

# 10 Microbiology and The Pathological Society

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## INTRODUCTION

For its first 75 years The Pathological Society encompassed the broad church of pathology and microbiology (primarily bacteriology) as interrelated and mutually supportive disciplines. The Society's meetings addressed both of these in a single programme and the *Journal of Pathology and Bacteriology* reflected this unity of purpose. The accounts of H. Dible (Chapter 2) and A.C. Lendrum (Chapter 3) provide good records of the combined fortunes of pathology and bacteriology up to the 75th Anniversary of the Society. Here we attempt to trace the changes that drove our disciplines along separate lines in the later decades of the 20th century and into the new millennium.

The last quarter of the 20th century saw increasing divergences in the academic activities and service provisions of the two disciplines. The first major result for the Society was the separation of the *Journal of Pathology and Bacteriology* into its two component subject areas as the *Journal of Pathology* and the *Journal of Medical Microbiology*. The meetings themselves also divided the subject matter with parallel sessions on histopathology and morbid anatomy and microbiology, although continued and often very successful attempts were made to provide cross-disciplinary sessions that emphasised the scientific unity of pathology. Nevertheless, by the end of the century the academic and professional bases of the disciplines had diverged to such an extent that a broad pathology-based society was no longer the most appropriate forum for microbiology. An amicable separation was therefore agreed, with the microbiology section of the Society moving into the newly created clinical microbiology group of the Society for General Microbiology (SGM). At the same time, the responsibility for and ownership of the *Journal of Medical Microbiology* was also transferred to the SGM.

Three themes are inextricably linked in the story of microbiology and The Pathological Society during this period: (i) the changing pattern of microbiology as a scientific and clinical discipline; (ii) the creation of new societies and associations and the exponential growth in scientific conferences and symposia; and (iii) the increasing volume and specialisation of medical and scientific publications.

## THE SUBJECT AND PRACTICE OF MICROBIOLOGY

The Society's recognition of medical microbiology as an independent and expanding discipline with the launch of the *Journal of Medical Microbiology* in 1968 coincided with a period of political (and medical) disregard for the continued threat of infection and infectious diseases. Infection was conquered; antibiotics and vaccines had controlled infectious diseases. This misguided view had serious consequences for medical microbiology as a profession, for its academic base and for patient care in developed and developing countries. There was an ever-increasing disparity

**Table 10.1** Examples of 'new' infections described since 1975

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HIV/AIDS
Hepatitis C, E
HTLV
HHV6, 7, 8
Lassa, Ebola viruses
Nipah, Hendra viruses
Hantavirus (SN)
Avian influenza
SARS
<i>Legionella</i> spp.
<i>Campylobacter</i> spp.
<i>Clostridium difficile</i>
<i>Helicobacter pylori</i>
<i>Escherichia coli</i> O157 (VTEC)
<i>Vibrio cholerae</i> O139
<i>Cryptosporidium parvum</i>
<i>Chlamydia trachomatis</i>
vCJD

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between what was happening within microbiology and how it was perceived elsewhere in medicine, particularly by those responsible for the policy and management of health services. Modern medical advances focused particularly on cancer treatment and heart disease. The increased life expectancy, huge advances in cancer treatment by radiotherapy and chemotherapy (with the inevitable immunosuppression and risk of infection), ever more complex surgery in the fields of cardiac, orthopaedic and neurosurgery and the increasing numbers of patients living far longer with chronic illnesses all created a population at greater risk of infection; but the infections were considered a nuisance rather than a priority. At the same time, medical microbiology and infection control were moving apace. There was new technology as the genomics revolution took hold, new antibiotics (and new resistance mechanisms), new societies, new journals, new guidelines for dealing with infection and a succession of new diseases. Examples of the new infections that have been recognised since 1975 are shown in Table 10.1. However, increasingly infection and infection control were deemed to be the province of the microbiologists and infection control specialists rather than the mainstream of medicine. During the 1980s and 1990s there were increasing clinical problems with healthcare-associated infections (methicillin-resistant *Staphylococcus aureus*, antibiotic-associated diarrhoea and colitis due to *Clostridium difficile*, opportunist infections with *Acinetobacter* spp., explosive outbreaks of norovirus diarrhoea, etc.), increasing antimicrobial resistance (and fewer new antibiotics to combat these infections) and threats of new pandemics of influenza and other infectious diseases. These increased the need for microbiology and microbiologists, but the profile of infection specialists and the supply of microbiologists were decreasing. Within medicine in the UK there were fewer training posts for microbiologists, and on the academic front the profile of medical microbiology became much reduced. There was less impact on medical students and their training, and the successive research assessment exercises led further to a dislocation of the academic and service interface as they focused more on basic science research than on applied aspects of infection diagnosis, treatment and control.

