

Wellcome Witnesses
to Twentieth Century Medicine

BRITISH CONTRIBUTIONS TO MEDICAL
RESEARCH AND EDUCATION IN AFRICA
AFTER THE SECOND WORLD WAR

A Witness Seminar held at the
Wellcome Institute for the History of Medicine,
London, on 3 June 1999

Witness Seminar Transcript edited
by L A Reynolds and E M Tansey

Introduction by Maureen Malowany

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Key

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Professor John Waterlow (1916–2010), Professor Gerry Shaper
Dr Peter Williams, Dr Bill Watkins, Dr Maureen Malowany
Professor Herbert Gilles, Professor Alan Fleming
Professor David Bradley, Dr Tom Hopwood
Dr Hamish Davidson, Professor Sir Ian McGregor (1922–2007)
Dr Mary Dobson, Professor Michael Hutt (1922–2000)

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Professor Gerry Shaper
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Dr Michael Gillies (1920–99), Mr Tony Wilkes
Dr Len Goodwin (1915–2008), Dr Tony Duggan (1920–2004)

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INTRODUCTION

Immediately following the Second World War, the future of medical research in sub-Saharan Africa looked grim. With the exception of South Africa, there were no universities, no medical schools, no teaching hospitals. Declining funding and interest in the research laboratories of West Africa, in particular Sierra Leone and Nigeria, had sapped the vitality of prewar investigations. Although those in the field felt the anxiety of an uncertain future, with hindsight, this picture was actually turned around very quickly. By 1947, only two years after the cessation of war, renewed confidence in science to solve health concerns developed within the UK and, through the Colonial Office, was extended to Africa. Was the resurgence of interest in science in Africa a direct result of India's independence in that same year, releasing both research scientists and funds for other parts of the British Empire?

From the early twentieth century, administrative direction for the Empire came from the Colonial Office, through its own tropical medicine committees and advisers as well as medical services personnel. In 1960 the Tropical Medicine Research Board (TMRB) was created, forging new links between the Colonial Office and the Medical Research Council (MRC), and later the Overseas Development Administration and Foreign Office.

There is a fascinating story yet to be written of how various UK committees and advisory boards influenced the direction of tropical medicine and its applications over the past century. As witnesses noted, the TMRB brought experienced researchers to the field and, with them, understanding and support to the medical personnel who sought to maintain a research and clinical career. Another funding body, the MRC, created the longest-running research unit in sub-Saharan Africa in The Gambia. Over its 75-year history, the MRC Laboratories has provided a home for hundreds of clinicians and scientists.

Following the Second World War, the creation of university medical schools, teaching hospitals and research institutes in Africa revitalized medicine in the classroom, surgery and laboratory. One very important factor for the history of medicine in Africa in this period is the importance of the teaching hospital for the training and continuity of first-class clinical medicine in Africa. As many at this Witness Seminar remarked, the winds of change were blowing through Africa and the *raison d'être* of clinical teaching was to train Africans.

The 1960s – years of African political independence – marked changes for both the organization and delivery of healthcare, medical research and education across the continent. African nation-states required a well-trained medical community. African medical graduates, formerly required to travel to the UK for specialty training, had to be encouraged to remain in their home countries for appropriate further education. Medical curricula within university medical schools and teaching hospitals responded to local needs, resulting in subjects such as paediatrics, obstetrics and gynaecology

being given priority in some schools. Unusually for this period, equal status was given to social preventive medicine as well as to curative medicine where the pressures of local populations were keenly felt. Some witnesses noted that clinicians and scientists who worked in Africa before the 1960s could spend their entire careers, should they choose, in Africa. Their dedication, established by extensive experiences in Africa, could not easily be matched by the new expatriate scientists who knew their time was short. They were to train up their African replacements as quickly as possible. The pressures to become 'self-sufficient, self-reliant, self-generating' (page 35) were enormous.

With the shift to primary healthcare as the model for health services after the Alma Ata Declaration of 1978, a number of problems ensued and many of these were exacerbated by periods of internal political disorder. A point that perhaps has not been appreciated by medical historians concerns the denigration of teaching hospitals that occurred as a direct result of an international paradigmatic change in healthcare funding and delivery. Teaching hospitals became primary care centres and the concomitant decline in admissions to the hospitals deleteriously affected medical student teaching. The added burden of rural healthcare proved cumbersome. The problem of meeting the needs of rural populations was not new to medical services in the colonial period. However, by the mid-1960s, the need for a more-balanced healthcare delivery between urban and rural centres took a sharper focus. Newly graduated African doctors were largely unwilling to take their expertise to the rural areas. They preferred the urban centres, hospitals and populations. This problem was not unique to Africa – but for new nations with raised expectations for equality of service and care, the challenges were substantial.

One comment on this particular dilemma: 'We are now in danger of knowing more and more and doing less and less' (page 63). And yet, much was being done – clinical and field work were inseparable. While changes to medical curricula were constant, the 'old, the new and the new new' (page 35), specific paramedical training in fields such as laboratory technology and specialties such as radiology marked the new schools. However, there were deficiencies. Medical education required more parasitology, epidemiology and control of infectious diseases. Local researchers desperately needed increased career support to conduct research and earn a living wage if science and scientists in Africa were to evolve.

Transmitting knowledge from the hospitals and laboratories to the field was a problem from the 1970s. Poor coordination between organizations responsible for research and control constrained effective applications for field projects. The disease campaigns of the 1960s and 1970s required but often did not fully support skilled and competent organization on the ground. Collaboration between the London and Liverpool tropical schools and the field, while successful in the laboratories, often suffered from poor field planning and organization.

What of those discoveries and ideas from research in Africa that informed medical science elsewhere? Unusual linkages were noted between researchers in Ibadan,

Makerere and the West Indies on cardiovascular problems, coronary heart disease, endomyocardial fibrosis, environmental effects on blood pressure, diabetes and hypertension. Field trials of drugs such as the trypanocides or collaboration on a tropical disease such as schistosomiasis led to increased understanding in the UK of cancer of the bladder. British contributions to research on tuberculosis, gained both in the field and in laboratories in the UK, may prove even more useful in exploring contemporary links between tuberculosis and HIV/AIDS. The long-standing studies of nutrition – comparative studies within Africa (Uganda and The Gambia, for example) – have laid the foundation for further research into malaria and immunity, and greatly contributed to the search for a malaria vaccine. In some instances, specific developments within the colonies actually predated similar changes at home. West Africa became the site of integrated and detailed studies of small communities presaging the epidemiological studies that would become the hallmark of the latter part of the twentieth century.

Discussion of vector-borne and infectious diseases raised many more questions to be investigated. Entomological studies of vector behaviour received some attention but discussion of helminths soon gave way to pharmacology and pharmaceuticals, pharmacodynamics and clinical trials. Participants wanted to hear more on nursing staff and training. They rightly felt that South Africa deserved more representation and attention. Participants agreed that the next Witness Seminar would have to be held on African soil to permit those still in the teaching hospitals, laboratories and research institutes to contribute their voices, experiences and criticisms.

Unlike a collection of essays, this document is best read in its entirety as an exchange of ideas and reflections. Participants were asked to comment on medical education, services and research, and, where possible, to link their insights to the application of medical services within sub-Saharan Africa. As the majority of witnesses had worked in East and West Africa, the geographical picture is skewed somewhat in that direction. On this point, made by the Chair and participants themselves, it was recommended that Central and, in particular, South Africa would perhaps require a Witness Seminar of their own.

The idea for this Witness Seminar grew out of meetings with many of the participants, as part of the oral history foundation for the History of Malaria in East Africa Project (Dr Mary Dobson, Dr Bob Snow and Dr Maureen Malowany) funded by the Wellcome Trust. Expanding these individual conversations to an intimate gathering of 80 individuals could have been unwieldy. The careful and thoughtful navigation of the Chair, Professor David Bradley, expertly guided us through the lives, work and experiences of those present.

Maureen Malowany.
Wellcome Unit for the History of Medicine
University of Oxford

WITNESS SEMINARS: MEETINGS AND PUBLICATIONS¹

In 1990 the Wellcome Trust created a History of Twentieth Century Medicine Group, as part of the Academic Unit of the Wellcome Institute for the History of Medicine, to bring together clinicians, scientists, historians and others interested in contemporary medical history. Among a number of other initiatives the format of Witness Seminars, used by the Institute of Contemporary British History to address issues of recent political history, was adopted, to promote interaction between these different groups, to emphasize the potentials of working jointly, and to encourage the creation and deposit of archival sources for present and future use. In June 1999 the Governors of the Wellcome Trust decided that it would be appropriate for the Academic Unit to enjoy a more formal academic affiliation and turned the Unit into the Wellcome Trust Centre for the History of Medicine at University College London from 1 October 2000. The Wellcome Trust continues to support the Witness Seminar programme via its support for the Centre.

The Witness Seminar is a particularly specialized form of oral history where several people associated with a particular set of circumstances or events are invited to meet together to discuss, debate and agree or disagree about their memories. To date, the History of Twentieth Century Medicine Group has held over 25 such meetings, most of which have been published, as listed in the table below.

Subjects for such meetings are usually proposed by, or through, members of the Programme Committee of the Group, and once an appropriate topic has been agreed, suitable participants are identified and invited. These inevitably lead to further contacts and more suggestions of people to invite. As the organization of the meeting progresses, a flexible outline plan for the meeting is devised, usually with assistance from the meeting's chairman, and some participants are invited to 'set the ball rolling' on particular themes, by speaking for a short period of time to initiate and stimulate further discussion.

Each meeting is fully recorded, the tapes are transcribed and the unedited transcript is immediately sent to every participant. Each is asked to check their own contributions and to provide brief biographical details. The editors turn the transcript into readable text, and participants' minor corrections and comments are incorporated into that text, whilst biographical and bibliographical details are added as footnotes, as are more substantial comments and additional material provided by participants. The final scripts are then sent to every contributor, accompanied by copyright assignment forms. Copies of all additional correspondence received during the editorial process are deposited with the records of the meeting in Archives and Manuscripts, Wellcome Library, London.

¹ The following text also appears in the 'Introduction' to recent volumes of *Wellcome Witnesses to Twentieth Century Medicine* published by the Wellcome Trust and the Wellcome Trust Centre for the History of Medicine at University College London.

As with all our meetings, we hope that even if the precise details of some of the technical sections are not clear to the nonspecialist, the sense and significance of the events are understandable. Our aim is for the volumes that emerge from these meetings to inform those with a general interest in the history of modern medicine and medical science, to provide for historians new insights, fresh material for study and prompt fresh themes for research, and to emphasize to the participants that events of the recent past, of their own working lives, are of proper and necessary concern to historians.

Members of the Programme Committee of the History of Twentieth Century Medicine Group

The Group's activities are overseen by the Programme Committee, which includes professional historians of medicine, practising scientists and clinicians. The Programme Committee during 2000–2001 comprised:

Dr Tilli Tansey – Historian of Modern Medical Science, Academic Unit (now Wellcome Trust Centre), and Convenor;

Sir Christopher Booth – Academic Unit (now Wellcome Trust Centre), former Director, Clinical Research Centre;

Dr Robert Bud – Head of Life and Environmental Sciences, Science Museum;

Dr Daphne Christie – Senior Research Assistant, Academic Unit (now Wellcome Trust Centre), and Organizing Secretary;

Dr Gordon Cook – Academic Unit (now Wellcome Trust Centre), former consultant, St Pancras Hospital for Tropical Diseases;

Dr Chris O'Callaghan – Consultant paediatrician, Leicester;

Professor Roy Porter – Historian of the Social History of Medicine, Academic Unit (now Wellcome Trust Centre).

HISTORY OF TWENTIETH CENTURY MEDICINE WITNESS SEMINARS, 1993–2001

- 1993** **Monoclonal antibodies¹**
Organizers: Dr E M Tansey and Dr Peter Catterall
- 1994** **The early history of renal transplantation**
Organizer: Dr Stephen Lock
- Pneumoconiosis of coal workers²**
Organizer: Dr E M Tansey
- 1995** **Self and non-self: a history of autoimmunity¹**
Organizers: Sir Christopher Booth and Dr E M Tansey
- Ashes to ashes: the history of smoking and health³**
Organizers: Dr Stephen Lock and Dr E M Tansey
- Oral contraceptives**
Organizers: Dr Lara Marks and Dr E M Tansey
- Endogenous opiates¹**
Organizer: Dr E M Tansey
- 1996** **Committee on Safety of Drugs¹**
Organizers: Dr Stephen Lock and Dr E M Tansey
- Making the body more transparent: the impact of nuclear magnetic resonance and magnetic resonance imaging⁴**
Organizer: Sir Christopher Booth
- 1997** **Research in General Practice⁴**
Organizers: Dr Ian Tait and Dr E M Tansey
- Drugs in psychiatric practice⁴**
Organizers: Dr David Healy and Dr E M Tansey
- The MRC Common Cold Unit⁴**
Organizers: Dr David Tyrrell and Dr E M Tansey
- The first heart transplant in the UK⁵**
Organizer: Professor Tom Treasure
- 1998** **Haemophilia: recent history of clinical management⁶**
Organizers: Professor Christine Lee and Dr E M Tansey

¹ Tansey E M, Catterall P B, Christie D A, Willhoft S V, Reynolds L A. (eds) (1997) *Wellcome Witnesses to Twentieth Century Medicine*, vol. 1. London: The Wellcome Trust, 135pp.

² P D'Arcy Hart, edited and annotated by E M Tansey. (1998) Chronic pulmonary disease in South Wales coalmines: An eye-witness account of the MRC surveys (1937–1942). *Social History of Medicine* 11: 459–468.

³ Lock S P, Reynolds L A, Tansey E M. (eds) (1998) *Ashes to Ashes – The history of smoking and health*. Amsterdam: Rodopi B V, 228pp.

⁴ Tansey E M, Christie D A, Reynolds L A. (eds) (1998) *Wellcome Witnesses to Twentieth Century Medicine*, vol. 2. London: The Wellcome Trust, 282pp.

⁵ Tansey E M, Reynolds L A. (eds) (1999) Early heart transplant surgery in the UK. *Wellcome Witnesses to Twentieth Century Medicine*, vol. 3. London: The Wellcome Trust, 72pp.

⁶ Tansey E M, Christie D A. (eds) (1999) Haemophilia: Recent history of clinical management. *Wellcome Witnesses to Twentieth Century Medicine*, vol. 4. London: The Wellcome Trust, 90pp.

- Obstetric ultrasound: historical perspectives**⁷
Organizers: Dr Malcolm Nicolson, Mr John Fleming and Dr E M Tansey
- Post penicillin antibiotics**⁸
Organizers: Dr Robert Bud and Dr E M Tansey
- Clinical research in Britain, 1950–1980**⁹
Organizers: Dr David Gordon and Dr E M Tansey
- 1999 Intestinal absorption**¹⁰
Organizers: Sir Christopher Booth and Dr E M Tansey
- The MRC Epidemiology Unit (South Wales)**
Organizers: Dr Andy Ness and Dr E M Tansey
- Neonatal intensive care**¹¹
Organizers: Professor Osmund Reynolds and Dr E M Tansey
- British contributions to medicine in Africa after the Second World War**¹²
Organizers: Dr Mary Dobson, Dr Maureen Malowany,
Dr Gordon Cook and Dr E M Tansey
- 2000 Childhood asthma, and beyond**¹³
Organizers: Dr Chris O'Callaghan and Dr Daphne Christie
- Peptic ulcer: rise and fall**
Organizers: Sir Christopher Booth, Professor Roy Pounder and Dr E M Tansey
- Maternal care**¹⁴
Organizers: Dr Irvine Loudon and Dr Daphne Christie
- 2001 Leukaemia**
Organizers: Professor Sir David Weatherall, Professor John Goldman,
Sir Christopher Booth and Dr Daphne Christie
- The MRC Applied Psychology Unit**
Organizers: Dr Geoff Bunn and Dr Daphne Christie
- Genetic screening**
Organizers: Professor Doris Zallen and Dr Daphne Christie

⁷ Tansey E M, Christie D A. (eds) (2000) Looking at the unborn: Historical aspects of obstetric ultrasound. *Wellcome Witnesses to Twentieth Century Medicine*, vol. 5. London: The Wellcome Trust, 80pp.

⁸ Tansey E M, Reynolds L A. (eds) (2000) Post penicillin antibiotics: From acceptance to resistance? *Wellcome Witnesses to Twentieth Century Medicine*, vol. 6. London: The Wellcome Trust, 71pp.

⁹ Reynolds L A, Tansey E M. (eds) (2000) Clinical research in Britain, 1950–1980. *Wellcome Witnesses to Twentieth Century Medicine*, vol. 7. London: The Wellcome Trust, 74pp.

¹⁰ Christie D A, Tansey E M. (eds) (2000) Intestinal absorption. *Wellcome Witnesses to Twentieth Century Medicine*, vol. 8. London: The Wellcome Trust, 81pp.

¹¹ Christie D A, Tansey E M. (eds) (2001) Origins of neonatal intensive care in the UK. *Wellcome Witnesses to Twentieth Century Medicine*, vol. 9. London: The Wellcome Trust Centre for the History of Medicine at UCL, 84pp.

¹² Reynolds L A, Tansey E M. (eds) (2001) British contributions to medical research and education in Africa after the second world war. *Wellcome Witnesses to Twentieth Century Medicine*, vol. 10. London: The Wellcome Trust Centre for the History of Medicine at UCL, 93pp.

¹³ Reynolds L A, Tansey E M. (eds) (2001) Childhood asthma and beyond. *Wellcome Witnesses to Twentieth Century Medicine*, vol. 11. London: The Wellcome Trust Centre for the History of Medicine at UCL, in press.

¹⁴ Christie D A, Tansey E M. (eds) (2001) Maternal care. *Wellcome Witnesses to Twentieth Century Medicine*, vol. 12. London: The Wellcome Trust Centre for the History of Medicine at UCL, in press.

ACKNOWLEDGEMENTS

'British Contributions to Medicine in Africa after the Second World War' was suggested as a suitable topic for a Witness Seminar by Dr Mary Dobson and Dr Maureen Malowany and Dr Gordon Cook, a member of the Programme Committee of the Wellcome Trust's History of Twentieth Century Medicine Group. Dr Dobson and Dr Malowany provided many of the names of individuals to be invited, and assisted us in planning the meeting, and deciding the topics to be discussed. We are very grateful to them for their input. We are particularly grateful to Dr Maureen Malowany for writing such a useful introduction to these published proceedings. We are equally grateful to Professor David Bradley for his excellent chairing of the occasion. Our particular thanks go to Dr Lise Wilkinson, who read through earlier drafts of the transcript, and offered us helpful comments and advice. For additional help, we thank Dr Murray Baker, Dr Gordon Cook, Dr Tony Duggan, Professor Alan Fleming, Professor Herbert Gilles, Professor Eldryd Parry, Professor Gerry Shaper, Dr Alec Smith and Professor John Waterlow.

As with all our meetings, we depend a great deal on our colleagues at the Wellcome Trust to ensure their smooth running: the Audiovisual Department and the Medical Photographic Library, Julie Wood, who has supervised the design and production of this volume, our indexer, Nina Boyd, and our readers, Lucy Moore and Andy Oppenheimer. Mrs Jaqui Carter is our transcriber, and Mrs Wendy Kutner and Dr Daphne Christie assist us in running the meetings. Finally we thank the Wellcome Trust for supporting this programme.

Tilli Tansey

Lois Reynolds

Wellcome Trust Centre for the History of Medicine at UCL

BRITISH CONTRIBUTIONS TO MEDICAL
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AFTER THE SECOND WORLD WAR

The transcript of a Witness Seminar held at the
Wellcome Institute for the History of Medicine,
London, on 3 June 1999

Edited by L A Reynolds and E M Tansey

PARTICIPANTS

Dr Murray Baker	Professor Michael Hutt [‡]
Sir Christopher Booth	Dr Tony Jordan
Professor David Bradley (Chair)	Professor Sir Ian McGregor
Dr Gordon Cook	Professor George Nelson
Dr Hamish Davidson	Professor Eldryd Parry
Dr Mary Dobson	Professor Wallace Peters
Dr Christopher Draper	Professor Gerry Shaper
Dr Tony Duggan	Dr Alec Smith
Professor Alan Fleming	Dr Bob Snow
Professor Herbert Gilles	Dr Tilli Tansey
Dr Michael Gillies [*]	Dr David Tyrrell
Dr Len Goodwin	Professor John Waterlow
Professor Ralph Hendrickse	Dr Roger Whitehead
Dr Kay Hocking	Mr Tony Wilkes
Dr Tom Hopwood	Dr Peter Williams
Dr Sheila Howarth (Lady McMichael) [†]	

Others attending the meeting: Mr H G Bilcliffe, Professor Bill Bynum, Professor Anne Digby, Dr Kay Draper, Dr Lewis Gavin, Dr Brian Greenwood, Professor Peter Haggett, Dr Mike Jennings, Lady McGregor, Dr Maureen Maloway, Professor R Mansell Prothero, Mr Clem Ramsdale, Ms Diana Sibbick, Mrs Irene Smith, Dr Elise Vandervelde, Professor David Warrell, Dr Bill Watkins, Professor Gerald Webbe[§]

Apologies: Dr David Clyde, Dr Chris Curtis, Professor N R E Fendall, Dr P Jordan, Dr Adetokunbo Lucas, Dr M W Service, Lord Soulsby, Dr Geoffrey Timms, Dr Barton Worthington

^{*} Deceased 10 December 1999

[‡] Deceased 29 March 2000

[†] Deceased 31 July 2000

[§] Deceased 23 July 1999

Dr Tilli Tansey:¹ The History of Twentieth Century Medicine Group was started a few years ago by the Wellcome Trust to establish links between practitioners in science and medicine, and historians of contemporary medicine and science. We are here today to link those communities. Indeed, the topic of colonial and tropical medicine is one that has particular relevance to the Wellcome Trust. It is a topic that the Wellcome Trust has supported since its inception in 1936² and it is a topic that was very dear to Sir Henry Wellcome's own heart, and if people did not know of it, Len Goodwin and Betty Beveridge have written an account of Wellcome's legacy in tropical medicine.³ The subject is also of interest to historians of medicine supported by the Wellcome Trust and this topic was suggested by Mary Dobson and Maureen Malowany from the Wellcome Unit at Oxford. These Witness Seminars are intended to produce archival material for use by historians and practitioners. To that end the entire meeting is recorded, transcribed and edited for publication. Without further ado, I will hand over to the chairman of our meeting, Professor David Bradley, Professor of Tropical Hygiene at the London School of Hygiene and Tropical Medicine.

