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Editorial

80th Anniversary of the discovery of penicillin An appreciation of Sir Alexander Fleming

Last year the journal celebrated the 50th anniversary of the discovery of the semi-synthetic penicillins [1]. This discovery would not have been possible without an equally important event 30 years previously, described by the discoverer, Alexander Fleming, as follows [2]:

"While working with staphylococcus variants, culture plates were set aside on the laboratory bench and examined from time to time. In the examination these plates were necessarily exposed to air and they became contaminated with various micro-organisms. It was noticed that around a large colony of a contaminating mould the staphylococcus colonies became transparent and were obviously undergoing lysis.

Subcultures of this mould were made and experiments conducted with a view to ascertaining something of the properties of the bacteriolytic substance which had evidently been formed in the mould culture and which had diffused into the surrounding medium. It was found that broth in which the mould had been grown at room temperature for one or two weeks had acquired marked bactericidal and bacteriolytic properties to many of the more common pathogenic bacteria".

Thus did Alexander Fleming describe the discovery of penicillin in 1928.

Eighteen years later, in the monograph which he edited entitled 'Penicillin, its Practical Application', Fleming wrote *inter alia* [3]:

"The name penicillin was given by me in 1929 to an antibacterial substance produced by a mould of the genus Penicillium".

"I failed to advance further for want of adequate chemical help".

"Florey and Chain (a biochemist) working at Oxford, having brought to a successful conclusion their work on lysozyme (curiously discovered by Fleming in 1921 [4]), decided to engage on a systematic investigation of antibiotic substances. After studying the literature they decided it would be worthwhile to concentrate penicillin. They obtained my culture".

Florey, Chain and colleagues proceeded to purify penicillin [5] and administer it to humans suffering from infection. Fleming, Chain and Florey were jointly awarded the Nobel Prize in 1944 for the discovery of penicillin.

There has been controversy about Fleming's claims to have 'discovered' penicillin [6]. Some have argued that his only contribution was to have made an accidental observation of the antibacterial properties of a mould contaminating a laboratory culture plate. I believe that this is unfair. Without Fleming penicillin might never have been discovered. Louis Pasteur, in a lecture in 1854, stated

'In the fields of observation chance favours only the prepared mind'. Fleming had such a prepared mind.

Charles Fletcher, a physician who had been involved in the initial clinical trial of penicillin in Oxford, and who believed that Fleming may have been given too much credit for the discovery, interviewed Fleming for a television programme in 1955. In a later article in the British Medical Journal in 1984 [7] recalling the interview he wrote: *"Any resentment that I had hitherto felt about Fleming's unmerited fame was melted by his simple humble attitude to the part that he had played in the story, and in the programme he gave full credit to the Oxford team".*

Robert Cruikshank, a mentor of mine who had worked with Professor Fleming (whom I once saw but never met), said of Fleming after his death:

"To casual colleagues he appeared an ordinary kind of man with perhaps no great personality, even in his fame. But he had great intellectual ability and capacity for work, observation, technical ingenuity and skill. Some kind of intuitive instinct showed him the kind of thing likely to lead to great results. In this respect I believe he had greatness, and a capacity for getting things done without fuss or bother".

Sir Alexander Fleming was a man of high intellect, great scientific skill, humility, integrity and, in the words of Louis Pasteur, his illustrious predecessor in the fight against infection, he had a prepared mind. On this, the 80th anniversary of his landmark discovery, we salute him.

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