By the 1960s it had become clear that the research bases of bacteriology and virology were pulling microbiology away from its traditional links with histopathology and were developing rapidly as separate scientific pursuits, supported and contested by the burgeoning disciplines of immunology, molecular biology and microbial genetics. We also had to take account of advances in mycology, protozoology and helminthology. Within this, microbiology had to adapt to rapidly

developing approaches to nucleic acid interactions and genetic engineering in all its many forms, from phage-mediated genetic exchange to antibiotic resistance transfer by conjugation. While we adopted genome sequence analysis for taxonomic and virulence investigations, we were also adapting to major technical advances in diagnostic laboratory work. Similarly, histopathology was contending with huge advances in immunology, clinical chemistry and haematology, in which new concepts of molecular interactions from cytokines to pathophysiological cascade systems became the order of the day.

The whole genomics revolution in medical science grew out of microbiological science (Judson, 1996) but this had mixed effects on medical microbiology. In some areas, academic medical microbiology disappeared as a recognisable entity, subsumed into 'molecular medicine,' whereas, sadly, clinical microbiology was often slow to embrace the new technology and remained firmly entrenched in diagnostic methods that traced their direct lineage from the work of Pasteur, Koch and their colleagues in the 19th century. Although there were rapid advances in our understanding of the pathophysiology of infectious diseases and the genetics of virulence, especially in virology, applied research and development work in important public health areas such as microbial epidemiology and infection control did not attract major research funding, weakening the clinical microbiology research base. Senior academic posts were not being refilled; indeed, in the 1980s, Professor Kevin McCarthy (chairing the Association of Professors of Medical Microbiology) declared that professors of medical microbiology were an endangered species. Moreover, changes were occurring in undergraduate medical education as it moved from a subject-based, taught curriculum, with pathology and medical microbiology strongly represented as the scientific bases of medical practice. Integrated, system-based curricula with a strong emphasis on self-directed and problem-based learning became fashionable. This further weakened the academic base of medical microbiology and reduced the visibility of the subject as a potential medical career (see Chapter 12).

Towards the end of the 20th century the tide began to turn again. Major hospital outbreaks of salmonellosis (Wakefield) and legionellosis (Stafford) in the UK generated public enquiries and the subsequent appointment of Consultants for Communicable Disease Control in all districts (the old Medical Officers of Health had been abolished in 1974). The inexorable spread of HIV/AIDS, the resurgence of tuberculosis, cholera and dengue and the continued presence of malaria focused international attention on infectious diseases. Then the recognition of health-care-associated infections as a major challenge (and cost) to healthcare services in developed as well as developing countries attracted fierce attention from politicians, the press and media and Departments of Health and health service managers. In the first few years of the 21st century infection was once again a healthcare priority and lessons of the previous 150 years (hand hygiene, asepsis and cleanliness) were having to be re-learned against a background of modern medical technology. The need for an understanding of the microbial world with training in infection control for all healthcare professionals and the importance of applied research and development were again recognised. Microbiologists, perhaps now better referred to as Infection Specialists, are once again obliged to accept the challenge and seize the opportunity to deliver their expertise to help reduce the impact of infection on the population's health. The pressing problem is that their numbers and resources have been badly depleted at a time when they are urgently needed.