Professor David Bradley:⁴ Thank you very much, Tilli. I am delighted to be here and to be invited to chair. I am also absolutely terrified. I think everybody that I have spoken to this afternoon has said, 'How do you propose to get everyone through everything in three hours?' My immediate reaction when I was shown the list of invitees was, firstly, it was extraordinarily nice to see such a wide range of people who have taught me many things, good friends and people I enormously respect in many ways. But also my reaction was that it was the material for five, six or seven afternoons, and the balance of people here is clearly somewhat arbitrary. Originally the focus was going to be mainly on malaria⁵

¹ Dr Tilli Tansey is Historian of Modern Medical Science at the Wellcome Trust Centre for the History of Medicine at University College London, a founder of the Wellcome Trust's History of Twentieth Century Medicine Group and its Convenor since 1996.

² Sir Henry Wellcome (1853–1936) created the Wellcome Trust in his will dated 29 February 1932. It endowed two research charities, one to support the history of medicine and the other to support research in medical sciences. For details of the original will and subsequent developments, see Hall A R, Bembridge B A. (1986) *Physic and Philanthropy: A history of the Wellcome Trust, 1936–1986*. Cambridge: Cambridge University Press.

³ Goodwin L G, Beveridge E. (1998) Sir Henry Wellcome and Tropical Medicine, in *Wellcome's Legacies*. London: The Wellcome Trust, 9–51.

⁴ Professor David Bradley FRCP FRCPath FFPHM FMedSci (b. 1937) has been Professor of Tropical Hygiene and Director of the Ross Institute at the London School of Hygiene and Tropical Medicine since 1974. He was Tropical Research Fellow of the Royal Society at Exeter College, Oxford, from 1969 to 1974; Lecturer in Medical Microbiology, then Senior Lecturer in Preventive Medicine at Makerere University Medical School, Kampala, Uganda, from 1963 to 1969; Medical Research Officer at the Ross Institute Unit at the East African Institute for Medical Research, Mwanza, Tanzania, from 1961 to 1963. He was President of the Royal Society of Tropical Medicine from 1999 to 2001.

⁵ See, for example, Bruce-Chwatt L J. (ed.) (1986) *Chemotherapy of Malaria*, rev. second edition. Geneva: World Health Organization. See also three *Parassitologia* volumes devoted to different aspects of the history of malaria: Bynum W F, Fantini B. (eds) (1994) Malaria and ecosystems: historical aspects. *Parassitologia* 36: 1–227; Bynum W F, Fantini B. (eds) (1998) Strategies against malaria, eradication or control? *Parassitologia* 40: 1–246; Coluzzi M, Bradley D. (eds) (1999) The malaria challenge after one hundred years of malariology. *Parassitologia* 41: 1–528.

in East Africa, I gather, and then it was decided to broaden it to East and West Africa, and of course one consequence is that there is quite a lot of under-representation of people who were concerned with central and southern Africa. That in itself again provides a possible topic for a complete and separate seminar.⁶ So I feel that this afternoon we shall perhaps just get a tasting of various things and if we can identify areas that the organizers want to pursue in greater detail, that may be the best we can do, because I know that without exception I would like to listen to everyone here for at least two or three hours each, and I am sure many of you would take that view.

So let's get the issues on the table. It's an opportunity for formulating new questions and new ways of looking at things as well. I have asked some people to lead off for about five minutes or so on particular topics to get the discussion going, but if you've been asked and someone before you covers the ground, don't feel shy about cutting down or leaving out what you were going to say, or say something that covers a different area. I do hope we can follow a discussion format, in spite of there being quite a large number of people. Do please just follow on from each other and try not to go on at too great a length if you make an interjection, so that we can make progress through the whole of West and East Africa with some of central and southern Africa in three hours. We've put a tea break in at 4 o'clock and we hope to discuss the great infectious and vector-borne diseases after that, but I am sure they will creep in to some degree before. This is just simply a way to try and divide up the day. So I am looking forward very much to hearing from everyone. I would remind you that we are putting on record people's personal experiences for subsequent historians to absorb as part of their coverage of the topic.⁷ I think the best person to talk in greater detail about the background to this meeting is the person who has been very much involved in organizing it, and that is Dr Mary Dobson. She is in charge of the Wellcome Unit for the History of Medicine in Oxford, which it has recently been decided by the Wellcome Trustees should focus particularly on tropical medicine and infectious disease.

Dr Mary Dobson:⁸ I should start by thanking Tilli for organizing this and all the work that has gone on behind the scenes and her team, Wendy Kutner, Lois Reynolds and

⁶ Professor Alan Fleming wrote: 'The British contributions of medicine in Africa in the last 50 years have been so great that this one meeting was wholly insufficient. Further focused seminars are needed to record the history of the different disciplines and different institutions. Also, no one mentioned HIV and AIDS, except myself [see page 68], probably because the advent of the epidemic occurred after most of the contributors had left Africa. British people made vital contributions in the 1980s and 1990s. These should be recorded now and would be of great interest in the future.' Letter to Mrs Lois Reynolds, 10 April 2000.

⁷ Many participants amended their contributions in more detail than can be included here, but all correspondence related to this meeting is deposited, along with tapes, and other records received during the editorial process, in Archives and Manuscripts, Wellcome Library, London.

⁸ Dr Mary Dobson (b. 1954) has been Director of the Wellcome Unit for the History of Medicine and Reader in the Faculty of Modern History at the University of Oxford since 1999, and was Acting Director and Wellcome Trust Unit Fellow from 1998. She had been Senior Research Officer at the Oxford Unit from 1993. See Dobson M, Malowany M, Snow R W. (2000) Malaria control in East Africa: the Kampala conference and the Pare-Taveta scheme, a meeting of common and high ground. *Parassitologia* 42: 149–167. Dobson M, Stapleton D, Malowany M. (2000) Introduction: Dealing with malaria in the last 60 years: aims, methods and results. *Parassitologia* 42: 3–7.

Daphne Christie; I think you have done a splendid job. Thank you all for coming. I know many of you have come a long way and it's just wonderful to see some familiar faces – some unfamiliar – but certainly all familiar names here today. David and Tilli have mentioned how this idea got off the ground. Dr Bob Snow⁹ from the Kenya Medical Research Institute (KEMRI) and Wellcome Trust Research Laboratories Collaborative Research Programme, Nairobi, Maureen Malowany,¹⁰ and myself, started a project a couple of years ago on the history of malaria in twentieth-century East Africa. I think at a time when malaria, in terms of morbidity and mortality, remains such a major problem, and the WHO have launched their campaign to 'Roll Back Malaria', we felt it's important to roll back malaria and its history and to document and find out what's gone on over the twentieth century.¹¹ This project has become the starting point of what we feel is a very exciting historical programme of research, and, as David has said, the Wellcome Unit for the History of Medicine at Oxford is now specializing in the history of tropical medicine and infectious diseases. We are interested in malaria, but also in many other questions, and reflecting back on the history of medicine in sub-Saharan Africa. In the quest to unfold the histories of diverse aspects of medicine in Africa, we have discovered a wealth of archival material and epidemiological data in Africa and elsewhere. But I think more importantly for today, and for our research, we have also recognized that published and unpublished sources will tell only a fraction of the story, and if we are really to understand the history of diseases such as malaria, or more generally the history of medicine in sub-Saharan Africa, then we need to talk to those people who have played such a major role in medical research and medical services in Africa. I know that here today we have those people present. So to this end, Maureen [Malowany], Bob [Snow] and I, and others, have started to conduct oral histories, both here and in Africa, and several of you in this room have already been incredibly generous with your time, your materials, and your recollections, talking to us about the work you have conducted in the field, in the laboratories, the hospitals, the research institutes and the universities. We have heard fascinating stories already from you about your life and your experiences and these have helped to shape and enrich our own understanding of the history of medicine in Africa. We have often thought as we have sat in your kitchens, your studies, talking to you, how wonderful it would be if we could actually bring some of you together in one room and listen and I think today, this afternoon, is our time to do just that. So we welcome you here to share your experiences, good and bad, troublesome, challenging, pleasurable, and we would very much like to know what you select as the most important contributions made by yourselves and your

⁹ For biographical details, see note 106.

¹⁰ Dr Maureen Malowany (b. 1949) has been Senior Research Fellow at the Wellcome Unit for the History of Medicine, Oxford, since 1999 and is currently writing a history of the Wellcome Tropical Research Laboratories in Khartoum, Sudan, and Nairobi, Kenya. As a historian of East Africa, she joined the Unit in 1997 to work on the collaborative project, 'History of malaria and its control in twentieth-century East Africa', with Dr Mary Dobson and Dr Robert Snow, funded by the Wellcome Trust.

¹¹ Dobson M, Snow R W, Malowany M. (1999) Roll Back Malaria: the history of malaria and its control in twentieth-century East Africa. *Wellcome Trust Review* 8: 54–57.

colleagues to the development of medicine in Africa since the Second World War. We know we will come away from this afternoon with a deeper and broader understanding of how you conducted your work there. The historical record is incomplete without your voices and we look forward with immense interest and pleasure to learning from you and from others who have lived and worked in Africa. As David [Bradley] has said, we hope that this will be one of many such occasions and that we will be able to hold other Witness Seminars in the future in Africa and perhaps in southern Africa, so that we can build on this and build links with colleagues elsewhere. So I welcome you all, and I hope we have a wonderful day.

Bradley: Thank you very much. I suggest we pile straight into the substance of the things we are going to discuss. It may be helpful if we start off by perhaps looking at the balances of health services, research and medical education, because by the nature of an audience like this, it will tend to have a preponderance towards research and educational things, but the health services themselves are obviously quite central to the issues, and I am going to suggest that Murray Baker might like to lead off, telling us a little bit of his view of East Africa.

Dr Murray Baker:¹² I was most grateful to see in David's letter to us that those who had begun their African experience as general duty Medical Officers should not neglect that aspect of their careers.¹³ Perhaps only a few of us are in that category, but I happened to be particularly fortunate in succeeding George Nelson in 1955 in the West Nile District of Uganda.

I don't think that in those days any District Medical Officers ever received a detailed 'job description' or 'mission statement'; we simply had to coordinate our professional and auxiliary staff with the available funds and facilities to deliver healthcare to a population (then) of some 400 000 in an area the size of Wales. We had, of course, to work out our own priorities. George [Nelson], not surprisingly, linked his basic medical and administrative work with district-wide research on the wealth of parasitological problems in the diverse environments that made up the West Nile.

This was a splendid background for me and I was most grateful for it. For my part I became very interested in the educational side of it, in the education of medical auxiliaries, to secure continuing development in their roles in both curative and

¹² Dr Murray Baker (b. 1926) spent his National Service as anaesthetist at the Station Hospital, Nanyuki, Kenya, from 1951 to 1953; joining the Colonial Service in Uganda the following year. After periods in Jinja and Karamoja Districts, he was posted to the West Nile District. In 1961 he moved to the Medical Auxiliary Training Schools in Mbale, becoming Administrative Dean at the Makerere University Medical School in Kampala in 1964. He returned to the Tropical Medical section of the Medical Research Council headquarters, London, as Senior Medical Officer in 1967. From 1975 to 1986 he was the Principal Medical Adviser to the Overseas Development Administration.

¹³ For example, see Akinkugbe O O. (1989) *The Troubled Tapestry: The University Lectures, November/December 1989*. Ibadan, Nigeria: The University of Ibadan. Odusote K A. (1995) *Medical Education in West Africa: Proceedings of a symposium*. Lagos: West African Health Community. Iliffe J. (1998) *East African Doctors: A history of the modern profession*. Cambridge: Cambridge University Press.



Top: Figure 1. Administrative building, Makerere University College, Kampala, Uganda (1966).
Bottom: Figure 2. Mulago Hospital, Kampala (1966). Photographs reproduced by permission of Dr Gordon Cook.

preventive medicine. After five years in West Nile, I was able to continue this interest in supervising the auxiliary training schools for health inspectors and medical assistants in Mbale. Then followed a transition to the Dean's office at the Makerere Medical School [Kampala], where the intake was about to treble in the mid-1960s.

Recently I saw a draft chapter on the development of medical education at Makerere Medical School, which described the clinical practice as following 'the British curative model'. In the 1950s it was very much the truth, it was the curative model we were using.¹⁴ We looked back to Albert Cook,¹⁵ who after all arrived a hundred years ago, in 1897, he had a 12-bed hospital and was in effect a District Medical Officer, except he had the whole of Uganda to look after. He couldn't get anybody to work with him as medical auxiliaries or to be trained as such. The only people who did volunteer were recovered patients. The first Medical Auxiliary – I expect you all know this story – was Semei Kasaji¹⁶ whom he had treated for a mixed parotid tumour.

By the time I got to the West Nile I was faced with the prospect of 400 000 people with usually two or three doctors and two expatriate nursing sisters, and that was about it. We had to cope with most problems through auxiliaries and the selection and the training of these became my major interest. I was much helped by colleagues and especially by Mary O'Hare, whom I am sure many of you will remember, who later became the Deputy Matron of Mulago Hospital,¹⁷ and, on her return to the UK, the Chief Nursing Officer of the Royal National Orthopaedic Hospital at Stanmore. This shows the quality of staff that we had in the West Nile. It was wonderful.

But Albert Cook had to get the trust of his people¹⁸ and he succeeded, because when he died it's recorded that 20 000 people followed his coffin on the way to the funeral.

¹⁴ Dr Murray Baker wrote: 'Of course what is appropriate today is not an issue under discussion. However, I suggest that in an earlier period none of the splendidly successful teaching, research and community health programmes could have been initiated without a background of competent curative medicine.' Letter to Mrs Lois Reynolds, 29 June 2000.

¹⁵ Sir Albert Cook Kt KCMG OBE (1870–1951), medical missionary, became Senior Physician and Vice-President of the Church Missionary Society Hospital at Mengo, Uganda, and Consulting Physician to the Government European Hospital and to the Mengo Hospital in Kampala. See Cook A R. (1945) *Uganda Memories, 1897–1940*. Kampala: Uganda Society. Foster W D. (1978) *The Church Missionary Society and Modern Medicine in Uganda: The life of Sir Albert Cook KCMG 1870–1951*. Newhaven, East Sussex: Printed for the author by Newhaven Press. The Cook papers (PP/COO) are held in Archives and Manuscripts, Wellcome Library, London.

¹⁶ Semei met Albert Cook's approaching caravan in 1897 and worked for him for 14 years. See Foster W D (1978), note 15, 175.

¹⁷ Williams A W. (1952) The history of Mulago Hospital and the Makerere College Medical School. *East African Medical Journal* 29: 253–263.

¹⁸ Dr Murray Baker wrote: 'Cook realized that he had first to win the confidence of the people. No progress could be possible without it. He succeeded on the basis of his surgical skills and, as Michael Hutt and others showed in their *British Medical Journal* articles [Davies J N P, Elmes S, Hutt M S R, Mtimavalye L A R, Owor R, Shaper L. (1964) An analysis of the records of Mengo Hospital, Kampala, Uganda: Parts I and II, *British Medical Journal* i: 259–264, 336–341], a pitifully limited range of effective medicaments. I believe that this principle still applies and that an effective curative component is still essential for a climate of public opinion in which medical research can flourish and where behaviour modification pleas have a chance of attracting attention. The MRC Laboratories in The Gambia are an excellent case in point.' Letter to Mrs Lois Reynolds, 29 June 2000.

The one thing that we couldn't do was to provide West Nile-born medical auxiliaries and to remedy that was the task I set myself.

Let me tell you about one failure, just one total failure, that we had. In later years when I travelled through all the Anglophone countries in Africa, I never found anywhere from Egypt down to Lesotho, where the District Medical Officers were contented.¹⁹ No one wanted to go and work in the districts, no one thought of it as a challenge, as a delight, which I think most of us, in those earlier years, did.

Professor George Nelson:²⁰ I was there six years before Murray [Baker] and I went [to the West Nile of Uganda] instead of Tom Hopwood, so the three of us sitting here are all in some way associated with West Nile.

I do want to tell you about one difference between the six years I spent in Uganda and the subsequent six or seven years in Kenya. When I arrived in Uganda, before I was sent up to the West Nile district, Bob Hennessey,²¹ who is well known within Wellcome circles as Director of Research there – he was Director of Medical Services in Uganda – said to me, 'Nelson, you have only one job to do in this country, and that is to train an African to do the job better than yourself'. This was a philosophy that Murray Baker and I both followed and our assistant, and the man who was the joint author of the first paper that I ever published, was Dr Semambo, who succeeded us as District Medical Officer and went on to become the Medical Superintendent of the Mulago Hospital in Kampala, then Director of Medical Services and later Minister of Health.²²

It was quite different in Kenya, which was a colony and not a protectorate like Uganda. Uganda had one of the best medical schools in Africa, whereas Kenya didn't even have a medical school. When I arrived in Nairobi in 1955, I was shown around the Division of Vector-borne Diseases by the Director, who said, 'If an African puts his head above

¹⁹ Dr Murray Baker wrote: 'No, there was one exception. Wilfred Koinange, whom many must remember as Director of Medical Services in Kenya, once told me that his time in Mandera, a semi-desert station between Somalia, Ethiopia and Kenya, was a never-to-be-forgotten delight. But I repeat, he was an exception. It may be that only when this issue is properly addressed will problems such as healthcare delivery among nomadic pastoralists – including effective tuberculosis control – begin to be solved. But perhaps there has been great progress in this field about which I am sadly unaware.' Letter to Mrs Lois Reynolds, 29 June 2000.

²⁰ Professor George Nelson FRCP FRCPath (b. 1923) was District Medical Officer in Uganda from 1950 to 1955; Senior Specialist in Parasitology in the Kenya Medical Service's Division of Vector-borne Diseases from 1955 to 1963; Reader in Medical Parasitology from 1963 to 1966 and later Professor of Medical Helminthology in the London School of Hygiene and Tropical Medicine from 1966 to 1980 and Walter Myers Professor of Parasitology in the Liverpool School of Tropical Medicine from 1980 until his retirement in 1988, later Emeritus.

²¹ Dr Robert Samuel Fleming Hennessey CMG FRCPI (1905–1989) was Assistant Research Director of the Wellcome Foundation (the pharmaceutical company) from 1967 until his retirement in 1970. He had been a pathologist in Uganda from 1929, serving in Palestine during the Second World War, later as Assistant Medical Adviser to the Colonial Office, and Director of Medical Services in Uganda from 1949 to 1955. He moved to London to head the Wellcome Laboratories of Tropical Medicine from 1956, then as Head of the Therapeutic Research Division of the Wellcome Foundation from 1958 to 1966.

²² Nelson G S, Semambo Y B. (1956) The treatment of tropical ulcers in the West Nile District of Uganda with special reference to an easily organized itinerant skin-grafting team. *East African Medical Journal* 33: 189–202.

the ground, stamp on it'. Most of my research was actually done in Kenya and I was forbidden to include Africans or European technicians as joint authors of my scientific papers from Kenya at the early stages of my period there. Uganda was such an enormously successful country because it was a protectorate and not a colony.

Dr Tom Hopwood:²³ Can I just begin by saying I am sorry, Murray [Baker], that you had no job description. Your medical standing orders may have been mislaid in the archives, but they did in fact exist. A second observation, I actually met Sir Albert Cook just before he died and shook him by the hand, so I really feel some kind of link with the very early days.

