. Lady Bracknell (The Importance of Being Ernest, Oscar Wilde) would have thought this unlikely to be just luck. It suggests Pasteur’s comments on prepared minds. It may not be a coincidence that both substances act on the mucopeptide of bacterial cell walls, lysozyme breaks it up and penicillin interferes with its synthesis. Mucopeptide gives strength and rigidity to the cell wall and its destruction, however caused, results in dramatic consequences easily seen at colony level by the naked eye. At the penicillin memorial dinner in 1978, Chain was quite sure that Fleming was a naturalist not a scientist (Ernst Chain, personal communication). However, he was careful not to be overheard by Lady Fleming sitting on his other side.

Did Fleming realize the potential clinical significance of penicillin? Yes, but his exploratory experiments were insufficient and discouraging. Had he tested it on mice infected with pneumococci, we might have had penicillin 10 years earlier. His major problem was the inability to purify penicillin in large amounts. Rodney Porter, the Nobel prize winning immunochemist, believed that in 1928 chemistry was simply not advanced enough for purification to be feasible (Rodney Porter, personal communication).

It is a pity that Florey who, in 1940, was friendly and cooperative with Fleming was so irritated by the latter’s, unsought, publicity that he went to great lengths to stop it. His antipathy became so great that it delayed for years the penicillin appeal proposed in 1955. The eventual appeal in 1961 was a flop. Yet Florey owed much to Fleming. Not only had he made his name with penicillin but he and Chain had done useful work on lysozyme.

How was it that the silent Scot became the famous world traveller? Possibly, this was the influence of Amalia Voureka, Fleming’s second wife. She was Greek and had had a more exciting life as a resistance worker during the war. After Fleming’s death, she devoted herself to the immortal memory and was sometimes
difficult if one’s admiration for Fleming did not meet her exalted standards. Later, Lady Fleming returned to Greece, then under the Colonels, and was arrested for trying to help a political prisoner escape. Dr Christine Hodges of St Mary’s, who visited her in prison, reported that the Colonels embarrassed by the adverse publicity had let it be known that if a distinguished British doctor could say that Amalia’s health was at risk, she would be released. I communicated this to Sir Francis Avery Jones, at that time the doyen of British gastroenterologists. Within 24 hours, he had gone to Athens, at his own expense, and all was well.

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