by Bernard Dixon

A SALUTE TO THE PIONEERS OF MICROBIOLOGY

Before we lose sight of our good fortune amidst the freneticism of patents, probes, and what Spyros Andreopoulos calls "gene cloning by press conference" (See *New England Journal of Medicine* **302**:743, 1980), let's pause and remember one thing. Microbiology is young. Measured alongside other strands of human endeavour, it has not even touched upon middle age. While all scientists stand on the shoulders of their forebearers in advancing understanding, generation by generation, only microbiologists have an almost immediate sense of affinity with the people who created their craft.

Macrobiologists, for example, need to peer back way beyond Darwin to locate the misty origins of zoology in the ruminations of Aristotle. Physicists trace their concerns past Newton and Copernicus to the ancient Egyptians and Mesopotamians. Medicos look over the heads of Harvey and Vesalius to those venerable figures, Galen and Hippocrates. Yet among microbiologists alive now are individuals who knew those who created the subject during the late 19th and early 20th century. Some of today's equipment is recognizably the same as that evolved by the pioneers. And there are still nine years to go before we mark the 100th anniversary of the death of Louis Pasteur.

Despite their efforts in mounting an event packed with the latest developments and devices, such thoughts must be very much in the minds of those organising the 14th International Congress of Microbiology, which opens in Manchester, England, on 7 September. That will be exactly 50 years after the last such event to be held in Britain—the 2nd International Congress of Microbiology, which took place in London in 1936. And some of the same speakers from that occasion—held under the presidency of Jules Bordet, the founding father of immunology—could well be there.

They include Sir Christopher Andrews, former head of the World Influenza Centre, who collaborated with W. J. Elford in using collodian membranes with various pore size to make the first worthwhile estimates of the size of virus particles. He was a member of the team which made the considerable breakthroughs in 1933–4 of growing influenza virus in ferrets and mice, leading to the earliest efforts at immunisation. And, as Sir Christopher recalls in a "Citation Classic" essay in *Current Contents*, he also made important discoveries regarding the susceptibility of viruses to ether. When combined with information from the work with Elford, these findings spawned the very first classification of viruses, which Andrews later developed in his *Viruses of Vertebrates*. Published originally in 1964, this has become a definitive work, now in its fourth edition.

Think, too, of some of the other names which graced the 1936 Congress. President of Honor Jules Bordet had joined the Pasteur Institute in Paris while Pasteur was still alive and in 1906 had become the first person to culture the whooping cough bacillus in the laboratory. Among the galaxy of other speakers were Hans Zinsser, author of *Rats, Lice and History*; Peyton Rous and Robert Shope, discoverers of the virus-induced tumors which bear their names; Fred Griffith, whose 1928 demonstration of transformation in pneumococci was an essential prelude to the double helix of Watson and Crick; and Jan Kluyver and C. B. van Neil, authors of that splendid book *The Microbe's Contribution to Biology*.

Penicillin observer Alexander Fleming and tobacco mosaic virus purifier Wendell Stanley were there. So too were Max Theiler, the originator of yellow fever vaccine; Arthur Harden, who took the initial steps in dissecting out the biochemistry of alcoholic fermentation; Otto Myerhof, who unpickled lactic acid metabolism in muscle; and Marjory Stephenson, who fashioned the pursuit of microbial physiology almost single-handedly (See *Bio/Technology* **3**:959, November, 1985).

Half a century later (and who can resist the temptation to attend such an historic spectacular?), Jules Bordet's place will be taken by Harry Smith from the University of Birmingham. He too has carved out a new sub-specialty in microbiology, his researches into erythritol utilisation by *Brucella abortus* having initiated a wide ranging attack on the problem of why and how particular pathogens attack particular tissues. Professor Smith will be presiding over a galaxy of talent similar to that shepherded by his illustrious predecessor in 1936.

Among names leaping from the pages of this year's conference brochure are Werner Arber, the 1978 Nobel laureate whose discovery of restriction enzymes made genetic engineering possible: Luc Montagnier, whose more recent isolation of AIDS virus will probably also win a similar share of science's major honour; and David Hopwood, whose dogged work on the genetics of *Streptomyces* has now paid off magnificently with the announcement of "hybrid antibiotics." Ti plasmid engineer Marc van Montagu and numerical taxonomy pioneer Peter Sneath will be there too, as will Stanley Falkow, Ken Timmis, Chris Knowles, J. B. Neilands, Samuel Silver, Fred Brown, and many more.

But there is one important difference between Manchester 1986 and London 1936. Speaking at the earlier event, George Nuttall recalled the thrill he had experienced when hearing about Koch's discovery of the tubercle bacillus, and when later actually meeting many of the pioneers. He went on to urge younger participants to exchange ideas by being more mobile. This time, generous travel funds have been made available for young microbiologists, not just within the U.K. but from overseas too—particularly Third World countries. As a result, says organizing secretary Jeff Cole (contactable in the biochemistry department at the University of Birmingham), *everyone* wishing to attend the congress should be able to do so. Though highly unusual these days, that is an immensely laudable claim—especially in this most international of all the sciences.

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