Maybe I had better set out my credentials for being here. I went to Uganda in 1948 and left just after independence in 1962 and I was fortunate enough to go from Medical Officer to Acting Director of Medical Services in those 15 years. Then I went to Ethiopia for five or six years as Chief Medical Adviser. The reason why you should include Ethiopia in these proceedings is because it was administered by the British from the end of the Second World War until 1952. Sir Philip Mitchell,²⁴ who'd been the Governor in Kenya, was head of the administration for part of that time. Subsequently, Ethiopia depended on so many nations. Nowadays we regard colonialism as something quite horrible; you shouldn't really admit that you had ever worked in the colonies, but Ethiopia was every bit as dependent as any colonial territory in Africa. Each province, medically speaking, was run by a different nation. Harer was French, the Swedes were in Sidamo in the Rift Valley, the Germans in Bahar Dar by Lake Tana, the Americans ran the Public Health College in Gondar, and so on. The British created the Medical School led by Frank Howarth,²⁵ Coralie Rendle-Short,²⁶ who had been Professor of Obs and Gynae at Makerere [University] in Uganda, Charles Leithead,²⁷ who unfortunately died very early was Professor of

²³ Dr B E C (Tom) Hopwood (b. 1919) served as Medical Officer in the Falkland Islands from 1944 to 1947, Deputy Chief Medical Officer in Uganda from 1948 to 1962 and on the scientific staff of the Medical Research Council in London from 1962 to 1965. He returned to Africa as Chief Medical Adviser in Ethiopia from 1965 to 1969, to London as Assistant Director of the Wellcome Trust's Tropical Medicine Division from 1969 until 1978 with the Commonwealth Secretariat as Consultant until 1980, when he moved to Kenya as Director of the Wellcome Trust Research Laboratory in Nairobi until his retirement in 1986.

²⁴ Major General Sir Philip Mitchell GCMG KCMG CMG MC (1890–1964) was Governor and Commander in Chief of Kenya from 1944 to 1952, having served in Nyasaland, Tanganyika, Uganda, Ethiopia, Fiji and the Western Pacific.

²⁵ Dr Frank Howarth, physiologist, succeeded Oscar Barry as Dean of the Faculty of Medicine, Haile Selassie I University, Addis Ababa, Ethiopia, from 1964 to 1969. Additional information provided by Professor Eldryd Parry, 4 December 2000.

²⁶ Dr Coralie Rendle-Short OBE FRCOG (d. 2001) was Professor of Obstetrics and Gynaecology at the Haile Selassie I University, Addis Ababa, Ethiopia.

²⁷ Dr Charles Leithead CBE FRCP (1925–1975) joined the Liverpool School of Tropical Medicine as lecturer in 1955, becoming an international expert in high ambient temperatures. He was the first Professor of Medicine at the Haile Selassie I University, Addis Ababa, Ethiopia, from 1964 until shortly before his sudden death in 1975. He handed over his department to his Ethiopian successor in 1973. See BM and DH. (1975) C S Leithead. *British Medical Journal* iv: 710.

Medicine and Jim Braithwaite was Professor of Anatomy.²⁸ These four people originally created the University, and I think that shouldn't be forgotten.

I knew quite a lot about Uganda, and quite a lot about Ethiopia, and a little about Kenya. What did research do for East Africa from 1948 until 1962? By 1986 there was more sleeping sickness²⁹ in Uganda than there ever has been, even going back to the 1942 or the 1902 epidemics. There was just as much malaria³⁰ as there ever was, probably more. Schistosomiasis³¹ is virtually untouched. Leprosy³² was more frequent. So what did we actually leave behind us when we left (and the colonialists among us all left much about the same time or within a few years)? The answer has to be a network of health services. We didn't really improve the health of the people all that much. Subsequently, the infant mortality rates went down, and people say, 'Why did that happen?' I don't know the answer, but I am pretty sure it's got less to do with medicine than we think. It's more likely to be what Pearson of Canada³³ used to say, 'economic improvement', but I believe very strongly that a major issue has been the education of women. After 1960 women began to take their part in all walks of life, in both Uganda and Kenya. If you teach the women, who bring up the babies, how to get them past the first five years of life in Africa, you are home and dry. Well, not quite, but you are getting on that way. So I think that was a good thing.

One of the bad things we did, was to leave the poor wretched African governments with the responsibility for running the High Commission's Research Centres, the Medical Institute in Mwanza, the one for malaria in Amani, the one for sleeping sickness in Tororo and the [East African] Virus Institute in Entebbe. The point was they were financed only for ten years and the result was that many people took the opportunity of a golden handshake and disappeared far too soon. When the Africans' turn came to spend their own money on research, they didn't have any. When I was in medical headquarters in Uganda, we had ten shillings [50p] per head, per year, for every conceivable thing you can think of, including drains and all the sanitary stuff, as well as medicine and health. So our legacy would have been all right, perhaps, if we'd lasted long enough. We certainly had a better opportunity in the years after the Colonial

²⁸ Dr Jim Braithwaite was Professor of Anatomy at the Haile Selassie I University, Addis Ababa, Ethiopia, from 1964, later Professor of Anatomy in Durban, South Africa. Additional information provided by Dr Tom Hopwood, letter to Mrs Lois Reynolds, 29 November 2000.

²⁹ Sleeping sickness, also called trypanosomiasis, is caused by protozoan parasites, trypanosomes, transmitted by the tsetse fly of the species *Glossina*. For historical background, see Cox F E G. (ed.) (1996) *The Wellcome Trust Illustrated History of Tropical Diseases*. London: The Wellcome Trust, 179–191. Ford J. (1971) *The Role of the Trypanosomiasis in African Ecology: A study of the tsetse fly problem*. Oxford: Clarendon Press. See also note 201.

³⁰ Malaria is a parasitic infection caused by the *Plasmodium* species transmitted by *Anopheles* mosquitoes. See note 5.

³¹ Schistosomiasis, also called bilharzia, is a parasitic infection caused by mammalian blood flukes (*Schistosoma*), transmitted by specific freshwater aquatic or amphibious snails. See Cox F E G. (ed.) (1996) note 29, 265–273.

³² Leprosy is a bacterial infection caused by *Mycobacterium leprae*, similar to the tubercle bacillus. Humans are the only known reservoir of infection, with the exception of armadillos. See Cox F E G. (ed.) (1996) note 29, 61–71.

³³ Lester Pearson (1897–1972) was Prime Minister of Canada from 1963 until 1968. He was awarded the Nobel Peace Prize for 1957 in recognition of his role in the 1956 ceasefire agreement during the Suez crisis.

Development Fund was created.³⁴ The new Mulago [Hospital, Kampala] was opened in 1962 and there were by then good hospitals in most of the provincial centres in Uganda.

Bradley: That makes some good points, thank you very much. Let the West Africans come in now. Herbert, would you like to kick off?

Professor Herbert Gilles:³⁵ I think I will just confine myself to my experience in Nigeria. First of all at the University of Ibadan³⁶ [Nigeria], which with respect to George [Nelson], was certainly considered to be as good a medical school as Mulago [Kampala], without the slightest doubt. It was six of one and half a dozen of the other to decide which of the two schools was the better one, and as in West Africa we've always been a bit more modest than the East Africans, we have always said that the two schools are as good as each other. My real involvement in Ibadan really came because Professor Sandy Brown,³⁷ who was a very enlightened Scotsman and was Professor of Medicine, realized that in his department at the time, there wasn't anyone with any expertise in tropical diseases or parasitic diseases. And there was no one who had any experience to teach that subject, or to do any sort of research in it, and so he asked Brian Maegraith,³⁸ who was the Dean [at Liverpool], if he had anyone that he could second, and that's where I came in. Maegraith managed to get some money from the Leverhulme Trust and seconded me to the University of Ibadan to do precisely what Brown had in mind. At the time they [Ibadan] were doing excellent work on endomyocardial fibrosis, diabetes, tuberculosis, really important stuff, but no one was doing anything on the parasitic diseases.

³⁴ The Colonial Development Fund was set up by the Colonial Development Act of 1940 and Colonial Development and Welfare Acts 1945 and 1959. The 1940 Act redefined British 'trusteeship', removed the requirement for colonies to be self-financing and permitted British funds to be spent to support the transition of the Empire into Commonwealth, which ceased giving funds for research grants in 1962. It was distinguished from the Colonial Development Corporation in that its funds went on projects that did not always generate revenue. From 1946 to 1958 £15.5 million was spent on medicine, health and nutrition and £17.2 million on research, of which 16.6 per cent on medicine, 9.6 per cent on tsetse and trypanosomiasis and 8 per cent on pesticides. See Colonial Office. (1959) *Colonial Development and Welfare Acts*. Report on use of funds provided under the Colonial Development and Welfare Acts and outline of a proposal for Exchequer loans to the colonial territories. Cmnd 672. London: HMSO, Table 4, 17. See also Hailey W M. (1938) *An African Survey: A study of the problem arising in Africa south of the Sahara*. London: Oxford University Press. Beinart J. (1989) The inner world of imperial sickness: the MRC and research in tropical medicine, in Austoker J, Bryder L. (eds) *Historical Perspectives on the Role of the MRC: Essays in the history of the Medical Research Council of the United Kingdom and its predecessor, the Medical Research Committee, 1913–1953*. Oxford: Oxford University Press, 109–135.

³⁵ Professor Herbert Gilles (b. 1921) was a member of the scientific staff in the MRC Unit in The Gambia from 1954 to 1958 when he was appointed lecturer at the Liverpool School of Tropical Medicine, seconded to the University of Ibadan until 1965, later Professor of Preventive and Social Medicine there. He returned to Liverpool as Senior Lecturer, then Professor of Tropical Medicine in 1970 until his retirement in 1986, later Emeritus.

³⁶ The University College at Ibadan, Nigeria, was established in 1948, becoming the University of Ibadan in 1962. It taught clinical medicine in a new 500-bed hospital established in 1957.

³⁷ Professor Alexander Brown CBE FRCP (1910–1969) held the first Chair of Medicine at the University of Ibadan, Nigeria, for 21 years. See Lowe M D W, Wolstenholme G. (1982) Alexander Brown. *Munk's Roll* 6: 69–71. Scarborough H. (1975) *Foundation and Roots: Planning medical education for a changing society*. Fourth Alexander Brown Memorial Lecture, May 1975. Ibadan, Nigeria: University of Ibadan Press.

³⁸ Professor Brian Gilmore Maegraith CMG FRCP FRACP (1907–1989) was Alfred Jones and Warrington Yorke Professor of Tropical Medicine at the Liverpool School of Tropical Medicine from 1944 to 1972, later Emeritus, and Dean from 1946 until 1975. He was a member of the MRC's Tropical Medicine Research Board for two terms from 1960 to 1969, and a member of the Committees on Malaria and Abnormal Haemoglobins.



Figure 3: University College Hospital, Ibadan, Nigeria (1961). Photograph reproduced by permission of Dr Gordon Cook.

I was given the odd name of ‘Lecturer at Large’. It sounded as if I was coming from the zoo, but I only had been in The Gambia for four years, and I don’t think that was quite a zoo. My first task was simply to start an outpatient clinic, which I called an endemic diseases clinic and started doing research work on malaria, schistosomiasis and hookworm infection. Obviously, I collaborated with various people – John Lawson,³⁹ Ralph Hendrickse⁴⁰ and Peter Ball.⁴¹ I also did an environmental study in the community, because the curriculum in Ibadan was rather odd, as it was based entirely on the London clinical curriculum at the time, and at no time were the students going outside the hospital. They got a completely warped idea of what the pattern of disease was and also the facilities they would have when they were eventually sent to the rural areas. As a sequel to the Akufo Scheme,⁴² as it was known then, we got some money from the Rockefeller

³⁹ Dr John Bateman Lawson FRCOG (1922–1997) was Professor of Obstetrics and Gynaecology in Ibadan, Nigeria, and Consultant Obstetrician and Gynaecologist, Newcastle General Hospital and Princess Mary Maternity Hospital, Newcastle upon Tyne, from 1953 to 1987. His National Service was spent in the West African Medical Corps in Sierra Leone and the rest of his career was devoted to Africa. See Lawson J B, Stewart D B. (eds) (1967) *Obstetrics and Gynaecology in the Tropics and Developing Countries*. London: Edward Arnold.

⁴⁰ For biographical details, see note 105.

⁴¹ Dr Peter Ball was seconded from Middlesex Hospital, London, to the University of Ibadan, Nigeria, between 1963 and 1965, returning to become Senior Physician there. He also worked at the Institute of Comparative Medicine at the London Zoo. Additional details from Professor Herbert Gilles, 29 November 2000.

⁴² Professor Herbert Gilles wrote: ‘The Akufo Scheme was the precursor of the Igbo-Ora Scheme. It was designed to focus attention on the community and to stress the importance in its medical patterns of the interplay between diet, environment, social, economic and genetic background in a rural population in Western Nigeria, 12 miles from Ibadan (population: 1430). The work in Akufo emphasized the view that any rational medical curriculum suitable for medical students in Nigeria required orientation in the direction of the needs of the community. I collaborated with other staff members of the Faculty of Medicine from 1959 to 1963.’ Note on draft transcript, 29 November 2000. See Gilles H M. (1964) *Akufo, An Environmental Study of a Nigerian Village Community*. Ibadan: Ibadan University Press.

Foundation⁴³ and started the Igbo-Ora scheme.⁴⁴ The Faculty of Medicine had changed the curriculum at the time, because it was giving its own degrees and decided that as part of the training, all the students had to spend eight weeks in Igbo-Ora. The organization was done by the Department of Medicine in collaboration with the Department of Preventive Medicine. I am glad to say in terms of sustainability, I was asked to move from the Department of Medicine to the Department of Preventive Medicine and I agreed only if I could attract a good Nigerian, and I was very fortunate to attract Adetokunbo Lucas,⁴⁵ who took over from me [as Professor of Preventive Medicine]. When I left he went on with all the research work on the parasitic diseases until he went to Geneva. The work has continued until this day, by Professor Oyediran after that and now with Professor Kale.⁴⁶ That really finishes my statement as far as Ibadan is concerned.

Bradley: What I would like to do is to get other comments on the medical services. The actual service side.

Dr Tony Duggan:⁴⁷ I would like to comment on what might be called 'station-based hospital medicine' in former times. I first went to Nigeria in 1944 and was posted to

⁴³ Professor Herbert Gilles wrote: 'As far as the Rockefeller contribution was concerned, they gave a grant to the University for five years to establish the scheme. I think the amount of the grant was US\$100 000 per year for five years, but I am not absolutely certain of the figure and I cannot find a reference to the actual amount in any of the publications that I have. At the time the Director of the Rockefeller Foundation was Dr Weir and it is possible that the Rockefeller Foundation will have a record of how much money was involved.' Letter to Mrs Lois Reynolds, 29 November 2000. For a brief background to the Rockefeller investment in the University of East Africa, see Shaplen R, edited by Tourtellot A B. (1964) *Toward the Well-being of Mankind: Fifty years of the Rockefeller Foundation*. New York: Doubleday.

⁴⁴ The Igbo-Ora Scheme was located some 60 miles from Ibadan at the Ibarapa Community Health Project, where facilities for research and teaching were built around a rural health centre, so that training in community health became part of the medical school curriculum from 1964. Professor Herbert Gilles wrote: 'The originators of the Project were the late Professor A Brown [see note 37] (Professor of Medicine) and myself (Professor of Preventive Medicine). The first Director was Professor Ogunlesi (Professor of Medicine) appointed in 1963. The teaching programme was a collaborative programme and was based on the premise that the medical teaching complex must include a representative segment of the normal community in its catchment area and must put itself in the way of studying disease in all its guises and magnitudes. Four partners were involved in the project: the University, which received a five-year grant from the Rockefeller Foundation to initiate the project; the West Regional Government which granted permission for the use of the Rural Health Centre at Igbo-Ora and its personnel there; the Liverpool School of Tropical Medicine; and the London School of Hygiene and Tropical Medicine, both of whom seconded staff to the project with the aid of the Leverhulme Trust and the Department of Technical Cooperation respectively. The name of the Scheme was changed to the Ibarapa Project in 1965 to reflect the cultural characteristics of the people in the district of Ibarapa, the largest town being Igbo-Ora.' Note on draft transcript, 29 November 2000.

⁴⁵ Dr Adetokunbo O Lucas FRCP was Professor of International Health at Harvard University from 1992 to 1997. He had been Director of the WHO Special Programme for Research and Training in Tropical Diseases from 1976 to 1986, and Chairman of the Medical Research Council of Nigeria.

⁴⁶ Professor Herbert Gilles wrote: 'Professor OO Kale followed Professor ABOO Oyediran as Professor of Preventive Medicine in Ibadan and is still there in the same capacity.' Note on draft transcript, 29 November 2000.

⁴⁷ Dr Tony Duggan (b. 1920) was Medical Officer to the Nigerian Government from 1944 to 1954, becoming Senior Medical Officer to the Sleeping Sickness Service. He was Assistant and then Director of the Wellcome Museum of Medical Science at 183 Euston Road, London, from 1955 to 1984. He edited the *Journal of Tropical Medicine and Hygiene* from 1958 to 1966, and was President of the Royal Society of Tropical Medicine from 1981 to 1983. See Duggan A J. (1962) A survey of sleeping sickness in Northern Nigeria from the earliest times to the present day. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 56: 439–486. *idem* (1981) A brief history of the Wellcome Museum of Medical Science. *ibid.* 75 (Suppl.): 29–31.

the Sleeping Sickness Service. This news arrived on board ship on the way out and I remember the commiserations from those who knew West Africa saying, 'Sleeping Sickness? You poor chap'. In that job one didn't have a fixed station; one was bush-bound nearly the whole time. However, it suited me very well, and I eventually did four tours with the Service and another, seconded to the West African Institute for Trypanosomiasis Research (WAITR), mainly in the field the whole time.

Professor Gilles spoke about training African medical students in first-class universities and well-equipped teaching hospitals. After they qualify they want station posts; the last thing they want is to go into the bush. This is perhaps one of the reasons for hospital-based medicine. A hospital has as its first objective to look after its staff, rather than dealing with rural problems. I remember finding 4 per cent of sleeping sickness in a hamlet less than a mile from one of the largest hospitals in northern Nigeria.⁴⁸

Professor Alan Fleming:⁴⁹ I arrived at University College Hospital in Ibadan [Nigeria] in December 1962. The first thing I would like to say is that this was not an ivory tower, remote from the needs of the population, and that all the research, teaching and service were devoted to what were seen as the major problems. Each leg of that tripod of research, teaching and service was of equal importance in Ibadan in those days. One example of that, of course, would be the late George Edington's work in pathology.⁵⁰ In my own special field of haematology and blood transfusion, some very great work had been done previously by John Watson-Williams,⁵¹ who, incidentally, later returned to Africa and re-established the blood transfusion services of Uganda in the 1990s, Norman Allan⁵² and Sheila Worlledge.⁵³ Another department of immense importance in the history of medicine in Africa would be that of obstetrics; Herbert Gilles has already mentioned John Lawson, but again what is needed is a sub-meeting of this meeting, on the development of obstetrics and gynaecology in West Africa under John Lawson's leadership.

⁴⁸ Dr Tony Duggan wrote: 'Towards the end of my time in that country this whole problem was addressed by establishing a special Field Unit Service with which the Sleeping Sickness Service was eventually amalgamated.' Note on draft manuscript, 27 June 2000.

⁴⁹ Professor Alan Fleming FRCPATH (b. 1931) qualified at the University of Cambridge and specialized in clinical and laboratory haematology. For 30 years he practised in sub-Saharan Africa, including Ibadan and Zaria in Nigeria, Ndola and Lusaka in Zambia, and Soweto in South Africa.

⁵⁰ Dr George Edington CBE FRCP FRCPATH (1918–1981) was Professor of Pathology at the University of Ibadan, Nigeria, from 1957 to 1969 and at Ahmadu Bello University, Zaria, from 1970 to 1977. He founded the first Cancer Registry in Ibadan with Una Maclean in 1961. See Edington G M, Maclean C M U. (1964) Incidence of the Burkitt tumour in Ibadan, Western Nigeria. *British Medical Journal* i: 264–266. Edington G M, Gilles H M. (1969) *Pathology in the Tropics*. London: Edward Arnold.

⁵¹ Dr John Watson-Williams (b. 1923) was Senior Lecturer, later Associate Professor, in Haematology at Ibadan from 1957 to 1961.

⁵² Dr Norman Allan (b. 1929) was Senior Lecturer in Haematology at Ibadan from 1960 to 1967, later Consultant Haematologist (NHS) at the Western General Hospital, Edinburgh.

⁵³ Dr Sheila Worlledge FRCPATH (1928–1980) was Lecturer in Haematology and Blood Transfusion at the University of Ibadan, Nigeria, where she established the blood transfusion service, returning after five years to the Postgraduate Medical School, Hammersmith Hospital, London, where she was Lecturer, then Reader, in Haematology until her sudden death.