## SCIENTIFIC MEETINGS AND TRAINING IN PATHOLOGY

For the first 60 years of its existence The Pathological Society had played a leading role in training and career development for pathologists, including microbiologists. However, by the early 1960s there was a groundswell for change within the Society's ranks, and not least in connection with the need for recognition of our new sub-disciplines and the requirement for an examination system that would guide our training as our interests and their applications at academic and clinical levels

diverged. The history of events that led to the foundation of the (Royal) College of Pathologists and the provision of a structure that served these needs is well documented by Goddard (2005) and in Chapter 11. Despite much debate and fierce protest from some members, the electorate of The Pathological Society in 1960–1961 were narrowly in favour of the founding of a College and supported the appointment of provisional officers, with Sir Roy Cameron as President in 1962. The first examinations were held in 1964 and our changed circumstances were set. Our continuing commitments to education and training became the province of the College, but with important input from many Society members.

During the same period it became clear that joint programmes with a major histopathology component were not attractive to either research or clinical microbiologists. The Society recognised this by breaking its long tradition of the unity of pathology to provide parallel programmes for pathology and microbiology, with some joint sessions of mutual interest. They were pioneered by R.E.O. Williams as Meetings Secretary, who did sterling work to edit microbiological contributions for publication in the new *Journal of Medical Microbiology*. However, this did not stem the flow of microbiologists away from the Society's meetings during the 1970s. As clinical microbiological interest focused on the problems of antimicrobial resistance and hospital infection, new societies such as the British Society for Antimicrobial Chemotherapy and the Hospital Infection Society were founded and their meetings became major focal points for medical microbiologists. In the 1980s the Association of Medical Microbiologists was formed to provide a professional forum for microbiology, and The Pathological Society meetings were no longer in the mainstream of professional interest for microbiologists. Attendance at the microbiology sessions reached a nadir in the late 1970s when a large coffee table seemed a more appropriate meeting venue than a small lecture theatre. A decision had to be made – either to disband the microbiology section or to make a determined effort to reinvigorate it. The remaining enthusiasts chose the latter route and the first action was to appoint a separate Microbiology Meetings Secretary to re-launch the meetings programme and to look for joint activities with other microbiology societies.

Under the successive guidance of Charles Easmon, Mary Cooke, Rosamund Williams and Curtis Gemmell, each supported by a small but enthusiastic Microbiology Subcommittee, this worked well and the reinvigorated microbiology programme continued for another 20 years. Meetings were well attended, especially the winter meetings in London. There were high quality and very successful symposia on Gram-negative sepsis, anaerobes, meningococcal disease, sexually transmitted infections, mycobacteriology and others that balanced academic research with clinical aspects of microbiology and the epidemiology of infection. However, as the 20th century neared its close, it was clear that medical microbiologists would not regard the Society as a major outlet for their activities. The Society for General Microbiology was the major academic and professional society for (mostly) non-medical microbiology but had raised its profile in the traditional Pathological Society area of microbial pathogenesis. At the same time, the professional societies that represented clinical microbiology and infectious diseases were pooling their resources to create an annual national meeting under the banner of the Federation of Infection Societies. Although not one of the original founding group, the microbiology section of the Society was very pleased to become a partner in the Federation. The microbiology section also gave strong support to the creation of a new clinical microbiology group to complement the existing microbial pathogenicity group at the SGM and, after due negotiations between the two societies, after 95 years The Pathological Society's microbiology section wound up its activities in 2002 and transferred allegiance to the SGM, along with its 'seat' in the Federation.

