Queen Elizabeth I did not found the Royal Society. She might have done so if she had heeded the advice of Sir Humphrey Gilbert. He proposed that her Court should contain an Academy of Learning in which the ‘physician should continually practise together with the natural philosopher...to search out the secrets of nature’. Presumably Gilbert was impressed by the practice and not the scientific attainments of his contemporary Fellows of the Royal College of Physicians, as he advocated an annual stipend of one hundred pounds for his master of physic and only forty pounds for his senior natural philosopher. But, in the mid-seventeenth century, the gathering of brilliant minds that led to the formation of the Royal Society contained many physicians with a knowledge of science unconnected with their medical skills. Indeed, there were fourteen physicians among the thirty-seven scientists who finally proposed a college for physico-mathematical learning that became the Royal Society. It was actually suggested that the College of Physicians would be a convenient venue for the meetings of the Society.

After such a promising start, it seems strange to record that the first joint meeting of the Royal College of Physicians and the Royal Society was held in 1971. The meeting itself was, therefore, almost as important as the subject discussed, a review of penicillin thirty years after its introduction to clinical medicine. The clinical papers presented at the meetings are published in this issue of the *Journal*. They certainly underline the dramatic impact of penicillin on clinical medicine. Apart from the obvious therapeutic benefits, the papers show how the natural history and clinical manifestations of infective disease have been altered by antibiotics. The names may be the same but the face of disease and its diagnostic criteria have been substantially altered. But threats to human health are always changing. So, to counteract any euphoria induced by contemplating the success of antibiotics, the *Journal* publishes some new data from Sir Richard Doll on the dangers of smoking.

The meeting on penicillin also heard papers on various non-clinical aspects of antibiotics. These papers are published in the *Proceedings of the Royal Society*. They include contributions from the following scientists and their colleagues: Professor Barton (Chemical relationships between cephalosporins and penicillins); Dr Carrington (The development of commercial processes for the production of 6-amino penicillanic acid (6-APA)); Dr Nayler (Structure-activity relationships in semi-synthetic penicillins); Dr Neuss (Biosynthetic...
studies of β-lactam antibiotics); Professor Pollock (The function and evolution of penicillinase); Dr Rolinson (Bacterial resistance to penicillins and cephalosporins); Professor Sela (The immunological properties of penicillin) and Professor Strominger (How penicillin kills bacteria: progress and problems).

Digging holes in the road is an accepted British spectator sport. Reading about scientific discovery is a similar but more intellectual occupation. It is fascinating for all those who like to see how good brains work. Sir Ernst Chain’s account of the discovery of penicillin is an exciting example of human creativity at work. Koestler defined the creative act of mind as ‘a sudden interlocking of two previously unrelated skills, or matrices of thought’. Of course, research is not creative in the sense of making something out of nothing. It uncovers, selects, reshuffles, combines, synthesises already existing facts, ideas, faculties and skills (Koestler). With hindsight it is only too easy to see where a jump from the accepted matrix of opinion would have hastened the discovery of penicillin and where heavy financial investment in technique would have proved to be economical in the long run. These are the dilemmas that constantly trouble those responsible for allocating funds and directing research. An original idea cannot be anticipated by planning; it may be hard enough to recognise its worth. Success may come from a small budget programme or from some monumental collection of expensive apparatus and man-power. Taking the happy example of research into penicillin-like substances, much can be made of collaboration between industry and university. It is, of course, impossible to make a useful distinction between pure and applied research. The individual researcher is hard put to select, shuffle and combine the existing mass of data and technique. The leaping idea that links previously disparate fields of endeavour is no easy thing to come by when each person’s vision is increasingly narrowed by the bulk of work in his own discipline.

Despite the lack of an efficient crystal ball, those concerned with the future of medical research have done well. Perhaps the active encouragement of lateral thinking by genuine interchange of scientific disciplines could be the theme for further meetings between the Royal College of Physicians and the Royal Society. One meeting in over three hundred years can scarcely have exhausted the formal co-operation of these august bodies.