Dr Alec Smith:⁵⁴ May I make a couple of points, Mr Chairman? I worked in Africa for 30 years – 22 in Tanganyika (later Tanzania),⁵⁵ four in South Africa, and four in Nigeria. I would like to draw on two points made during the discussion here. Firstly, my own experience in working for quite a number of years in the Taveta area of Kenya before and well after independence, and for some eight years after the Pare–Taveta Malaria Scheme [1954–1959],⁵⁶ where a very high level of malaria control was achieved, was that malaria transmission returned eight years later, pretty well to its pre-spraying level, but the parasite rate actually declined. It was my colleague, Dr Gerry Pringle,⁵⁷ who found that what seemed to be happening was that the local people were so tuned in to using the dispensary services following the Malaria Scheme, that they were going to the dispensary in much larger numbers and receiving the antimalarial drugs that were being made available. After the Scheme it was the deliberate intention to have antimalarial drugs available for the local people, thus the parasite rate went down quite noticeably, so there was, in a sense, an improvement after the colonial period.

The other point relates to maintaining medical research in East Africa following independence. My own experience of the then problems of research and research funding was as Director of the East African Tropical Products Research Institute in Arusha, Tanganyika, where I took over from Kay Hocking.⁵⁸ There was a counterpart contribution⁵⁹ originally from the British Government to the research and this went

⁵⁴ Dr Alec Smith (b. 1927) was in the Colonial Medical Research Service in East Africa from 1950 to 1972, as Entomologist until 1966. He was appointed Director from 1967 of the Tropical Pesticides Research Institute, Arusha, Tanzania, and from 1970 Director of Special Studies. From 1973 until his retirement in 1986 he served with the WHO studying malaria transmission in South Africa (1973–1976), Nigeria (1976–1980) and then in the WHO headquarters in Geneva.

⁵⁵ Titmuss R M, Abel-Smith B, MacDonald G, Williams A W, Wood C W. (1964) *The Health Services of Tanganyika: A report to the Government*. Report by the African Medical and Research Foundation. London: Pitman Medical Publishing Co. Ltd.

⁵⁶ The Pare–Taveta Scheme was started in 1954 and covered 3500 square miles between Mkomazi in the South Pare area of Tanganyika and Taveta in Kenya. Smith A. (1962) Malaria in the Taveta area of Kenya and Tanganyika. Part III. Entomological findings three years after the spraying period. *East African Medical Journal* 39: 553–564. *idem* (1966) Malaria in the Taveta area of Kenya and Tanganyika. Part IV. Entomological findings six years after the spraying period. *ibid.* 43: 7–18.

⁵⁷ Dr Gerry Pringle (b. 1916) was Senior Malariologist in the Ministry of Health, Baghdad, Iraq, from 1946 to 1958, Deputy Director of the East African Institute of Malaria and Vector-borne Diseases, Amani, Tanganyika (United Republic of Tanzania) from 1958 to 1960, and its Director from 1960 to 1966, when he returned to the UK as Parasitologist, Filariasis Section of the Pfizer Group, moving to the Liverpool School of Tropical Medicine as Senior Lecturer in Tropical Hygiene in 1970. Pringle G. (1967) Malaria in the Pare area of Tanzania. III. The course of malaria transmission since the suspension of an experimental programme of residual insecticide spraying. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 61: 69–79. Smith A, Pringle G. (1967) Malaria in the Taveta area of Kenya and Tanzania. V. Transmission eight years after the spraying period. *East African Medical Journal* 44: 469–474.

⁵⁸ For biographical details, see note 231.

⁵⁹ Dr Alec Smith wrote: ‘During the colonial period the 12 East African High Commission Research Services were funded through East African funds matched by a counterpart contribution provided by the British Government. This arrangement existed for some years after independence, until about 1966, by which time the East African High Commission had been designated the East African Common Services organization for some four years. The British Government then went over, step by step, into the procedure now widely used, the ‘project approach’. The basis of the project approach was that the UK reviewed research proposals offered by the East African Common Services and selected those that it wanted to support; and provided counterpart funding, staff and equipment

on very satisfactorily and gave a high level of support, and then there were difficulties, but not of the British Government's doing. The reason was that it had decided that it no longer would give counterpart contributions in the way that they had carried out previously, simply because the British Government wanted to be concerned with topics with which it felt it had a genuine interest, and therefore went over to what is now very widely used, a project approach. Now I don't know whether they are now, because I have been away from the subject for a long time, but the difficulties then were that the Africans who replaced the British Directors of Research Services had great difficulty coming up with projects, which is one reason why there were difficulties in maintaining good research in East Africa, because sufficient good project proposals were not produced.

Nelson: I can't resist getting up again and refuting Tom Hopwood, who implied that all of those years of work – 100 years of research – have not led to major improvements in health in Africa.⁶⁰ This is absolute nonsense. Of the diseases I have worked on – for example, leprosy, river blindness (eradicated from Kenya and the Nile valley in Uganda);⁶¹ yaws⁶² (practically everybody in West Nile had yaws, eliminated by penicillin), typhus, smallpox, bubonic plague, meningococcal meningitis (controlled following the introduction of sulphonamides). The great Yellow Fever Institutes in Yaba [Nigeria] together with Ipaba in Nigeria, made more advances in relation to yellow fever⁶³ than

where necessary, sometimes far exceeding 50 per cent of the overall cost. This approach had a great deal to commend it, not only from the technical point of view but also from that of financial accountability. The East African Common Services Headquarters moved from Nairobi to Arusha in 1967 under the new title of the East African Community. As Director of the Tropical Pesticides Research Institute in Arusha from 1967 to 1970, I was very much involved with this then very new form of funding. It was received with lukewarm enthusiasm by many senior African officials who perceived it as a form of “neo-colonialism”. Also, some African directors were either reluctant or found it difficult to come up with project proposals acceptable to the UK and so, in its early stages, project funding imposed restrictions on research. I appreciate that what I have said is history and that it might be very much easier now.’ Letter to Mrs Lois Reynolds, 28 April 2000.

⁶⁰ Professor George Nelson wrote: ‘Of course we must not forget the vast development of hospitals and dispensaries where the most prevalent of all infectious diseases, like pneumonia, tetanus, poliomyelitis, measles, dysentery and typhoid, syphilis and gonorrhoea, to mention only a few, became treatable or preventable. It was our studies in the West Nile District of Uganda [Nelson G S. (1958) Leprosy in the West Nile District of Uganda: an epidemiological study with its special reference to the distribution of leprosy in Africa. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 57: 176–185] which reported that tuberculosis protected against leprosy and this led to the first use of BCG in antileprosy campaigns – more than 40 years later the WHO claimed that the BCG is more effective against leprosy than against tuberculosis.’ Letter to Mrs Lois Reynolds, 27 June 2000.

⁶¹ Onchocerciasis, also known as river blindness, is caused by a nematode worm, *Onchocerca volvulus*, transmitted by the black fly, *Simulium*. The larval microfilariae cause inflammation and itching, and blindness may result if this is near the eyes. See Cox F E G. (ed.) (1996) note 29, 305–309. See also note 250.

⁶² Yaws is a growth or ulcer caused by *Treponema pertenuis*, transmitted by touch, and was very common in tropical Africa. See Cox F E G. (ed.) (1996) note 29, 105–109.

⁶³ Yellow fever is a haemorrhagic fever caused by a flavivirus, transmitted between wild animals (often monkeys in Africa) by mosquitoes, which also infect humans. The East African Virus Research Institute (formerly the Yellow Fever Institute), Entebbe, Uganda, was established by the Rockefeller Foundation in 1932 and became part of the Colonial Office in 1945. In a letter to the Chairman of the Medical Research Council, the Hon. W Ormsby-Gore MP, a member of the East Africa Commission, wrote on 29 May 1925: ‘I saw the Rockefeller people this morning – en route from New York to British Nigeria, where they are going to do our yellow fever research for us. I am really pained at the inadequacy of our own research work all along the line in the tropical empire.’ Thomson A L. (1975) *Half a Century of Medical Research*. Vol. 2. *The programme of the Medical Research Council*. London: Medical Research Council, 199. For a brief history, see Cox F E G. (ed.) (1996) note 29, 143–147.

other institutes in the world. They produced the vaccines, so that all travellers are protected and yellow fever is not allowed to become endemic anywhere in Africa. The work that we did at Winches Farm⁶⁴ was based on our work on schistosomiasis in Kenya, on *Schistosoma haematobium* in baboons, which led to the demonstration that praziquantel, a drug developed by Bayer, was highly effective.⁶⁵ One single dose [of praziquantel] eradicates schistosomiasis from a community. Those communities are infinitely better off, especially where the reduction in morbidity is related to the reduction in the number of parasites. I could say the same thing about lots of other diseases, but I had better sit down.

Sir Christopher Booth:⁶⁶ Well said, George.

Bradley: Any last words on services, before we really move into research? Dr Davidson, did you want to say something about central Africa?

Dr Hamish Davidson:⁶⁷ I think you can get my colleague here, Gordon Cook, to do that better than myself. We were there to provide a health service for the people. Research was not encouraged. We actually managed to start a medical journal in 1967. I think it went defunct after I left. I can't pretend to have any knowledge of research,⁶⁸ but services, yes. The services were good. The services supplied in central Africa were excellent, I am sure Gordon Cook will testify to that, but academically there was a lot left to be desired.

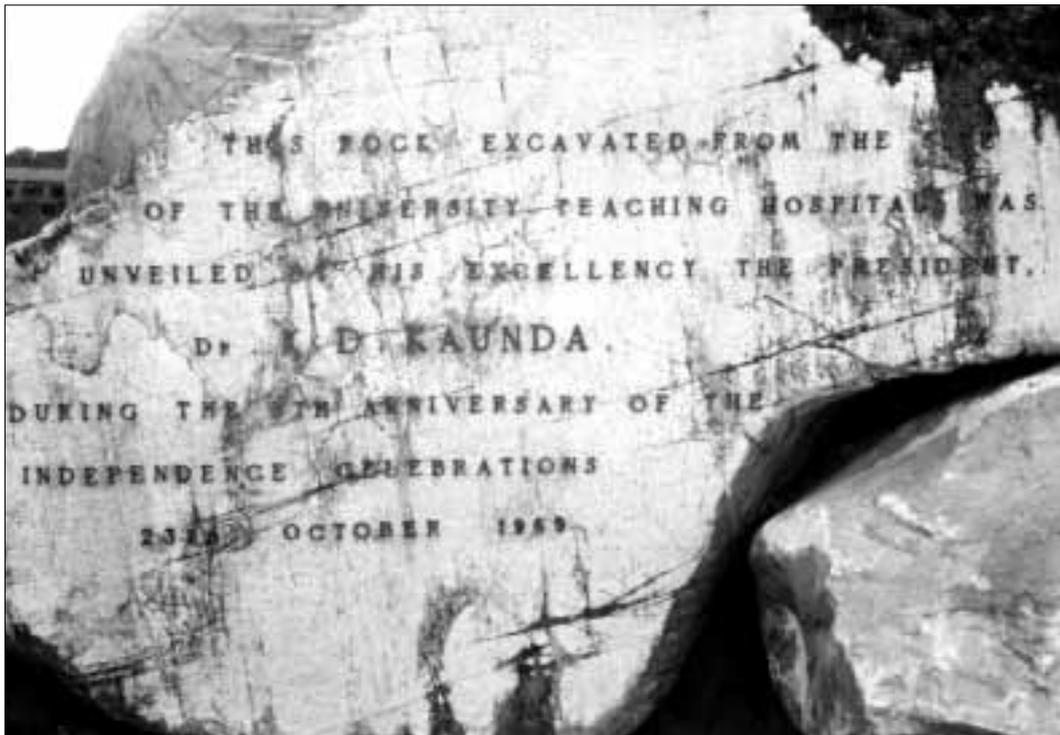
⁶⁴ Taylor M G. (ed.) (1992) *A Brief History of Virology, Protozoology and Helminthology at Winches Farm, 1924–1992*. London: London School of Hygiene and Tropical Medicine. Pamphlet dedicated to Professor Gerry Webbe. Wilkinson L, Hardy A. (2001) *Prevention and Cure: The London School of Hygiene and Tropical Medicine. A twentieth century quest for global public health*. London: Kegan Paul (in press), especially chapter 9, 'Winches Farm: from agricultural comparative parasitology to LSHTM field station'.

⁶⁵ Praziquantel, available in the UK on a 'named patient' basis, originally manufactured and marketed by Bayer as Biltricide, is also available from Merck under the name Cysticide. See Davis A, Wegner D H G. (1979) Multicentre trials of praziquantel in human schistosomiasis: design and technique. *Bulletin of the World Health Organization* 57: 767–771. Davis A, Biles J E, Ulrich A M. (1979) Initial experiences with praziquantel in the treatment of human infections due to *Schistosoma haematobium*. *Bulletin of the World Health Organization* 57: 773–779. Katz N, Rocha R S, Chaves A. (1979) Preliminary trials with praziquantel in human infections due to *Schistosoma mansoni*. *Bulletin of the World Health Organization* 57: 781–785.

⁶⁶ Sir Christopher Booth Kt FRCP (b. 1924) trained as a gastroenterologist and was Professor of Medicine at the Royal Postgraduate Medical School at the Hammersmith Hospital, London, from 1966 to 1977 and Director of the MRC's Clinical Research Centre at Northwick Park Hospital, Harrow, from 1978 to 1988. He was a member of the Medical Research Council from 1981 to 1984 and Chairman of its Tropical Medicine Research Board from 1981 to 1985. He was Harveian Librarian at the Royal College of Physicians from 1989 to 1997. He was the first Convenor of the Wellcome Trust's History of Twentieth Century Medicine Group from 1990 to 1996 and remains an active member of its Programme Committee.

⁶⁷ Dr J C (Hamish) Davidson FRCPE (b. 1926) practised in Central Africa from 1957, later Senior Consultant Physician in Lusaka Central Hospital until 1969 when he moved to Doha, Qatar, as Senior Consultant Physician at Rumaillah Hospital, then as Consultant Physician and Chief of Internal Medicine at Hamad General Hospital in Doha, Qatar, until his retirement in 1991.

⁶⁸ Dr Davidson wrote: 'I forgot to mention at the seminar that a Medical Research Committee was set up in Zambia in late 1968 and I was a member. Had it been extant and working when Dr Cook arrived in Lusaka in 1969 I am sure he would have said something about it.' Letter to Mrs Lois Reynolds, 19 June 2000.



Top: Figure 4. University of Zambia Teaching Hospital, Lusaka, Zambia (1973).

Bottom: Figure 5. Foundation stone (1973). Photographs reproduced by permission of Dr Gordon Cook.

Dr Gordon Cook:⁶⁹ I would endorse that entirely, I think the services were very good, I think the patient care was very good. My problem was when I arrived in Zambia, in 1969 I think it was, most of the European expatriates had moved south, in fact to Zimbabwe or South Africa, leaving very few European expatriates there, but nevertheless the patient care, I would say, was very good at that stage. We had an enormous controversy going on at the time about the relative roles of primary healthcare and patient care in the teaching hospital.⁷⁰ A sort of ivory tower argument. This went on throughout my time there. I would endorse what Dr Davidson has said entirely.

Bradley: Well, let's move on to research. Ian, what about your view of how research developed overall within West Africa?

Professor Sir Ian McGregor:⁷¹ I would like to stress that if you look at medicine in British West Africa in the immediate post-Second World War years, there were two striking features. The first was that there was neither university nor any faculty of medicine, in any of the West African territories. The second feature was that the local medical services, including medical research, were operated by the Colonial Service, as such run predominantly by expatriates, with very variable degrees of experience concerning the health of Africans. Some of these expatriates may have been deeply experienced in the problems of a particular West African country, some of them may have moved from an area that had no such problems. I think as a result there was a tendency to focus the medical services more on urban than rural areas. Research centres at this particular time were few and far between. There was an active one on trypanosomiasis in Nigeria, that Tony [Duggan] has already referred to,⁷² and there was another in the Cameroons [later the Cameroon Republic], partly staffed by the

⁶⁹ Dr Gordon Cook FRCP (b. 1932) has been a member of the History of Twentieth Century Medicine Group since 1997. He was Senior Lecturer in Clinical Sciences at the London School of Hygiene and Tropical Medicine and Honorary Consultant Physician at the Hospital for Tropical Diseases, London, from 1976 to 1997. He has been a Captain in the Royal Nigerian Army from 1960 to 1962, Lecturer at Makerere University College, Kampala, Uganda, from 1965 to 1967, later Professor of Medicine at the Universities of Zambia, Riyadh and Papua New Guinea before returning to the London School of Hygiene and Tropical Medicine in 1976. He was President of the Royal Society of Tropical Medicine and Hygiene from 1993 to 1995 and editor of *Manson's Tropical Diseases*. See note 95. Cook G C. (1992) *From the Greenwich Hulks to Old St Pancras: A history of tropical disease in London*. London: The Athlone Press.

⁷⁰ Dr Gordon Cook wrote: 'In those early days of the Medical School at Lusaka (I was the first clinical appointee) patient care and teaching had of necessity to take priority. Nevertheless, a great deal of research was carried out. See Cook G C. (1980) *Tropical Gastroenterology*. Oxford: Oxford University Press.' Note on draft manuscript, 8 January 2001. See also *idem* (1979) Training of doctors and delivery of health care in developing countries. *Lancet* ii: 297–299.

⁷¹ Professor Sir Ian McGregor Kt CBE OBE FRCP FRS FRSE (b. 1922) spent his military service in Palestine, during which he trained as a malariologist. He joined the scientific staff of the Medical Research Council and was posted to The Gambia in 1949 as a member of the MRC Human Nutrition Research Unit (see note 79). In 1954, shortly after the Gambian Field Station at Fajara had been created as an MRC Unit in its own right (see note 85), he was appointed Director and began long-term research studies into malaria and other endemic diseases. In 1980 he left The Gambia and was appointed Visiting Professor at the Liverpool School of Tropical Medicine.

⁷² See page 14.

Liverpool School of Tropical Medicine, Gordon,⁷³ Kershaw⁷⁴ and Crewe, working in Kumba at that time.⁷⁵ If one looked at other research centres, many of them were in decay. The Yellow Fever Institute at Yaba, Nigeria, for example, ceased to function in the immediate postwar years, as did the Alfred Jones Laboratory in Sierra Leone.⁷⁶

For many years, and for much longer than the period I am speaking of, the Medical Research Council (MRC) had wished to get a footing in tropical medicine, but was thwarted by the Colonial Office's determination to retain control of the research facilities. However, in the late 1940s and early 1950s the MRC did get a foothold in West Africa, in The Gambia,⁷⁷ more by accident than by design. The person who was responsible for the foothold was Ben Platt,⁷⁸ Professor of Nutrition in London, the

⁷³ Professor Rupert Montgomery (Tim) Gordon OBE FRCP (1893–1961) was Assistant Director of the Alfred Jones Laboratory, Freetown, Sierra Leone, from 1924 until his appointment as Director from 1929 to 1938. He returned to Liverpool in 1938 as the Dutton Memorial Professor of Entomology and in 1941 the first Everett Dutton and Walter Myers Professor of Entomology and Parasitology at the University of Liverpool until his retirement in 1958.

⁷⁴ Professor William Edgar Kershaw CMG FIBiol (1911–1998) was the first Lecturer in Medical Parasitology in the Department of Tropical Medicine at the Liverpool School of Tropical Medicine from 1946 until his appointment as Walter Myers and Everett Dutton Professor of Entomology and Parasitology at the University of Liverpool from 1958 until 1966. From 1977 he was Professor of Biology at the University of Salford until 1976, later Emeritus, and Honorary Lecturer in the Department of Bacteriology of the University of Manchester until 1996. He was a member of the MRC Tropical Medicine Research Board and Chairman of the Helminthiasis Committee and a consultant in parasitology for the WHO.

⁷⁵ The Colonial Office funded the Helminthiasis Research Unit in Kumba, Cameroon, supervised by Rupert Montgomery Gordon with William Edgar Kershaw and Bill Crewe, a member of the Colonial Medical Research Committee working on loiasis. See Power H J. (1999) *Tropical Medicine in the Twentieth Century: A history of the Liverpool School*. London and New York: Kegan Paul International, 122.

⁷⁶ The Alfred Lewis Jones Research Laboratory was established in 1921 in Freetown, Sierra Leone, to study diseases caused by parasites and biting or blood-sucking insects, with a bequest of £10 000 in the 1907 will of Sir Alfred Lewis Jones. It had three Directors, Donald Blacklock, Tim Gordon and Thomas Herbert Davey, before its closure in 1941. See Power H. (1999), note 75, 47–77. Davis P N. (1978) *Sir Alfred Jones: Shipping entrepreneur par excellence*. London: Europa.

⁷⁷ The MRC annual report for 1957–58 described The Gambia: 'It is the nearest of the British territories in Africa. It has an excellent climate during more than half the year, although the humidity is high during the rainy season; near the coast the weather is seldom excessively hot, and during the dry season the nights are cool with a breeze off the sea. The health record of Europeans nowadays – in contrast to earlier times – is good. The African population is cooperative and the Government has warmly welcomed the presence of a research project which makes an important impact on the life of a small community. Relations on all sides are cordial, to the benefit of all concerned.' Medical Research Council. (1959) A development in research policy: The Council's Laboratories in West Africa. *Report of the Medical Research Council for the Year 1957–1958*. Cmnd 792. London: HMSO, 4–5. Quote on page 4.