## **THE JOURNAL OF MEDICAL MICROBIOLOGY**

The difficulties encountered in maintaining microbiological interest in the Society's meetings contrasted with the success and growth of the Society's microbiology journal. By the late 1960s

it was clear that researchers wished to publish their work in journals specifically focused on their own subject (except for the higher echelons of *Nature* and the *Lancet*). The senior microbiological members of the Society were increasingly aware that scientists were demanding recognition of the many emerging sub-disciplines within the subject and were setting up successful independent journals to meet the demand. Despite his personal commitment to the joint journal, C.L. Oakley presided over the separation of the twins and the launch of their independent lives as the *Journal of Medical Microbiology* and the *Journal of Pathology*, initially acting as Editor-in-Chief of both. Under his dynamic and uncompromising leadership, the first editorial team, comprising S.D. Elek, R. Blowers, J.P. Duguid, M.T. Parker, H. Stern and J.G. Collee, were very conscious of their responsibility for this break with tradition. The new journal was immediately successful and flourished under the successive editorships of Oakley, Elek, Collee and then B.I. Duerden. The journal developed an eclectic style of editorial management that created a strong 'collegiate' team ethos among its editors. For the first 20 years there was no traditional Editor-in-Chief. There was a Chairman of the Board, appointed by the Society's committee, but other senior editors took individual responsibility for running the reception and registry office and the rejection and rehabilitation office. In a novel but pivotal role, the sureditor was responsible for taking all accepted papers through to publication; he (they were all male) edited every paper, sorted out tables and figures, liaised with the publishers and printers, arranged the circulation and collation of proofs and did the contents make-up. Robert Blowers fine-tuned this role from 1977 and then handed it on to Brian Duerden in 1982. Proofreading was an essential quality assurance procedure for the journal. Not only were proofs sent to the authors and read line by line by the sureditor, but also to the original assigned editor and a third editor as 'collateral proofreader'. This gave the journal an enviable record of minimal corrigendum notices and served as a mutual education exercise for the editors.

The *Journal of Medical Microbiology* editors inherited from Oakley and his predecessors an unshakeable commitment to sustaining the quality, clarity and accuracy of scientific English. Many authors were amazed at the painstaking editorial work performed on their manuscripts but most were profoundly grateful for the improved clarity of their papers and their 'free tutorials' on scientific writing. Editorial colleagues and authors alike were indebted to Tom Parker and James Duguid for their sterling contributions in setting our standards of industry and care. From the Journal's inception, the editors felt a responsibility to authors to get worthwhile science into print even when initially poor presentation seemed to obscure the interesting science, especially when the author's first language was not English. This was why the rejection editor always had rehabilitation as an equal (and more time-consuming) part of the role.

When Duerden succeeded Blowers as the senior editor, the journal was still a quarterly publication with about 55 papers per year, perhaps a reflection of the less frenetic research environment of the time. By the 1980s, more papers were being submitted and there was an ever-increasing demand for faster review and publication. Under the guidance of Collee and Duerden, and ably supported by David Old and other senior colleagues, the journal expanded to first six and then eight issues per year, and reached the goal of monthly publication in 1988. Through the 1990s the editorial office at Chepstow and the meetings venue at Tintern became the *Journal's* nerve centre and spiritual home, with Marjorie Duerden working impressively to meet the heavy demands of increasing submissions and shorter turnaround times. To meet the demands of the modern readership and broaden the educational appeal, editorials, review articles, a technical note and a correspondence section were added to the essential core element of original reports of microbiological research.

A notable birthday was celebrated in 1993 with the Silver Jubilee of the *Journal of Medical Microbiology*. A memorable symposium that provided modern updates on the topics covered in the first issue (*Haemophilus influenzae*, *Bordetella pertussis*, *Escherichia coli* in farm animals, staphylococcal virulence, and listeriosis) was equally memorable as a microbiological event for

those editors who were also members of the Pathological Society committee. Of 27 committee members and guests who attended the committee dinner 36 hours before the symposium, 21 became acutely ill with enteritis clinically characteristic of infection with norovirus (small round virus of Norwalk type). The incident was a point source outbreak, probably linked to contaminated shellfish, with the onset occurring between 36 and 48 hours after the meal; symptoms of vomiting, diarrhoea, headache, fever, rigors and muscular aches ranged from moderate to incapacitating and two committee members were admitted to hospital. J.G.C. (who had not been at the dinner) shouldered the burden of chairing the whole symposium while the co-chairman (B.I.D.) was confined to his hotel room.