⁷⁸ Professor Benjamin Stanley Platt CMG (1903–1969) was the first Professor of Nutrition and Head of the Department of Human Nutrition at the London School of Hygiene and Tropical Medicine from 1945 until his death in 1969. He joined the MRC staff in 1938, having worked on beri-beri at the Henry Lester Institute for Medical Research, Shanghai, advised the Colonial Office on nutrition as Joint Secretary of the Scientific Food Policy Committee of the War Cabinet and as Secretary to the Colonial Office Committee on Nutrition in the Colonial Empire, becoming Director of the Human Nutrition Unit at the School in 1944 (see note 79). He was instrumental in setting up the Unit's field research station in 1947, which became the MRC Laboratories in The Gambia (see note 85) and was a member of the Tropical Medicine Research Board. See Platt B S. (1962) Tables of representative values of foods commonly used in tropical countries. *MRC Special Report Series 302*: 1–46. Additional information from Professor John Waterlow, 27 November 2000 and 11 January 2001. See also Anonymous. (1969) B S Platt. *British Medical Journal* *iii*: 243. Anonymous. (1969) Benjamin Stanley Platt. *Lancet* *ii*: 224, 276. See also Wilkinson L, Hardy A. (2001), note 64, Chapter 8.

Colonial Adviser in Nutrition, as well as the Director of the Medical Research Council's Human Nutrition Research Unit.⁷⁹ So he had three hats and three sources of money and he used these sources of money to finance a field station in what in war time had been the 55th British military hospital in The Gambia.

Over this period of time, and John Waterlow can speak on more of this than can I, nutritional research in Fajara investigated liver disease in Gambian children. And at that time the newly appointed Secretary of the MRC, Sir Harold Himsworth,⁸⁰ an internationally accepted authority on liver histology and pathology, came to The Gambia specifically to have a look at this research and to see something of the station.⁸¹ During his stay he became alarmed at the size of the Fajara Field Station and that most of its cost was being met directly from the annual budget of the Human Nutrition Research Unit. The MRC had the financial responsibility for what was going on in an overseas establishment over which it had no direct control. Himsworth appointed a subcommittee to visit The Gambia, to assess the situation and its potential for research, and to report its recommendations on the Field Station's future. The principal recommendation of this subcommittee was that the Field Station should cease to be concerned solely with nutritional research, but should become a research station with a much wider brief to study any of the diseases within The Gambia and a Unit of the MRC in its own right.

Cook: May I just interrupt, because the membership of that Committee is rather important.

McGregor: The membership of the Committee was Landsborough Thomson [Sir Landsborough from 1953],⁸² who was the Second Secretary of the MRC, Sir John

⁷⁹ The MRC Human Nutrition Unit was Directed by Professor B S Platt from its establishment in 1944, originally at the National Hospital for Nervous Diseases, Queen Square, London, until 1950, at the MRC Laboratories, Hampstead, London, until 1956 and at the Nutrition Building, National Institute for Medical Research, Mill Hill, London, until 1967, when responsibility for the Unit was taken over by the London School of Hygiene and Tropical Medicine. The Unit had a Field Research Station in The Gambia from 1947 until 1953, when it became an MRC establishment (see note 85).

⁸⁰ Sir Harold Himsworth KCB FRCP FRS (1905–1993), a distinguished clinical scientist, had been Professor of Medicine and Director of the Medical Unit at University College Hospital (UCH), London, from 1939 to 1949 and Secretary of the MRC from 1949 until his retirement in 1968. He established the Tropical Medicine Research Board under his chairmanship in 1960 and later became Chairman of the Board of Management of the London School of Hygiene and Tropical Medicine from 1969 to 1976. See Black D A K, Gray J. (1995) Sir Harold Percival Himsworth KCB. *Biographical Memoirs of Fellows of the Royal Society* 41: 201–218. Gray J, Booth C. (1994) Sir Harold Himsworth. *Munk's Roll* 9: 238–241.

⁸¹ See Beinart J. (1989), note 34, especially 132 on the report of the working party, MRC 52/207.

⁸² Sir Landsborough Thomson Kt CB OBE (1890–1977) was Second Secretary of the Medical Research Council from 1949 until his retirement to part-time special duties in 1957, having joined the headquarters staff in 1919. He was Secretary of the MRC Tropical Medical Research Committee from 1936 to 1941 and a member of the Colonial Medical Research Committee from 1954 to 1960. He was Chairman of the Public Health Laboratory Service Board from 1950 to 1963 (he had been influential in its establishment during the Second World War), and President of the Zoological Society of London from 1954 to 1960. See Thomson A L. (1973–75) *Half a Century of Medical Research*. Vol. 1. *Origins and policy of the Medical Research Council (UK)*; Vol. 2, note 63, 190–225.

Taylor,⁸³ who had been the Director of Pathology Services in the Indian Army, and most importantly Sir John Boyd,⁸⁴ who was the Director at the time of the Wellcome Laboratories of Tropical Medicine. [From the floor: Can you give us the year?] Yes, the visit was made in January 1952. One year later the unit was created in its own right, 1953,⁸⁵ and I became Director in 1954.

Himsworth's visit to The Gambia had other consequences and I think it is important to realize that many things happen by serendipity and not necessarily by brilliant planning. The visit had deepened his interest in tropical medicine research and, like many others, he saw very clearly that one single West African country could not meet the costs of medical research. Therefore there should be emphasis on a pooling of resources, each of the four West African territories putting whatever it could afford into this research fund. In this way Himsworth played a leading role, I think, at the time of the formation of the West African Council for Medical Research.⁸⁶ It ran rather fitfully, it never really functioned as smoothly and as beautifully as the Research Council did in the West Indies, and it lasted until 1962, when Ghana [formerly the Gold Coast] withdrew its financial support. It is quite interesting and as an aside, because I can't take it any further, part of the withdrawal perhaps was directly due to the Liverpool School of Tropical Medicine, who had offered to supply a research service to Ghana and this was being considered very seriously by the Ghanaians. I

⁸³ Major General Sir John Taylor Kt CIE DSO (1884–1959) spent his career in the Indian Medical Service, having been Director of the Central Research Institute at Kasauli from 1932 to 1944, and a member of the Army Pathology Advisory Committee in India and later at the War Office. On his return to London in 1944 he worked part-time for the Medical Research Council, particularly on medical research in the colonies and was Joint Secretary of the Colonial Medical Research Committee until his retirement in 1954. He was a Fellow of the Royal Society of Tropical Medicine and Hygiene.

⁸⁴ Sir John Boyd Kt OBE FRS FRCP (1891–1981), an authority on dysenteric diseases, malaria and typhus, served in the Royal Army Medical Corps from 1914 until his retirement in 1946, having been in charge of the vaccine laboratory at Millbank and of pathology in the Middle East, later for the War Office. He was Director of the Wellcome Laboratories of Tropical Medicine from 1946 to 1955, a Wellcome Trustee from 1956 to 1966, and Scientific Consultant to the Wellcome Trust from 1966 to 1968. He was an original member of the Colonial Medical Research Committee from 1945 to 1960 and its successor, the Tropical Medicine Research Board, from 1960 to 1963. See Goodwin L G. (1982) John Smith Knox Boyd. *Biographical Memoirs of Fellows of the Royal Society* 28: 27–57, particularly 44–45 on the Wellcome Laboratories of Tropical Medicine.

⁸⁵ The MRC Laboratories, The Gambia, was the new name of the Human Nutrition Research Unit at Fajara, with a field station in Keneba, directed by Dr J Newsome, followed by Dr I A McGregor (see note 71) in 1954. The Laboratories dealt with questions on malaria, including entomological studies. A small section of the Trachoma Unit was attached to the Laboratories from 1958 but directed from the unit's headquarters at the Lister Institute. See Thomson A L. (1975), note 63, 217–219.

⁸⁶ The MRC's *Report for the Year 1958–59* described the efforts to promote medical research: 'It was early evident that no single territory contained, or in the foreseeable future was likely to contain, sufficient resources for medical research to deal with more than a fraction of its problems and opportunities and, further, that the division of efforts between them was such as to render those resources that were available less effective than they might have been. It was therefore suggested that neighbouring territories might combine their efforts. In this way there came into being a West African Council for Medical Research, covering Nigeria, the Gold Coast (as it then was), Sierra Leone, and The Gambia; an East African Council covering Kenya, Uganda, Tanganyika and Zanzibar...Each of these organizations contained two members from the United Kingdom, nominated by the Secretary of State for the Colonies, and was thus related to the Colonial Medical Research Committee.' Thomson A L. (1975) Vol. 2, note 63, 211. The Tropical Medicine Research Board took over the duties of that Committee on its creation on 15 July 1960 until it was disbanded in September 1992. See note 93.

remember Himsworth being irate that the thing might fall apart at the seams because of that.

During the 1950s a start was made in establishing universities and faculties of medicine in West Africa. The first was, as Herbert [Gilles] has mentioned, that in Ibadan, Nigeria. The important feature here was that the development was done in partnership with a university in the United Kingdom, so that the standards of examinations and of postgraduate work were maintained at a high level. Ibadan University became a centre of research excellence, and over a number of years did splendid work.

Now one point again that I should make here, is that this tendency to produce universities was greatly fostered by the wind of change and independence.⁸⁷ Perhaps it was not always successful, but this certainly hastened the development of new universities and the foundation of new faculties of medicine in different territories.

There was one adverse effect of the wind of change, and that was, as mentioned earlier, that many experienced research workers in the Colonial Medical Research Service saw no future in working in Africa, accepted loss of career terms and left West Africa. There was a period of difficulty in recruiting research staff. Individuals did not want to commit themselves to work overseas for any length of time, even in a UK-funded organization such as the MRC Laboratories in The Gambia. The MRC tried to overcome this by offering supernumerary posts, the costs of a lectureship, to the Schools of Tropical Medicine, both in London and Liverpool. The individual supernumerary lecturer would have been replaced in The Gambia by a succession of individuals and this would have given a research basis to either of the Schools. This would have enabled us to continue work on a scientific basis. Neither School was in a position to accept this offer and recruitment difficulties persisted. Collaboration between the [two] Schools and the MRC Laboratories remained a matter of personal arrangement between the Director and individual members of the Schools' staff. An important aspect of the Director's duties therefore was to keep in touch with potential visiting workers who could make important contributions to research studies in the course of their relatively brief visits. This was an exceedingly time-consuming business, which occupied the whole of one's leave, every time one came on leave.

That is all I want to say about West African institutes. Now what about research? So much research depends, in its interpretation, on accurate knowledge of vital statistics of the communities under study – birth rates, death rates, the effect of season on these particular rates, how individuals grow, what is the nutritional status, what are the standards. In the years following the Second World War such information did not exist for communities in rural areas in the West Africa that I knew and probably the

⁸⁷ Harold Macmillan (1894–1986), Prime Minister of Great Britain from 1957 to 1963, said, 'The wind of change is blowing through this continent', in a speech given to the South African Parliament, Cape Town, South Africa, on 3 February 1960.

West Africa that Herbert [Gilles] knew. There was a need to create a facility whereby this information could be supplied accurately. We tried to do this in The Gambia through long-term studies investigating a series of villages. I began observations on the health of the entire residential population of four villages in the Keneba area of The Gambia in 1949.⁸⁸ I am glad to say that these observations continue to the present day and are still providing important new data. For example, part of Roger's [Whitehead] team's most recent finding has been that the mortality rate of young adults is ten times higher in those who have been born in the wet and hungry season, as opposed to those born in the dry and fruitful season.⁸⁹ The reason for this remains unknown.

Additional village studies have indicated not only morbidity patterns, but also the causes of morbidity; they have illuminated the acquisition of immunity to diseases like malaria; they have shown the value of sero-epidemiology in the assessment of endemic and epidemic diseases like malaria, influenza and rubella, and have demonstrated again the extreme mortality of common conditions like measles to children in rural Africa.

There have been other studies made by visiting groups in The Gambia, like the studies in trachoma,⁹⁰ where the isolation and culture of *Chlamydia*, responsible for infection, took place and for which Josef Sowa won the Louis Braille Prize.⁹¹ In other countries of West Africa, the concentration was on epidemiology of filariasis, meningitis and trypanosomiasis.

Dr Peter Williams:⁹² I wonder if I could put in a structural shape to the background of what Ian [McGregor] was saying, as looked at from London. I worked at the Medical Research Council headquarters between 1955 and 1959. Soon after I arrived there, principally because I was born in Trinidad, Sir Harold Himsworth (Secretary of

⁸⁸ McGregor I A. (1956) A nutritional assessment of the result of control of parasitic diseases in Keneba – a rural Gambian village. Communication. *Inter-African Conference on Nutrition* (3rd) 1956, Luanda, 2 vols. Angola: [The Conference], vol 1: 281–293. McGregor I A. (1991) Morbidity and mortality at Keneba, The Gambia, 1950–1975, in Feachem R G, Jamison D T (eds) *Disease and Mortality in Sub-Saharan Africa*. Oxford: Oxford University Press for the World Bank, 306–324.

⁸⁹ Moore E M, Cole T J, Poskitt E M E, Sonko B J, Whitehead R G, McGregor I A, Prentice A M. (1997) Season of birth predicts premature adult mortality in rural Gambia. *Nature* **388**: 434.

⁹⁰ T'ang F-F, Chang H-L, Huang Y-T, Wang K-C. (1957) Studies on the etiology of trachoma with special reference to isolation of the virus in chick embryos. *Chinese Medical Journal* **75**: 429–446. Collier L H, Sowa J. (1958) Isolation of trachoma virus in embryonate eggs. *Lancet* **i**: 993–996. See Cox F E G. (1996), note 29, 92–94.

⁹¹ Josef Sowa, a bacteriologist at the MRC Trachoma Research Group in The Gambia, made further isolations of the trachoma virus – brought back from China in 1957 by Professor E T C Spooner (1904–1995), Professor of Bacteriology at the London School of Hygiene and Tropical Medicine from 1947 to 1960, – which was then propagated at the Lister Institute in London. See Sowa S, Sowa J, Collier L H, Blyth W. (1965) Trachoma and allied infections in a Gambian village. *MRC Special Report Series* **308**: 1–88.

⁹² Dr Peter Williams CBE FRCP (b. 1925) was Medical Officer on the headquarters staff of the Medical Research Council from 1955 to 1960. He joined the Wellcome Trust in 1960 and was its Director from 1965 to 1991 and Director of the Wellcome Institute for the History of Medicine from 1981 to 1983.

the Medical Research Council and Chairman of the Colonial Medical Research Committee⁹³) asked me to understudy him in tropical medicine. Through the Colonial Medical Research Committee he had access to a regular review of all the new institutes that had developed under the Colonial Medical Research Service.⁹⁴ A number of institutes had been set up in Africa in 1948; indeed, I always understood they were a replacement for those that the British had lost when India became independent in 1947. The result was that not only had Sir Harold become interested because of the Gambian activities, but also he was now involved in the tours of East and West Africa and the West Indies that were undertaken regularly by the members of that Colonial Office Committee. The members of that Committee were virtually all old India hands, who were then working in England, and they were essentially specialists in classical tropical medicine. Sir Harold gradually added to this coverage of the disorders encountered in the tropics that were not in *Manson's Tropical Diseases*,⁹⁵ such as diabetes. At the same time, and Ian [McGregor] has referred to this, universities were developing in Africa⁹⁶ and there were, in addition, the medical services. The Colonial Office had within it a Colonial Medical Research Committee, a department concerned with medical services in different countries, and a Trypanosomiasis and Tsetse Fly Research Committee. The Medical Research Council was operating its units independently of the Colonial Office. All of those separate activities operated independently of one another, and furthermore, each country operated independently from the next one. I don't think, for instance, that Uganda and Kenya exchanged very much. I think this is the point one wants to emphasize when one tries to talk about such things as East and West African relationships or relationship between countries in the East and West. They had a centralization in London, but this centralization was not a coordination.⁹⁷

⁹³ Two Colonial Medical Research Committees were established by the Secretary of State for the Colonies. The first functioned from 1927 until 1930; the second from 1945 until 1960, with revised remit in 1953. The Tropical Medicine Research Board was set up on 15 July 1960 by the MRC to advise the Secretary of State for the Colonies on all medical research funded from Colonial Development and Welfare Funds (see note 34), from the Exchequer or from MRC funds. This was amended in 1963 to include funds from the newly created Department of Technical Cooperation and in 1964 from the new Ministry of Overseas Development and the Colonial Office, which merged with the Commonwealth Relations Office a year later, becoming part of the Foreign Office in 1968. See the final report of the Colonial Medical Research Committee, Colonial Office. (1961) Sixteenth Annual Report of the Colonial Medical Research Committee/Tropical Medicine Research Board, in *Colonial Research 1960–1961*. Cmnd 1584. London: HMSO, 143–206.

⁹⁴ For details of the MRC's attitude towards the Colonial Medical Research Service, see Thomson A L. (1975), vol. 2, note 63, 207–211.

⁹⁵ For example, see Manson-Bahr P H, (ed.) (1945) *Manson's Tropical Diseases: A manual of the diseases of warm climates*. Twelfth edn. London: Cassell. For current advice, see Cook G C. (ed.) (1996) *Manson's Tropical Diseases*. Twentieth edn. London: W B Saunders Co. Ltd.

⁹⁶ See note 153.

⁹⁷ Dr Peter Williams wrote: 'I visited West Africa in 1957, East Africa in 1958 and the West Indies in 1959 and wrote reports for the MRC. I still have a copy of the report on East Africa (maybe the others are in the MRC archives). Also Dr Raymond Lewthwaite kept detailed diaries of his annual tours which may be preserved in the Colonial Office archives. The members of the Colonial Medical Research Committee also reported back to the Committee, but I do not know if they wrote reports. Annual Reports of the Institute were published.' Letter to Mrs Lois Reynolds, 17 April 2000.

Professor John Waterlow:⁹⁸ I don't know much about how things were organized, but you haven't mentioned a man who was a key person and that is Lewthwaite, Director of Colonial Medical Research.⁹⁹ Surely he did a fine job in coordinating, at least as far as I was concerned.

Williams: Absolutely right. Raymond Lewthwaite went around the regions every year and did a magnificent job trying to coordinate the research side, but he had no authority over the medical services or the MRC Units.

Waterlow: I was in The Gambia before Ian [McGregor], in 1950, and I think we must give B S Platt the credit for having started that unit at Fajara, and also a field station at Geneiri, which in those days was part of the same operation. Platt had the vision to see that the subject of nutrition required a field station to work on tropical malnutrition. Platt, in a way, did for tropical malnutrition what Boyd Orr did for public health nutrition in this country.¹⁰⁰ He had been, as Ian [McGregor] said, adviser to the Colonial Office; he produced a report on nutrition in the colonial Empire, which was very important – he really started the whole subject. When I was there, the head of the station was John Walters, Colonel Walters formerly of the Indian Medical Service,¹⁰¹ who was an absolutely splendid man. Platt had the vision and it fell apart

⁹⁸ Professor John Waterlow CMG FRCP FRS (b. 1916) was Professor of Human Nutrition at the London School of Hygiene and Tropical Medicine from 1970 to 1982, later Emeritus. He was a member of the scientific staff of the Medical Research Council from 1942 to 1970, becoming Director of the MRC Tropical Metabolism Research Unit at the University of the West Indies from 1954 to 1970. He developed the 'Waterlow Index', a system of classifying children with undernutrition and growth failure, later adopted by WHO. Waterlow J C. (1948) Fatty liver disease in infants in the British West Indies. *Medical Research Council Special Report Series 263*: 1–84. Waterlow J C. (1972) Classification and definition of protein-calorie malnutrition. *British Medical Journal* *iii*: 566–569.

⁹⁹ Dr Raymond Lewthwaite CMG OBE FRCP (1894–1972) was Medical Research Adviser at the Ministry of Overseas Development from 1964 to 1968. He had been a pathologist in Malaya in 1926, and Field Director of the MRC's Scrub Typhus Commission, South-East Asia Command, from 1944 to 1945. He was appointed Director of Colonial Medical Research at the Colonial Office from 1949 until 1961, when he became the adviser on medical research to the new Department of Technical Cooperation, and assessor to the MRC's Tropical Medicine Research Board.

¹⁰⁰ Sir John Boyd Orr (Lord Boyd Orr of Brechin Mearns from 1949) CH FRS (1880–1971), qualified as a teacher and a physician and became Director of the Nutrition Institute in Aberdeen (later the Rowett Research Institute for Animal Nutrition) in 1914. During the 1930s his investigation of the diets of mothers and children revealed widespread malnutrition, an embarrassment for the Government, which became the basis for British food policy during the Second World War. He was awarded the Nobel Peace Prize in 1949, donating the prize money to various organizations working for peace. He was the first Director-General of the Food and Agriculture Organization of the United Nations. See Orr J B. (1936) *Food, Health and Income: A report on a survey of adequacy of diet in relation to income*. London: Macmillan. Kay H D. (1972) John Boyd Orr, Baron Boyd Orr of Brechin Mearns. *Biographical Memoirs of Fellows of the Royal Society* *18*: 43–81.

¹⁰¹ Colonel John Walters (b. 1909) joined the Indian Medical Service in 1936 retiring with the rank of Lieutenant Colonel in 1947. He was appointed Physician to the MRC field station, Fajara, The Gambia (see note 85) in 1947, later Medical Director from 1950, moving to Kuwait as Consultant Physician and Medical Director and Personal Physician to the Ruler in 1952. From 1955 he was Consultant Physician at the Hospital for Tropical Diseases, London and in charge of repatriated prisoners of war from the Far East at Queen Mary's Hospital, Roehampton, London, until about 1972. See Walters J H, Waterlow J C. (1954) Fibrosis of the liver in West African children. *Medical Research Council Special Report 285*: 1–72. Additional information from Professor John Waterlow in letters to Mrs Lois Reynolds, 27–28 November 2000, and Sir Ian McGregor, 19 February 2001.

when Himsworth took over from Mellanby.¹⁰² That's a little bit of the history of the station.

Gilles: I just want to say a few words about the break-up as far as Ghana is concerned. Those were the days actually when Nkrumah,¹⁰³ as many people here would remember, was very keen to make Ghana the centre of attraction, the most important country as far as Africa was concerned. He approached Brian Maegraith to ask him whether the Liverpool School could help to build some institute over there and Brian Maegraith said, 'Sure, we will help you' and they started what was known as the Institute of Health in Accra [Ghana]. The irony was that the first Director was Joe Gillman,¹⁰⁴ who was a South African who left South Africa and came to run the Institute of Health in Ghana. I thought that might be interesting from an historical point of view.

Professor Ralph Hendrickse:¹⁰⁵ I knew Joe Gillman. There were two Gillman brothers, very big research people in Johannesburg, and Joe, like Nkrumah, got delusions of grandeur in Ghana. He had collected a very fine research team, people who were loyal to him, but he accomplished nothing, because he acted like a little dictator. I spent a weekend with Joe discussing their research and plans and made it known to him that a number of his very dear colleagues were rather upset about the fact that they weren't actually getting on with the research. They were really being dictated to by him. On the last day he said, 'I really must have a chat with you, Ralph' and spent the whole of that day trying to wheedle out of me the names of the people who had spoken to me. That was a sad business, because the Gillman brothers did some very good research in South Africa. I think Nkrumah got touched by God and Gillman got touched by Nkrumah.

Dr Bob Snow:¹⁰⁶ It's a question really, picking up on a point made by Dr Williams. To what extent did people feel that the Colonial Medical Research Institutes actually

¹⁰² Sir Edward Mellanby FRS (1884–1955) was Secretary of the Medical Research Council from 1933 to 1949 until succeeded by Sir Harold Himsworth FRS (see note 80) as Secretary from 1949 to 1968. See Dale H H. (1955) Edward Mellanby. *Biographical Memoirs of Fellows of the Royal Society* 1: 193–222.

¹⁰³ The Rt Hon. Dr Kwame Nkrumah PC (1909–1972) was Prime Minister of the Gold Coast (Ghana after 1957) from 1952 to 1960 and the first President of the Republic of Ghana and Osagyefo ('Redeemer') from 1960 until deposed by an army coup and forced into exile in 1966.

¹⁰⁴ Joe Gillman and his brother, Theodore, trained at the University of Witwatersrand. Joe Gillman (1907–1981) was Director of the Institute of Health and Medical Research at Accra, Ghana, from 1961 until 1966, leaving in the wake of Nkrumah's exile. See Tobias P V. (1982) In Memoriam: Joseph Gillman. *South African Medical Journal* 62: 1007–1008.

¹⁰⁵ Professor Ralph Hendrickse FRCP FRCPE (b. 1926) was Professor and Head of the Department of Tropical Paediatrics at the Liverpool School of Tropical Medicine from 1974 to 1991, later Emeritus, and Dean from 1988 to 1991. He qualified at the University of Cape Town, going to University College Hospital at Ibadan, Nigeria, as Senior Registrar in 1955, Senior Lecturer at the University of Ibadan, and Senior Consultant Paediatrician from 1957, and Professor and Head of Paediatrics from 1962 to 1969. In 1964 he became Director of the Institute of Child Health in Ibadan, moving to the Liverpool School of Tropical Medicine as Senior Lecturer in 1969. See Hendrickse R G. (1985) *Kwashiorkor, 50 Years of Myth and Mystery: Do aflatoxins provide a clue?* Dordrecht: Floris Publications.

¹⁰⁶ Dr Bob Snow (b. 1961), a malarial epidemiologist, has worked in Africa since 1984 at the MRC Laboratories in The Gambia and the Wellcome Trust Laboratories in Kenya, and was appointed to the Chair in Tropical Public Health at the University of Oxford in 2000. He has a special interest in the epidemiological basis of malaria as a disease and the implications of control upon disease ecology and immunity.

interfaced with the medical services? Were there mechanisms in place by which research findings could be channelled to new policies and new health developments, or were those mechanisms just not in place? This is one of the things that faces people working in research in Africa today. I just want to make one observation from what we've found going through the archival material. In the Director of Medical Services Reports that are published from 1912 onwards,¹⁰⁷ there's always a section on research. Now is that research done by the medical services, not by the traditional research institutes, or is it done by the research institutes that is then reported by the medical services?

Bradley: Could I make a comment, not as Chairman. There was an interesting situation in East Africa with the Institutes during the time they belonged to the Common Services Organization, when there was almost a blockage to things being transferred down, because action was national and the research organizations belonged to the East African Community,¹⁰⁸ so that when Pip Jordan first wanted to get involved in implementing things from the schistosomiasis research, he was in danger of getting into trouble for trespassing into areas that were not his. Len Goodwin would be able to speak probably on this from the days when he came out and looked at what was going on.

Duggan: In Nigeria, the headquarters of the Sleeping Sickness Service was about 400 yards away from the headquarters of the West African Institute of Trypanosomiasis Research (WAITR). It was never officially established that the Annual Reports, or indeed any other reports, should be regularly exchanged between the two institutions. It was a fantastic situation. What rapport there was, I am glad to say, was man-to-man, across the coffee cups or the bar at the club, between the research workers and the control organization. That was how we exchanged views and found out what each other was doing.

Smith: May I say a few words on the development of research services. My experience with the Tropical Pesticides Research (TPR) Institute in East Africa was that after independence we had experienced expatriates leaving after they received their golden handshakes and there was the difficulty recruiting replacements. At the same time the East African Community Service Commission, which was committed to Africanization of research posts, had great difficulty in recruiting Africans to fill the

¹⁰⁷ See, for example, Government of Colony and Protectorate of Sierra Leone. (1913–1917) *Annual Reports of the Medical Department for the Years Ending 31st December 1912–1916*. London: Waterlow & Sons. Government of Colony and Protectorate of Nigeria. (1934–35) *Annual Reports of the Medical and Health Department for the Years 1932 and 1933*. Lagos, Nigeria: Government Printers. Government of the Colony and Protectorate of Kenya. (1935) *Medical Department Annual Report, including the Medical Research Laboratory Annual Report for 1933*. Nairobi, Kenya: Government Printers.

¹⁰⁸ The East African Community was created in June 1967 by the East African Economic Cooperation Treaty and lasted until 1977. It was responsible for the University of East Africa (University College, Makerere, Uganda, from June 1963; University College, Nairobi, Kenya, from 1964; University College, Dar es Salaam, Tanganyika, from 1961) until its dissolution in July 1970. See Hyslop J M. (1964) The University of East Africa. *Minerva* 2: 286–302. See also documents and reports on university development in Nigeria, Malawi and Northern Rhodesia, in *Minerva* 3 (1965): 210–261.

research posts. If they could get anybody to fill the research posts, very often they would have to have them bonded for two years. Quite a number of them would be sent either to Britain, to receive further training, or what was quite popular at that time, to Russia.¹⁰⁹ When they came back they fitted in after two years' probation. There was nevertheless considerable difficulty in getting Africans, and the Commission allowed the recruitment of expatriates. They tried to recruit from various countries and certainly as far as the TPR was concerned, most of them were British, and they were employed on renewable two-year contracts, until a suitable African was found to replace them. Many expatriates would have liked to stay on and some, indeed, did so. But as Africanization proceeded they were replaced and often had a counterpart African officer with them who took over from them when they left.

With regard to integration of research, I and other colleagues within the East African High Commission Medical Services would attend the East African Medical Research Council along with the Directors of the National Medical Research Institutes. There was a time when we were gathered at least once a year all together in the same building, discussing the agenda.¹¹⁰

With regard to the lack of communication among the institutes, the East African High Commission changed its name after independence to the East African Common Services Organization, which in 1967 became the East African Community. The East African Community decided that there was a problem of communication between the national research institutes [the Medical Research Council Institutes and the Agricultural Research Council Institutes of Kenya, Uganda and Tanzania] and the East African Community research institutes and they had a programme that they called 'resiting of the research institutes'. Now this went on for years and every Director as far as I know produced streams and streams of reports and memoirs and descriptions, including the Institute's history, which were designed to harmonize the research institutes within East Africa. But that was still going on in 1972 when I left East Africa.

¹⁰⁹ Dr Alec Smith wrote: 'Most [recruits] went to Britain but others to Russia, which was then held in some regard by the Commission. Training in Britain was very popular among recruits, but that in Russia less so as living conditions were less pleasant and the qualifications received did not fit readily into the existing Scientific Officers salary scale, which caused problems. There was also the problem that having spent two years in Britain, quite a number of the "bonded" staff no longer wanted to return to Africa to "help build the nation", a popular quotation at that time. Not unexpectedly, this problem did not arise among those studying in Russia.' Letter to Mrs Lois Reynolds, 28 April 2000.

¹¹⁰ Dr Alec Smith wrote: 'In 1967 the East African Community proposed to resite the Research Institutes in East Africa to provide more equitable services within Kenya, Tanzania and Uganda. Planning included the 12 research services under the aegis of the East African Community together with all National Research Services. There was an immense amount of communication in so far as the topic of "resiting the Research Institutes" was on the agenda of every East African Medical Research Council and East African Natural Resources Research Council that I attended. The last African Research and Social Council, held in Arusha, continually demanded reports and information to assist it in its deliberations. Huge quantities of documents were produced. I saw mountainous piles of them in an East African Community headquarters office in Tengeru, near Arusha. As far as I am aware, nothing was achieved by 1977 when the East African Community had disbanded.' Letter to Mrs Lois Reynolds, 28 April 2000.

Professor Michael Hutt:¹¹¹ My remit is medical education in East Africa and I want to concentrate on the training of local people to fulfil both service and research posts. We have already heard something of the value of Medical Assistants that had been trained from the early 1930s, indeed before that, and then they were translated to Assistant Medical Officers, which would be the cadre of people that George [Nelson] and Murray [Baker] would have been working with. Naturally, these people who were very bright and very well trained, were anxious to be recognized as Medical Officers. The term ‘native’ had once been added before the term Assistant Medical Officers and that was bitterly resented. In 1953 the General Medical Council (GMC) agreed that all doctors, who passed their final examinations in what was originally a Government Medical School but was now becoming associated with the University College in Makerere, should qualify as licenciates in medicine and surgery, and that they be registered to practise independently in Africa after a two-year internship. During the 1950s the main departments in the Medical School, clinical and preclinical, appointed appropriate staff, including professors, but there was a very small number of students, because the basic education did not provide sufficient applicants reaching the minimum qualifications for entry. Pressure to establish a full university in East Africa increased in the 1950s and eventually resulted in the formation of the Federal University of East Africa in 1962. At that time it was agreed that the Medical School would be at Makerere, but other specialist faculties were to be established either in Dar [es Salaam, Tanganyika] or Nairobi [Kenya]. In the year that I arrived (1962), 17 students qualified, which is a meagre number to cover the needs of Uganda, Kenya and Tanzania, each of which was to face loss of doctors from the Government Medical Services after independence was granted to these three countries in the early 1960s. To respond to this, we increased the intake from all three countries at Makerere, from 30 to 90, over a three-year period. But it was clear that this was quite inadequate and so medical faculties were established at the University Colleges in Dar es Salaam and Nairobi. Although we shared a common qualification which was MB, ChB (East Africa), using similar external examiners for quality control, each school had somewhat separate developments and I think their way of looking at what we were producing was also slightly different, perhaps because of earlier political and social influences, as George [Nelson] has suggested. At Makerere we made great efforts to make the curriculum appropriate to the local situation and here I am repeating what we have already heard from Ibadan. While they were establishing outstations, we were also doing so. And the concept that we were fixated on the old London MB is nonsense. Certainly one of my first memories is going to a curriculum committee

¹¹¹ Professor Michael Hutt FRCP FRCPath (1922–2000) was Professor of Pathology at Makerere University, Kampala, Uganda, from 1962 to 1970. He returned to Britain to a Chair in Geographical Pathology at St Thomas’ Hospital Medical School until his retirement in 1983, later Emeritus. He was a member of the MRC’s Tropical Medicine Research Board from 1972 to 1976 and of the Wellcome Trust’s Tropical Research Grants Committee from 1981 to 1984. He was Vice-President of the Royal Society of Tropical Medicine and Hygiene from 1991 to 1993 and was made an Honorary Fellow of the Royal Society of Tropical Medicine and Hygiene in 1993. Anonymous. (2000) Professor Michael Hutt: Pathologist dedicated to understanding cancer in East Africa. *The Times* (25 May 2000), 25.

where we were revising the curriculum and Dick Jelliffe¹¹² got up and said, ‘Do you know how much time paediatrics has got?’ and we said, ‘Six weeks’. Six weeks was jolly good in London. And he said, ‘Do you realize that 50 per cent of the population are paediatric?’ That was a time of a lot of change. We in fact introduced two new curricula and there was a time when we were running three curricula at the same time – the old, the new, and the new new – not an easy task. During this period of the 1960s, it was clearly recognized that our major objective was to train nationals to succeed us and to run the university departments and the services. In fact, some of the earlier graduates had already taken higher degrees and were in charge of the main ministry services. A major problem in achieving this was that in order to get people of sufficient status to take on these posts, they had to go to the UK to take their higher degrees, whether these were speciality degrees in particular subjects, such as medicine, surgery, obstetrics, or community medicine, or whether it was a basic science degree, such as the PhD. This meant that we were temporarily losing our best and brightest students, those who had obtained distinctions, for up to three or four years at a stretch, in the case of pathology, for four years. So after 1965, we began to consider the development of specialist postgraduate qualifications appropriate to the needs of East Africa, which could be undertaken locally. From these discussions emerged a specialist postgraduate qualification, the term MMed followed by the name of the specialty. You could take MMed (Community Medicine), MMed (Surgery), involving only the major specialties at that stage. Subspecialties developed later. We were only able to do this where sufficient teaching staff were available. Inevitably, anxiety was expressed by some of our colleagues, both expatriates and locals, that our students were getting a second-class qualification. And this worry continued for some time. For Uganda, the introduction of the MMed was a lifesaver for the school, and it continued to be a lifesaver when the situation deteriorated in the early 1970s under Amin.¹¹³ The Ugandans were in this programme, they were not all in the UK. Those who had gone to the UK had come back and so they were able to take over our posts, and there was

¹¹² Professor Dick Jelliffe (d. 1992) qualified in medicine at the Middlesex Hospital, worked as an academic paediatrician in Sudan and, in Uganda, as a District Medical Officer. He was Professor of Paediatrics at University College, Ibadan, Nigeria, from 1948 to 1952, as Senior Lecturer in Paediatrics at the University College of the West Indies from 1953 to 1954, at the University of Calcutta from 1954 to 1956 and in New Orleans from 1956 to 1959. He was UNICEF Professor of Paediatrics and Child Health at the University of East Africa (see note 108) at Kampala, Uganda, from 1959 to 1966 before his appointment as Director of the new Caribbean Food and Nutrition Institute, University of the West Indies, that had been established by the Pan-American Health Organization. He left for the University of California for a Chair in Public Health and Paediatrics at the School of Medicine, University of California Los Angeles, California, from 1972 to 1990 and was Director of the International Health Program from 1989 to 1991. See Laurence B M. (1994) Derrick Brian Jelliffe. *Munk's Roll* 9: 271–273. Additional information from Professor John Waterlow, 27 November 2000 and Professor Gerry Shaper, 6 December 2000. Trowell H C, Jelliffe D B. (1958) *Diseases of Children in the Subtropics and Tropics*. London: Edward Arnold. Williams C D, Jelliffe D B. (1972) *Mother and Child Health: Delivering the services*. London, New York: Oxford University Press.

¹¹³ In 1961, Uganda was granted internal self-government, became an independent member of the Commonwealth in 1962 and a republic in 1967. President Milton Obote was overthrown in 1971 by troops under General Idi Amin. Amin's administration practised widespread repression and the Asian residents were expelled in 1972. In April 1979, a force of the Tanzanian Army and Ugandan exiles took Kampala and forced Amin into exile. Dr Obote again became president following the 1980 elections, until his administration was again overthrown in 1985.

a further cadre coming up to replace them. From about 1973 onwards nearly all the top positions in all three medical schools, despite their slight differences in outlook, were predominantly held by East Africa nationals. Sadly, on the negative side for Uganda, we did lose some of our brightest and best students, who are now scattered all over the world, many in senior, responsible positions.

Bradley: Alan, would you like to contrast with that or comment on that in relation to West Africa, the similarities and differences. Is this a good time or not?

Fleming: I'll come in later because I think possibly Herbert [Gilles] was there before.

Hendrickse: May I say something on this? One of the problems that West Africa faced when they were thinking of a new medical school, was that the Nigerian elite were reluctant to go into nursing. It was a profession that was looked down upon, and one of the master strokes of the University of Ibadan was to appoint a lady, Miss Louise Bell,¹¹⁴ from the United Kingdom, who toured all the top schools in Nigeria and encouraged educated girls from good backgrounds to come into the School of Nursing in Ibadan, which was set up very early. It was started in 1949 I think. Miss Bell's girls were the absolute pick of Nigeria's young ladies. They were not only competent, they were intelligent; she not only taught them nursing, she taught them etiquette, good English, encouraged them to read, and they were totally brilliant. Much of the success of the University of Ibadan's clinical departments relied upon the excellence of the nursing. Another important fact in shaping the destiny of the University of Ibadan Medical School was the fact that most of us who subsequently worked in the teaching hospital cut our teeth in the old government hospital at Adeyoyo where we were in direct contact with the population at large and where, in paediatrics, I used to go with a house officer to see 300 to 400 patients in a sort of three-hour triage at the outpatients and sort them out. Some were treated on the spot, the very sick were sent straight to the ward, others were sent home with advice, etc. Without that background I think our teaching hospital would have been a white elephant. It was from that hospital that I wrote the first decent clinical paper on malarial anaemia in childhood. There was so little known about the pathology of malaria that I didn't dare to call it malarial anaemia, I called it an 'anaemia of unknown origin', but in the discussion said, 'This must be malaria'.¹¹⁵ Many years later, the Regius Professor of Medicine in Oxford, David Weatherall, published a paper with Dr Abdalla from West Africa on morphological changes in the bone marrow of children with *Plasmodium falciparum* malaria based on studies done in The Gambia.¹¹⁶ Margaret King and I recorded a normoblastic maturation arrest in the

¹¹⁴ Schram R. (1971) *A History of the Nigerian Health Services*. Ibadan: Ibadan University Press, 274–276.

¹¹⁵ Hendrickse R G, King M A R. (1958) Anaemia of uncertain origin in infancy. *British Medical Journal* ii: 662–669.

¹¹⁶ Professor Sir David Weatherall Kt FRCP FRCPath FMedSci FRS (b. 1933) has been Regius Professor of Medicine at the University of Oxford since 1992 and was Nuffield Professor of Clinical Medicine from 1974 to 1992. See Weatherall D J, Abdalla S, Pippard M J. (1983) The anaemia of *Plasmodium falciparum* malaria. *Ciba Foundation Symposia* 94: 74–88.

bone marrow in the *British Medical Journal* back in 1958. We described for the first time the pathogenesis of malarial anaemia in childhood. For the first time it was realized that people didn't just die of cerebral malaria, they also died of malarial anaemia which had been called nutritional or iron-deficient anaemia. This work was done in the old Adeyoyo Hospital, before we ever moved into the research facilities of the new hospital. It was there, also, in the same hospital that Dick Jelliffe said, 'In spite of a 25 per cent incidence of sickling in the community, sickle cell anaemia is extremely rare.'¹¹⁷ It was in that hospital that I collected my material for an MD thesis which I presented at Cape Town University in 1957, which described the pattern of sickle cell anaemia in Africa that we recognize today. Without my knowledge, a half-page spread of my thesis and my new ideas were published in *Nature*.¹¹⁸ The author, whom I have never identified, gave full acknowledgement that the paper summarized salient points from my thesis. I didn't even know about this until about three years later, when somebody quoted this work to me and I said, 'Well, I have never published in *Nature*'.