The growth of interest in medical microbiology research and education was further emphasised when the then publishers of the journal, Churchill Livingstone, launched a sister journal, *Reviews in Medical Microbiology*, with support from the Society and under the initial editorship of Rosamund Williams. However, the publishers and the Society soon parted company (the publishers believing that medical microbiology would be itself divided and subsumed in a combination of molecular medicine and clinical infectious diseases) and both journals came within the Chapman and Hall and subsequently the Lippincott Williams and Wilkins stable. At the start of the new millennium, as the Society's microbiology section moved closer to the SGM, it was recognised that the most appropriate publishing home would now be the publishing arm of the SGM. With this move, Ian Poxton took over the senior editorship with an enlarged editorial team now backed by a well-integrated professional publishing office. This move also secured electronic (in addition to continued hard copy) publication of the journal, which had been a priority for the editors, if not the publishers, for several years. The transfer of the Journal's ownership was a very generous 'dowry' from The Pathological Society to help launch the new clinical microbiology activities of the SGM and maintain the essence of continuity. The benefits of this change have been immediately evident in further increases in submissions and a higher profile in the microbiological community, with a notable increase in the Journal's impact factor.

## FINALE

Microbiology has had a strong tradition in The Pathological Society. Our personal views are reflected in these individual comments:

'Early in my bacteriological career, I learned that The Pathological Society and its network was of enormous importance in our discipline. The Society set demanding standards in relation to professional competence, in the delivery of papers at meetings and at all stages of published work. It was, in effect, the labour exchange at which promising recruits for senior appointments were discreetly assessed. Our seniors were very regular attenders at all the Society's meetings and we were well aware of their interest in all that was on display. These were testing times and the experience was at once daunting and stimulating.

The *Journal of Pathology and Bacteriology* occupied a central position in all of this. To publish in its pages was indeed a significant achievement. Authors quickly became aware of the meticulous refereeing and checking of manuscripts under editors who were very jealous of the reputation of such a medical scientific publication. When I joined the editorial team, I was deeply impressed with the wealth of talent and experience around me – a daunting challenge to a new recruit. I was profoundly grateful for all the help and advice that were generously given. These were important influences to guide me when it was my turn to be more senior and to guide the next generation of editors.' (J.G.C.)

'When I joined the Edinburgh Department of Bacteriology as a very young lecturer, J.G.C. immediately suggested I join The Pathological Society. My first individual paper was published in the *Journal of Medical Microbiology* and my first public presentation was at a Pathological

Society meeting – still a nerve-wracking experience. When I needed to move to widen my experience, it was through The Pathological Society and its then General Secretary, Michael McEntegart, who was very keen to offer me a post in his Sheffield department. I was then thrilled to be invited to join the *Journal of Medical Microbiology* editorial board in 1976 and it has been one of my proudest achievements to have subedited the journal for 20 years on behalf of The Pathological Society and to see it progressing so strongly with the transfer to the SGM under Ian Poxton.’ (B.I.D.)

Microbiology has had to go its separate way but it owes much to its union with The Pathological Society over the last 100 years. Loyalties and pressures have changed and the new millennium presents new challenges and significant differences in our approaches to academic appointments, teaching, research, funding, training, recruitment and laboratory practice. There are equally demanding problems in providing effective microbiology services to our hospitals and to family and community doctors, and in maintaining proper links with the public health and health protection services. It is not surprising that these and other duties and obligations are pulling medical microbiologists in many different directions. Accordingly, academic and clinical microbiologists and epidemiologists and clinicians concerned with infectious disease must maintain contact with each other if we are to maintain the remarkably productive links that have advanced our discipline so well. Equally, in our continuing elucidation and understanding of the pathophysiology of human disease involving microbial systems, it is crucial that pathologists and microbiologists continue to nurture an essential partnership that has served the development of medical science so significantly in the past. It must be even more jealously guarded and valued as we face the challenges of the years ahead.