But that was at Adeyoyo and it was marvellous. It was there also that I first recognized something I had never seen in my paediatric experiences in South Africa. This was the prevalence of the nephrotic syndrome, which Herbert [Gilles] and I worked on. Herbert did most of the epidemiology and I subsequently proved this to be an immune complex nephritis.¹¹⁹ I was supported in this work by the Wellcome Trust. The Wellcome Trust also supported my research fellow, Dr A Adeniyi,¹²⁰ who did his MD thesis on this. He subsequently became Professor of Paediatrics at Ilorin, Dean of the Medical Faculty there and ended up finally as the Vice-Chancellor of that university. Now, all this research had its origins in the old government hospital and we followed up this work at the university teaching hospital. But I return to my main point which is that we would never have done such good clinical research without the quality of the nurses which Miss Bell put into operation.

Dr Michael Gillies:¹²¹ I used to work at the Malaria Institute at Amani. Just to start

¹¹⁷ Jelliffe D B. (1952) Sickle cell disease: a review of the literature with a report of two cases of sickle cell anaemia in Nigerian children. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 46: 169–184.

¹¹⁸ Anonymous. (1960) Sickle cell anaemia. *Nature* 186: 1027.

¹¹⁹ Hendrickse R G, Adeniyi A, Edington G M, Glasgow E F, White R H R, Houba V. (1972) Quartan malarial nephrotic syndrome: collaborative clinicopathological study in Nigerian children. *Lancet* i: 1143–1149. Professor Ralph Hendrickse wrote: 'This was the first time ever that the nephrotic syndrome in childhood was reported in association with renal damage caused by immune complexes.' Note on draft transcript, 29 November 2000.

¹²⁰ Dr A Adeniyi became Professor of Paediatrics of the University of Ilorin, Nigeria, in 1977 and Dean of the Faculty of Health Science in 1980, and subsequently Vice-Chancellor of the University of Ilorin. Adeniyi A, Hendrickse R G, Houba V. (1970) Selectivity of proteinuria and response to prednisolone or immunosuppressive drugs in children with malarial nephrosis. *Lancet* i: 644–648.

¹²¹ Dr Michael Thomas Gillies (1920–1999) initially trained in medicine and served as a Medical Officer in Asia during and after the Second World War. After a brief stay as Embassy Doctor in Moscow, which enabled him to learn Russian, he turned to medical entomology and served at the East African Institute of Malaria in Amani, Tanganyika (later Tanzania), from 1951. When Tanganyika became independent Tanzania, he returned to Britain in 1964 and a few years later, under the aegis of the Medical Research Council, set up the Mosquito Behaviour Unit, which combined laboratory research at the University of Sussex with field experiments in The Gambia. Corbet P. (2000) Mick Gillies. *Independent* (23 February 2000), 6.

with I would like to pretend I'm a historian and point out one thing that I haven't heard mentioned today, and that was that the Labour Government after the [Second World] War had an uneasy conscience about its inheritance of a large colonial empire, and as a result a large number of medical and other research institutes were set up in East Africa.¹²² There was the Malaria Institute [later the East Africa Institute of Malaria and Vector-borne Diseases], the Medical Research Institute [East Africa Institute for Medical Research] at Mwanza, the [East African] Virus Research Institute, which was taken over from the Rockefeller [Foundation] at Entebbe. There was support for the Kenya Medical Research Laboratories, and inevitably there were differences of viewpoint and opinion. Dr Bagster Wilson,¹²³ who was the Director at Amani and its founder, rather expected that Amani should be the processing house for malaria research in East Africa. Not surprisingly, there was resistance to this. He and Dr Heisch¹²⁴ from Nairobi I think were good friends, they respected each other's work; but certainly both of them spoke to me a little disparagingly about the other on occasions. Bagster Wilson was rather suspected of empire building. I know in the first years I was sent to Somaliland in the aftermath of the epidemics – that's a whole other subject, the epidemics in that part of the world. A few years later, Bagster Wilson also sent me to the Aden Protectorate, which was a fairly rough environment as you can imagine. You never ventured anywhere without six armed men, and there were bullet holes in the walls of the rest houses that I stayed in. I don't think I achieved anything particularly valuable. In the [Health Department] Annual Report for 1958, I think it was, there was a little appendix at the bottom of the report, labelled 'noxious animals'. And this report consisted entirely of one item: 'Dr M T Gillies of the East African Medical Malaria Research Institute spent three months in the territory'.

¹²² See page 26.

¹²³ Dr Bagster Wilson (d.1960) was Director of the East African Malaria Unit, from 1947 until his retirement and subsequent death in 1960. Additional information from Dr Kay Hocking, 27 November 2000. Wilson D B. (1949) On the present and future malaria outlook in East Africa. *East African Medical Journal* 26: 378–385. Wilson D B, Garnham P C C, Swellengrebel N H. (1950) A review of hyperendemic malaria. *Tropical Diseases Bulletin* 47: 677–698. Wilkinson L. (1998) Conceptual conflict: malaria control and internecine warfare within a London postgraduate school. *Parassitologia* 40: 239–244. Mr Tony Wilkes wrote: 'The Pare–Taveta Malaria Scheme is regarded by some as one of the most successful control programmes attempted in tropical Africa. The architect was Dr Donald Bagster Wilson who assembled a formidable team to measure the effects of a mass spraying campaign of the insecticide dieldrin on the health of people in some 3500 sq. miles in north-eastern Tanzania, and to look at the effect of the insecticide on the survival and behaviour of mosquitoes. Bagster Wilson was a malariologist in East Africa for many years, becoming the First Director of the Malaria Institute at Amani, Tanzania, in 1950, ably supported by his wife, Dr Margaret Wilson, an accomplished parasitologist and entomologist. The astonishing success of antimalaria campaigns using DDT in many parts of the world led to the demand that the same magic wand should be waved over Africa. The effect on malaria in the Pare–Taveta Scheme after a few rounds of spraying was dramatic, and malaria rates in the population dropped to a few per cent, but, despite the careful planning, the high level of supervision of the spraying and the wholehearted cooperation of the population, a trickle of malaria cases continued to occur. This dictated the philosophy of malaria eradication: attack malaria with everything you have, it disappeared and complete success could be achieved within a limited number of years. Spraying could then be safely discontinued. The alternative was spraying with insecticide for most of the foreseeable future. Apart from the cost of such a policy, there was the ever present possibility that the mosquitoes would become resistant to the insecticide and the whole experience would come to nothing. Bagster Wilson died shortly after his retirement in 1960. It is unfortunate that a book he intended to write about malaria in Africa never materialized.' E-mail to Mrs Lois Reynolds, 1 January 2001.

¹²⁴ Dr Ronald Heisch OBE (1910–1969) was Director of the Division of Insect-borne Diseases of the Kenya Medical Department. See Anonymous. (1969) R B Heisch. *British Medical Journal* iii. 722.

Fleming: Reverting to the University of Ibadan, I think Herbert Gilles is more able to contribute. Talking about Ahmadu Bello University in Zaria [Nigeria], which has not been mentioned yet, I think Eldryd Parry could say more about the undergraduate teaching, but I was appointed as the Director of Postgraduate Medical Education before any single student had graduated at that time. As Mike Hutt has said, it was important that these medical schools did establish their own postgraduate training, so as to become self-sufficient, self-reliant and self-generating. In Zaria we set up, and I was responsible for, the first professional course of the Fellowship of the Medical Council of Nigeria, and we also established the postgraduate degrees there, MSc and PhD. There were regulations for the MD, but I am not sure that anyone actually took that up. In contrast, in the University of Zambia Medical School, there was no postgraduate training until quite recently, and that Medical School has never flourished, because it has never had its own graduates succeeding to the lectureships and higher. In Ahmadu Bello University (ABU) we had Eunice Tattersall,¹²⁵ who did the same as Miss Bell as far as nursing was concerned. Now she was a very formidable lady, those of you who will remember her, and she too should have credit; the School of Nursing was greatly supportive of the whole of the hospital. There was also the training of medical laboratory technologists. They started by doing the British AIMLT (Associate of the Institute of Medical Laboratory Technology). The very last Nigerians to take the AIMLT from Britain were in 1970. Thereafter the Nigerians established their own Institute of Medical Laboratory Technology. I was on the Council for a number of years, and we established a School of Medical Laboratory Technology in ABU, which was, after Lagos, the first to be recognized in Nigeria in the early 1970s. That produced technologists and also people entering with primary education only, medical laboratory assistants, who were in fact the backbone of the laboratory services in the hospital and in the peripheral hospitals, including Malumfashi. There were British contributions to other paramedical training that haven't been mentioned. I am sure Peter Cockshott,¹²⁶ for example, had lots to do with the training of radiologists, but I really don't know about that.

Bradley: Thank you very much, Alan.

Hopwood: I would just like to add something to what Mike Hutt said. I don't think we ought to forget Ian McAdam¹²⁷ in regard to medical education at Makerere. Ian, of

¹²⁵ See note 114, 275–276.

¹²⁶ Dr Peter Cockshott organized the first radiographer course at the University of Ibadan with Dr David Trew in 1960. He later became Professor of Radiology until 1975 when he left to take a Chair of Radiology at McMaster University, Hamilton, Ontario, Canada. He also assisted Derek Abrahams and Eldryd Parry using contact medium radiology for cardiovascular studies of endomyocardial fibrosis and tropical aortitis. See Schram R. (1971), note 114, 277. Additional information from Professor Eldryd Parry, 4 December 2000.

¹²⁷ Professor Sir Ian McAdam Kt OBE FRCS FRCSE (1917–1999) was Professor of Surgery at Makerere University, Kampala, Uganda, from 1957 to 1972, where he established the Uganda Blood Transfusion Service, the Polio Treatment Centre and the Cancer Institute. He operated on Obote's head wound in 1972 and was later expelled by Amin. After a year at the National Cancer Institute in Washington, DC, he returned to Africa and was surgeon at the Knysna Hospital, Western Cape, South Africa, until 1992 when he retired to Oxfordshire.

course, was a surgeon and he built up after John Croot,¹²⁸ an excellent surgical department and it was he that caused the primary FRCS to be examined in Kampala, not in London. Eventually five or six Ugandans achieved their Fellowship. Also, one of his objectives was to see that each and every graduate who left Makerere was able to do a skin graft, a strangulated hernia and a caesarean section. Now this meant that if you could get hold of one of those people, they were more useful than a new graduate from the UK. It was a great contribution. We had an argument with him at Medical Headquarters, because he was producing more surgeons than we could absorb into the service. I remember him saying that Makerere was a tripartite university, and in any case there was the rest of Africa to think of. Indeed many of his graduates, his FRCSs did leave Uganda, but I think several of them are still there, but several went to Zambia and other parts of southern Africa. His was a remarkable achievement.

Nelson: To me the greatest defect, and I am quite serious about this, of the three medical schools that were set up in East Africa, is that none of them gave any prominence at all to the subject of parasitology. I once nearly vomited while listening to the Dean of the Medical School in Uganda when he made a statement which I have written down here, and I keep it in the back of my mind. He said, 'I have only one serious purpose in this medical school, and that is to destroy the ghost of Patrick Manson¹²⁹ that walks these corridors'. What has happened is that they have trained doctors who are really very good in urban areas and not much good up country in places like West Nile, because there they have to deal with parasites and vector-borne diseases. We could have done with a lot more teaching of the epidemiology and the control of these infections so that at least a few doctors would go up country and work on these problems.

Bradley: Perhaps to round off this discussion, which has inevitably come in and out of research, I would be interested to get Chris [Booth] to speak, because I know he is leaving early to go to an important function.

Booth: Well, I think one might say that the Medical Research Council, in respect of Africa, has not been terribly successful. I don't think anybody can say that it has been an outstanding success, with the exception of Ian McGregor's and Brian Greenwood's unit in The Gambia.¹³⁰ That has been an extraordinary success. For someone like

¹²⁸ Sir John Croot Kt CBE (1907–1981) was Professor of Surgery at the University of East Africa, from 1951 to 1958, a member of the Ugandan Legislative Council from 1955 to 1961 and Minister of Health and Labour from 1958 to 1961 in the Ugandan interim self-government prior to independence. He was then Senior Consultant Surgeon at Mulago Hospital, Kampala, Uganda from 1961 to 1969. From 1970 until his death he was a member and Medical Chairman of the Pensions Appeal Tribunals.

¹²⁹ Sir Patrick Manson GCMG FRS (1844–1922), a pioneer of tropical medicine, published six editions of *Tropical Diseases: A manual of the diseases of warm climates*, note 95, between 1898 and his death. See Manson-Bahr P, Alcock A. (1927) *The Life of Sir Patrick Manson*. London: Cassell. Manson-Bahr P. (1962) *Patrick Manson, the Father of Tropical Medicine*. London: Nelson.

¹³⁰ Professor Brian Greenwood FRS (b. 1938) has held the Manson Chair of Clinical Tropical Medicine, at the London School of Hygiene and Tropical Medicine, London, since 1999. He had been awarded a personal Chair in Communicable Diseases in the Department of Medical Parasitology at the London School of Hygiene and Tropical Medicine in 1995 in recognition of his work on malaria and acute respiratory infections in Zaria, Nigeria, in the 1970s, and later as Director of the MRC Laboratories, The Gambia, from 1980 to 1995.

myself who was brought up in a university background, I think it is quite extraordinary that a unit in such intellectual isolation should have been so successful. That may, of course, have been part of its success, because one of the features of the Medical Research Council is that it does like to keep control of its own affairs. And Sir Ian [McGregor] pointed out very clearly how the MRC had insisted, following the Landsborough Thomson Committee visit,¹³¹ that it must have total control and nobody else should be involved in it, except of course allocations of money made from the Tropical Medicine Research Board, albeit at a later stage.

The other thing is that when the academic units were started in London in the 1920s, the MRC deliberately tried to people those units with individuals paid by it to do research. Now why didn't it do the same with the new universities in Africa? Why was there no scheme whereby young men, either from these schools, or from this country or elsewhere, were encouraged to go and take posts. There were opportunities of that sort, but they were not terribly successful and largely, again as Sir Ian has pointed out, because of the problems of career structure of individuals in this country working for a temporary period in an African medical school. It was extremely difficult to get people to do that sort of thing. I think the other thing that the MRC can be stated to have failed upon is that it did not support local people from the local universities in the way that it might have done. So I think the MRC in personnel terms cannot be seen to have been wildly successful and any historian has to say that. As to what it really did in Africa, outside of The Gambia there were two groups in Mulago. There was Rex Dean's unit,¹³² founded in 1953 to look into kwashiorkor that had been so well described by Cicely Williams¹³³ some years before. That was an extremely effective unit in terms of introducing new methods of treating and dealing with nutrition and with diets of children. Despite the personal differences between Dick Jelliffe and Rex Dean, they did manage to have a certain degree of relationship in terms of what should happen on the service side and that's an example perhaps of something that did happen. Dean himself, of course, was a most extraordinary man. There will be many here who remember better than I do, listening to him playing his grand piano in the dark of a tropical night. My first visit to Mulago was in 1962, something like that, and it was an extraordinarily interesting visit for me, because of the way in which it illustrated to a visitor the difference between East and West. It was also interesting in

¹³¹ See note 81.

¹³² Professor Rex Dean FRCP (1907–1964) was a member of the scientific staff at the MRC Laboratories, The Gambia, from 1950, and Director of the MRC's Group for Research in Infantile Malnutrition (later Infantile Malnutrition Research Unit, finally MRC Child Nutrition Unit) at Mulago Hospital, Kampala, Uganda, (see note 193) and Professor at Makerere University from 1953 until his death in 1964. See Dean R F A. (1952) The treatment of kwashiorkor with milk and vegetable proteins. *British Medical Journal* ii: 791–796. See also note 194.

¹³³ Cicely Williams CMG FRCP (1893–1992), paediatrician and nutritionist, was the first paediatrician appointed to the Colonial Medical Service. See Williams C D. (1933) A nutritional disease of childhood associated with a maize diet. *Archives of Disease in Childhood* 8: 423–433. *idem* (1935) Kwashiorkor: a nutritional disease of children associated with a maize diet. *Lancet* ii: 1151–1152. Dally A. (1968) *Cicely: The story of a doctor*. London: Gollancz. The personal papers of Cicely Delphine Williams are held as PP/CDW in Archives and Manuscripts, Wellcome Library, London.

the sense that one found a group of people who were excellent teachers, many Colonial Service people who had founded that school and made a very good job of it. One must mention the name of Hugh Trowell,¹³⁴ for example in internal medicine. They were really quite remarkable people. The intriguing thing was that they didn't seem to be terribly interested in the local graduates, and that was possibly the difference to what was going on in the West. I can say something more about that a bit later.

Just to continue Peter Williams's point. He is absolutely right that the problem the MRC faced until 1960 was that the Colonial Office insisted on controlling its own resources, so it had its own research committees, own research directors and there was little coordination. Now [Sir Harold] Himsworth was, it's true, Chairman of the Colonial Research Committee, but that wasn't the important point. The important committee that he founded was the Tropical Medicine Research Board (TMRB) in 1960. This committee initially had equal numbers nominated by the MRC and the Colonial Service, but reporting directly to the MRC, and only through the MRC, to the Colonial Office.¹³⁵ That was what gave TMRB its independent structure. Speaking as someone who was a Chairman of TMRB for four wonderful years, I can say that chairing that board was arguably the best job in the MRC. It was a wonderful committee to chair, full of a wide range of basic scientists, clinicians, epidemiologists, and others, and I remember representatives of the Overseas Development Administration as well, who partly funded the committee. I do believe that the abolition of TMRB has been a disaster for British tropical medicine and for what is happening in the tropics. I will mention one visit to Brian Greenwood's unit some years ago, and I have never forgotten that particular occasion. The last thing that happened was that the Deputy Chairman of the Board [Professor Roland Terry] had a cardiac arrest on the way to the airport and his life, I may say, was saved by Brian Greenwood, who made the diagnosis as well. When the patient got back to London, he was operated on and has never looked back. The second thing I connect with Brian is having to go out after the coup in The Gambia, to visit the newly restored President.¹³⁶ Sir James Gowans said, 'You've got to go,' and I said, 'In Himsworth's

¹³⁴ The Rev. Hubert Carey Trowell (1904–1989) joined the Colonial Medical Service and worked in Kenya and Uganda from 1929 to 1958, identifying a nutritional disease now known as protein energy malnutrition, having been preceded by Cicely Williams (see note 133), although for many years he was unaware of her work. From 1935 until his retirement in 1959 he was at Mulago Hospital and Makerere Medical School, Kampala, Uganda. He was ordained in the Anglican Ministry and was a vicar from 1962 to 1972. See Heaton K W. (1994) The Rev. Hubert Carey Trowell. *Munk's Roll* 9: 533–536. See also Trowell H C, Davis J N P, Dean R F A. (1954) *Kwashiorkor*. London: Edward Arnold. Republished in 1982, New York: Academic Press. Trowell H C. (1960) *Non-infective Disease in Africa: The peculiarities of medical non-infective diseases in the indigenous inhabitants of Africa south of the Sahara*. London: Edward Arnold.

¹³⁵ See note 93.

¹³⁶ The Hon. Sir Dawda Kairaba Jawara Kt (b. 1924) was the Principal Veterinary Officer in The Gambia from 1957 to 1960 and leader of the Protectorate People's Party in The Gambia, was Prime Minister, later President of the Republic of The Gambia, from 1970 until 1974. The Gambia became independent within the British Commonwealth in 1965, until it was made a republic following the 1970 referendum. The Armed Forces Provisional Ruling Council (AFPRC) seized power in a military *coup d'état* in July 1994 and President Jawara was granted political asylum in Senegal, and then fled to London.

time, Himsworth would have gone,' and he said, 'No, you go,' and I went. I saw the President of the Republic of The Gambia and the following day there was a report on the Gambian radio from the President saying 'Britain sends out high-grade committee to commend the President of The Gambia on his restoration to power'. It so happened that most of the research workers in Brian Greenwood's programme at Farafenni were members of the opposition party and so this was a terrible thing to have been said, because they all wondered what on earth the MRC was getting up to. I still recall the occasion when we went across the ferry at Farafenni and a very large man who was the ferryman there, called Pa Saah, took me – much smaller than him – lifted me up in the air and looked at me and said, 'You said you supported that frightful man,' and I looked at him straight in the eyes and I said, 'Sir, presidents come and presidents go, but the MRC is for the people of The Gambia'.

Williams: Could I just emphasize one little point of Chris Booth's? He said that the TMRB had people on it from a wide range of disciplines, whereas the Colonial Medical Research Committee did not. This was Himsworth's initiative so that the TMRB could take a completely different approach to tropical medicine – sometimes referred to as 'medicine in the tropics'.