## REFERENCES

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### **Trial by Senior Member**

I gave my first ever public presentation to The Pathological Society at the Winter meeting in 1968; the paper was entitled ‘The cellular reaction in choriocarcinoma’. It was, without doubt, the most terrifying experience of my professional life! There were two main reasons for this. In the first place, I asked a ‘friend’ to help me prepare the talk but he suggested that a more senior colleague would be more appropriate. Unfortunately this was a deeply unpleasant man who espoused the ‘ritual humiliation’ method of rehearsal and who very nearly convinced me that my results were fraudulent. The second reason was the ‘Trial by Senior Member’ that one endured at Path Soc in those days; all sessions were plenary and it was a truly daunting experience to be faced by serried ranks of eminent Professors, who, it was rumoured, could destroy a blossoming career with a single carefully worded question. In the end I was very lucky because the speaker before me was foolhardy enough to read her paper rather than give it from memory. When it was my turn the ‘feeding frenzy’ was over, appetites were sated and I was given a relatively easy time. My abiding memory of the day is actually a happy one because at the end of the session Professor Bill Robertson, whom I had never met before, made a point of taking me to one side and making kind remarks about my paper. So I survived both ordeals and giving lectures has never been quite so harrowing since!

**Christopher Elston**

### **Sense-of-humour failure?**

It was a Cambridge January PathSoc meeting and very cold in Trinity Hall, where we were staying. Extra blankets and overcoats on the bed, with ice inside the windows. Late Friday afternoon, the domestic staff noticed that smoke was billowing from one the rooms. The fire brigade was called and arrived immediately. On entering the smoke-filled room, they encountered a desperate scene. The then Dr Phil Quirke had apparently been rehearsing his talk, and had left his slide projector on (imagine, carting a slide projector all the way from Leeds – talk about insecurity!) and this machine had overheated and caught fire. The room was a mess, and all Dr Quirke's clothes were utterly ruined. On his return to get changed for the evening dinner, Dr Quirke was confronted with the spectacle of all his belongings destroyed. Undaunted, he managed, in true PathSoc spirit, to borrow sufficient clothing to make a more-or-less respectable appearance at the dinner. But there was a slight, but perceptible, sense-of-humour failure, when I announced during my after-dinner speech that the fire had been caused by 'one of Dr Quirke's sex aids starting without him'. I remember telling the members, when the derisive laughter had died down, that 'Quirke was a man of few words, but he had just given me the benefit of two of them'.

**Nicholas Wright**

### **What's the fuss?**

My first good (only?) presentation was in Dublin 1986 when I gave an oral presentation on AIDS in Uganda (hot stuff for the time), and nearly broke down whilst thinking and talking about the appalling statistics and mortality. Of course, it has got much worse since then in resource-poor countries. Mike Wells asked what I wore to protect myself during autopsy procedures on such patients, and I replied 'gloves', wondering (as I still do) what the fuss over risk was all about.

**Sebastian Lucas**

### **Reconnaissance is key**

At Edinburgh 1993, I had a talk on paediatric AIDS all lined up for dual projection. Luckily I observed a very senior member of the Society giving an invited lecture and making a complete hash of the dual projection system. On inspecting the podium lectern, it transpired that the buttons were on asymmetric holders, at different heights on the podium, with the left button commanding the right projector and vice versa. I changed my talk to single projection!

**Sebastian Lucas**

### **The early Pleistocene**

I remember giving a paper with Bob Curran in a forward row. At that time his grave demeanor and *basso profund* struck terror into the hearts of many juniors. He approached me after the talk and said 'I was going to ask a question' – at this stage I was nervous – 'but it was all very clear' – at which stage I was surprised, but by then he had gone. It will probably strike current Lecturers (if any are left) that it was absurd to be scared of the Professoriat but I speak of the early Pleistocene.

**Colin Berry**