Hendrickse: Talking in terms of the development of medical schools, you will recall that the medical school of the University of Ibadan started as a college of London University, and the first degrees issued there were London degrees. But early in the 1960s the University decided it would go independent, and was determined not to stick to the London mode. The two most crucial changes the University of Ibadan made in its curricular structure were to accord, along with surgery, medicine, and obstetrics, equal status to social preventive medicine and to paediatrics. The first examination for the MB BS under the Nigerian curriculum was in those five subjects. Prior to this, students had taken no interest in paediatrics at all (as it was not an examination subject), but when one of the candidates passed all other subjects, but failed paediatrics in the first Ibadan exam and had to repeat six months, their change in attitude was incredible. The students actually learned paediatrics, which occupied as much time in the curriculum then as obstetrics did, and that changed something in the whole of Nigeria, because the Nigerian Medical Council recognized paediatrics and social preventive medicine as equal-status subjects. And when the postgraduate degrees were drawn up, the FMCs (Fellow of the Medical Council), I was Chairman of the Postgraduate Committee of the Faculty of Medicine in the University of Ibadan that drew up the rules and regulations for Nigeria's postgraduate medical structure. The recommendation of the Committee was sent unaltered (signed by Dr Thomas Lambo, the then Vice-Chancellor of Ibadan) to the Medical Council and they are still the template on which all the postgraduate medical qualifications in Nigeria are based. They were not based on the Membership [of the Royal College of Physicians] examination (MRCP). Candidates do a period of training in recognized subjects, part of which can be done abroad in approved institutions, the main thing being that training is supervised for at least three years before taking a qualifying exam, which is

only Part One. Part Two is the submission of a thesis based on actual clinical work or research. I do believe that the present postgraduate degree structure in Nigeria is producing really fine paediatricians, physicians, obstetricians and so forth, who are now taking their place in the educational structure in that country, as full professors and so on.

Dr David Tyrrell:¹³⁷ I, of course, paid only a fleeting visit to Africa and I had the good fortune to know a number of people in this room, but I wanted to make just two points which are rather tangential to what's been said, but nevertheless important. One is that it would be nice to point out at some stage that African experience and African staff have contributed something rather important to world medicine. I think of the time I went through to Makerere and met Denis Burkitt.¹³⁸ He was, I believe, originally there in the Colonial Medical Service as a practising surgeon, but with an eye for the unusual. He had just shown that he could treat the so-called Burkitt's lymphoma by chemotherapy and also that it had a very unusual distribution. Then the English virologist, Epstein,¹³⁹ observed herpes-like particles in the tumours and discovered what is now called the Epstein–Barr virus. The unusual epidemiology was really that of malaria and the immunological disturbance it caused. But I think it was truly remarkable that a very busy person doing what could have been called 'just' routine work was able, within the environment of that day and that place, to make completely original and lateral-thinking observations of something that has had an enormous effect since. Of course the Epstein–Barr virus is now known to have a great many other effects and to be distributed throughout the world.¹⁴⁰

¹³⁷ Dr David Tyrrell CBE FRS FRCP FRCPATH (b. 1925), physician and medical virologist, was trained at Sheffield and worked on the staff of the Medical Research Council, mainly at the MRC Common Cold Unit, Salisbury, from 1957, as its Director from 1982 until his retirement in 1990 and Deputy Director of the Clinical Research Centre, Northwick Park Hospital, Harrow. He has lectured on viruses in South Africa and was part of a WHO group which developed the research and evaluation that preceded the launch of the WHO initiative. See WHO. (1984) A programme for controlling acute respiratory infections in children: memorandum from a WHO meeting. *Bulletin of the World Health Organization* 62: 47–58. This is now incorporated into the Integrated Management of Childhood Illnesses (IMCI) (*The World Health Report 1998*. Geneva: WHO, 67) which is being evaluated and promoted worldwide.

¹³⁸ Mr Denis Burkitt FRCS FRS (1911–1993), a surgeon, went into the Colonial Service in 1946, moved to Mulago Hospital, Kampala, Uganda, to work with I W J McAdam (later Sir Ian, see note 127) and was later Senior Consultant to the Ministry of Health in Kampala, Uganda, in 1961. He was appointed to the MRC's scientific staff in 1964 until his retirement in 1976, in order to continue his studies of malignant lymphoma in African children. His other interest stressed the importance of roughage in the diet. Burkitt D P. (1962) A tumour syndrome affecting children in tropical Africa. *Postgraduate Medical Journal* 38: 71–79. The unusual distribution, mentioned above, related to temperature and rainfall with hyperendemic malaria as an essential cofactor. See Hutt M S R, Burkitt D. (1965) Geographical distribution of cancer in East Africa: a new clinicopathological approach. *British Medical Journal* ii: 719–722. Epstein A. (1995) Denis Parsons Burkitt. *Biographical Memoirs of Fellows of the Royal Society* 41: 89–102, especially 93–96 for Burkitt's lymphoma.

¹³⁹ Professor Sir Anthony Epstein Kt CBE FRS (b. 1921) was Professor of Pathology at the University of Bristol from 1968 to 1985, later Emeritus. He has been a Fellow of Wolfson College, Oxford, since 1986 and of University College London since 1992. In 1964 he discovered the Epstein–Barr virus that causes human infectious mononucleosis, also linked to cancers, such as Burkitt's lymphoma and nasopharyngeal carcinoma.

¹⁴⁰ See, for example, Waterson A P, Wilkinson L. (1978) *An Introduction to the History of Virology*. Cambridge: Cambridge University Press, especially 164–165.

My other small point. The atmosphere of the immediate postwar period in say, 1947, is something that we easily forget. There was a report then saying that Britain was going to be short of 26 000 scientists in the year 1955, if something wasn't done about their training.¹⁴¹ There was a strong urge to have new research units, which I think drove the MRC to found units in 1946 and 1947 and later. I suspect that attitude, that the science would solve health problems, probably had some influence in Africa as well.

Booth: I just wondered if Herbert Gilles could comment on whether the Todd Report of 1968¹⁴² had had any impact on curriculum changes in African medical schools, particularly the introduction of sociology and public health.

Gilles: That's an important question, but I can't answer it because 1965 saw my departure from West Africa, when I came to the Liverpool School of Tropical Medicine. There were a lot of changes. Take Nigeria, for instance. The whole country was in chaos because of the civil war.¹⁴³ Ghana suddenly went through a very bad patch, there was a lot of confusion within the medical services, between the relative importance of primary healthcare and hospital-based medicine. I don't think Todd or anybody else could have had any influence on it. The period 1965 to 1970 was a time of crisis for West Africa.

As far as the changes in public health are concerned, at the University of Ibadan, these happened in 1962, long before the Todd Report. When I moved from the Department of Medicine, to the Department of Preventive Medicine, radical changes in the curriculum took place. The Faculty agreed that, first of all, the teaching of preventive medicine should start in year 1 and go on right through the whole five years, and that at the fourth year, each student would spend eight weeks in Igbo-Ora as part of their training. This was a rural area 60 miles away from Ibadan; the scheme was supported by the Rockefeller Foundation,¹⁴⁴ and exposed the students to a pattern of diseases and conditions different from those in the teaching hospital. Moreover, for the first time, preventive medicine became a compulsory subject in the final examination.

The Igbo-Ora Scheme [later Ibarapa Community Health Project¹⁴⁵] was the natural development of a study carried out at Akufo, a village 14 miles from Ibadan, over a period of four years.¹⁴⁶ This was a study of disease and environment carried out by me,

¹⁴¹ Lord President of the Council. (1946) *Scientific Manpower: Report of a committee appointed by the Lord President of the Council*. Cmnd 6824. London: HMSO, 22. Sir Alan Barlow, Chairman. A shortfall of 26 000 qualified scientists by 1955 was identified and the Report recommended that the present output of qualified scientists be doubled to produce 5000 a year as soon as possible.

¹⁴² Royal Commission on Medical Education. (1968) *Report*. Cmnd 3569. London: HMSO. Named after its chairman, Lord Todd.

¹⁴³ Nigeria became independent in 1960 and a republic within the Commonwealth in 1963, with Nnamdi Azikiwe (1904–1996), who had been Governor General from 1960, as the Republic's first president. Two *coups d'état* in 1966 and the civil war of 1967–1970 began a period of military rule which ended in 1979.

¹⁴⁴ See note 43.

¹⁴⁵ See note 44.

¹⁴⁶ See note 42.

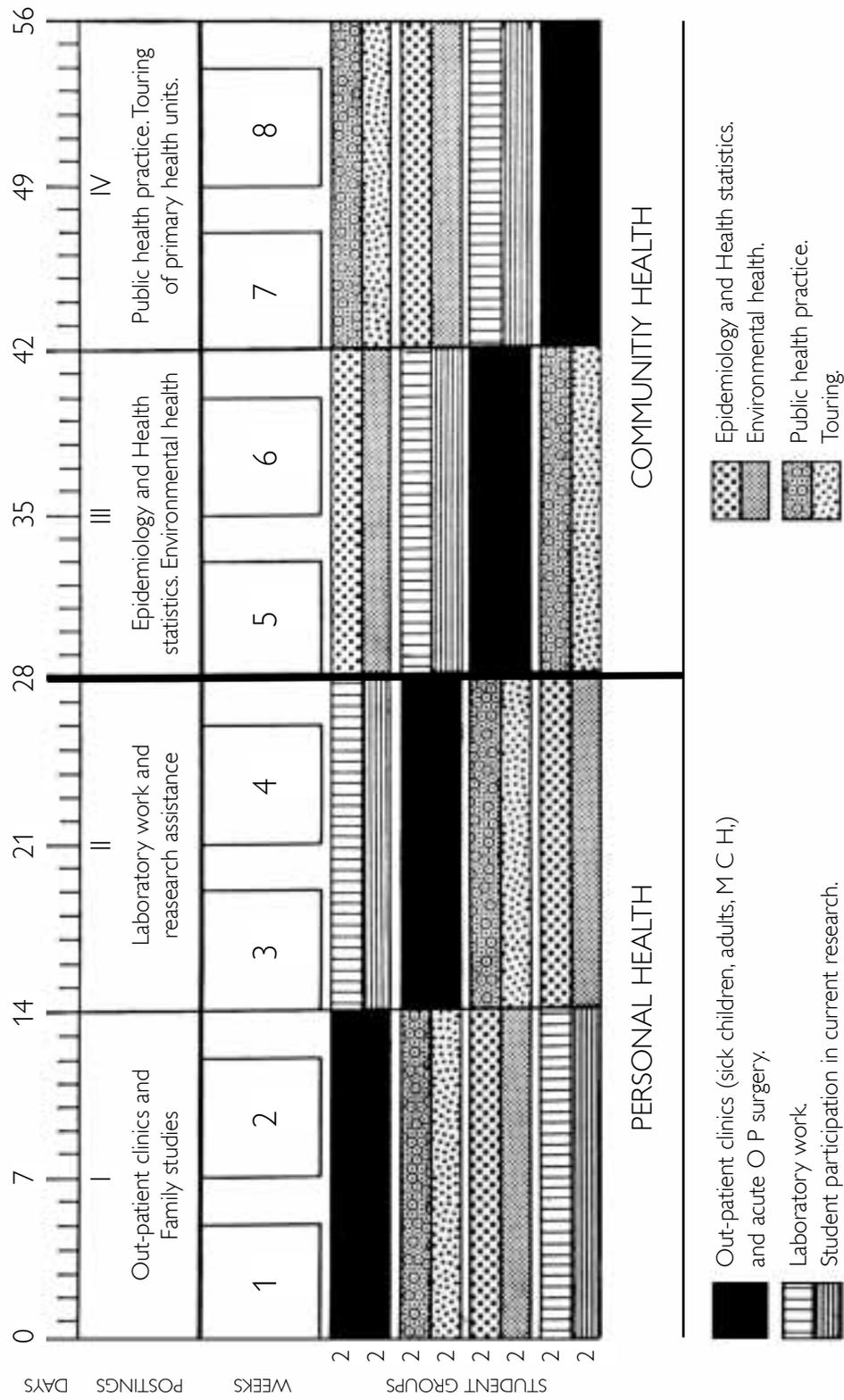


Figure 6: Allocation of student time in the Community Health Programme in 1965. Graph by University College Hospital, Ibadan, Nigeria, from Students at Igbo-Ora – An introduction to the teaching programme of the Ibarapa Project, Ibarapa Project Report No. 2, 1965, is reproduced by permission of Professor T O Ogunlesi.

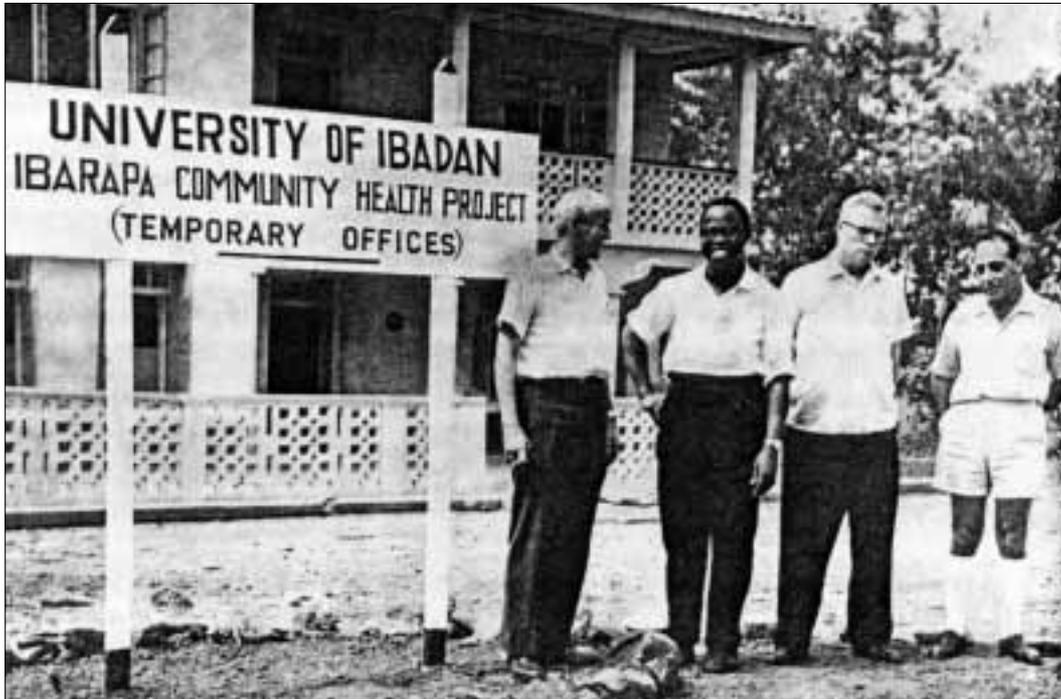


Figure 7: Visit to the temporary offices of the Ibarapa Community Health Project (left to right): Dr Joe Wray of Cali, Columbia; Professor T O Ogunlesi, Director; Dr J M Weir, Director of Rockefeller Foundation; and Professor H M Gilles. Photo by the Medical Illustration Unit, University College Hospital, Ibadan, Nigeria, from Students at Igbo-Ora (see Figure 6), is reproduced by permission of Professor T O Ogunlesi.

and an early example of an integrated and detailed approach to understanding the health of a small group of people. The allocation of student time in the community health programme at Igbo-Ora is given in Figure 6. The first Director was Professor T O Ogunlesi [see Figure 7].

For seven years between 1970 and 1977 I was responsible for a large Endemic Diseases Research Programme at Malumfashi, northern Nigeria, supported by the Medical Research Council. The study was carried out in close collaboration with the Institute of Health, Ahmadu Bello University. The resident directors of the programme were Dr Umaru Shehu and Dr Brian Greenwood. Dr Alice Greenwood was the Senior Research Field Worker. During the first years of the programme, Dr W A Williamson, another member of the research group, tragically died from viral hepatitis.

Bradley: I think it was almost the same timetable in Uganda, if I remember rightly, about 1962.

Hutt: I don't think that we were copying one another.

Gilles: No, we weren't copying one another, we were just coming to the same bright conclusion at the same time.

Bradley: Let us now look at how the two sides of Africa were similar and different. There are two people I think would be very appropriate to comment on that. The first is Chris Draper from the research point of view, because he worked in both East and West Africa.

Dr Christopher Draper:¹⁴⁷ Well there are obviously differences in the endemic diseases and the units which were formed to investigate these. Many diseases are very similar of course, such as the malaria. There were two pioneer control schemes, the Pare–Taveta Scheme with which I was involved, and which was very successful, using an insecticide that is now prohibited called dieldrin. That had remarkable effects on various health indices and infant parasite rates which went down dramatically. On the western side there was the Garki Project,¹⁴⁸ which was less successful, using propoxur¹⁴⁹ as the residual insecticide spray. Now the trend is to use bed nets treated with insecticide and there are big trials going on in East and West Africa. As well as being safer and less laborious, nets are much less expensive than the old-fashioned residual spraying.¹⁵⁰ There were also similarities on both sides in research institutes. There were institutes on both sides for schistosomiasis and trypanosomiasis and virus infections. The virus infections were in West Africa and there have been some splendid studies of mortality and morbidity, particularly in children. We did a five-year prospective study in the Pare area, showing the beneficial effects of malaria control on births and deaths, which increased births, but reduced deaths a certain amount.

I can talk about what's going on now in East Africa more than I can about West Africa, as I haven't been there for a long time. I believe the Amani Malaria Institute [East African Institute of Malaria and Vector-borne Diseases] continues, as does [the East African Institute for Medical Research] Mwanza [Tanganyika], where there's a little bit of schistosomiasis work. It's much more active in Kenya. The Medical Research Institute [Kenya Medical Research Institute (KEMRI), Nairobi, Kenya] there is quite active and there's a very active unit on the coast, the Wellcome Unit for Malaria Chemotherapy. I don't think the Uganda [East African] Virus Institute [Entebbe] is still operating, perhaps someone could enlighten me on that one. I was there [in Lagos] when pioneer work was done on the epidemiology of yellow fever and other arthropod-borne viruses in West Africa and elsewhere. The important thing is that the research

¹⁴⁷ Dr Christopher Draper (b. 1921) was Medical Officer with the Colonial Research Service in Tanzania and Nigeria from 1953 to 1963. From 1964 to 1969 he worked for the Wellcome Foundation pharmaceutical company in the Beckenham Laboratories. He was Senior Lecturer and Consultant in Tropical Hygiene at the London School of Hygiene and Tropical Medicine from 1969 until his retirement in 1987.

¹⁴⁸ Molineaux L, Gramiccia G. (1980) *The Garki Project: Research on the epidemiology and control of malaria in the Sudan savanna of West Africa*. Geneva: World Health Organization. The project was run by a collaborative research team from the WHO and the Government of Nigeria from 1969 to 1976 in the Garki District of northern Nigeria. Dr I A McGregor (later Sir Ian, see note 71) from the MRC's National Institute for Medical Research was among the members of the Consultative Group in May 1969 which caused the Garki Project to be established. Professor A F Fleming (see note 49) from Ahmadu Bello University, Zaria, Nigeria; Professor A O Lucas from the University of Ibadan, Nigeria; and Dr I A McGregor from the NIMR, were among the members of a second consultative group which met in February 1975. Mr John Storey, parasitologist, was a key figure in the field team and Dr K S Hocking (see note 231) assisted in the design of the entomological study.

¹⁴⁹ Propoxur (2-isopropoxy-phenyl-N-methylcarbamate, Baygon) developed by Bayer is a carbamate insecticide with selective toxicity and a potent anticholinesterase agent and resembles the organophosphates. See Baron R L. (1991) Carbamate insecticides, in Hayes W J Jr, Laws E R Jr. (eds) *Handbook of Pesticide Toxicology*. Vol. 3. San Diego, CA: Academic Press, 1125–1190. See also note 243.

¹⁵⁰ Curtis C F, Mnzava A E, Misra S, Rowland M. (1999) Malaria control: bednets or spraying? Summary of the presentations and the discussion. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 93: 460. Curtis C F. (ed.) (1990) *Appropriate Technology in Vector Control*. Boca Raton, FL: CRC Press Inc.

institutes are duplicated fairly well on both sides of Africa. I think probably the West now has the edge over the East in terms of medical research, at the Malumfashi Unit and the Gambian unit referred to by Ian McGregor. I don't think anything has been achieved in East Africa up to those sort of levels.

Bradley: I suppose we were particularly interested in how it felt to be doing research in West Africa. What was the atmosphere?

Draper: I worked in malaria in East Africa and then in 1959 Dr Lewthwaite, of the Colonial Medical Research Committee, told me, 'Young man, malaria is finished!¹⁵¹ Go into another field'. So I said, 'Perhaps I'll try viruses, that's an expanding field'. So I had nine months leave in England, learning about viruses and went to West Africa, and then subsequently I went back to malaria, of course, working at the London School.

Bradley: Was there a difference in the sort of research atmosphere? Is it possible to generalize?

Draper: I don't think so, no. We had rather more intelligent people in West Africa to help, perhaps that was the difference, you didn't have to train your staff so intensively as in the East. Climatically much better in East Africa of course, so you could do more work and think a bit more.

McGregor: I remember on my very first visit to East Africa, after some years in West Africa, being most impressed with the quantity and quality of scientific research, including medical research, being conducted there. In scientific matters East Africa seemed more active and progressive than did West Africa. One possible explanation for me was that there was a settler position, people from Britain had been settled three generations or more, giving continuity of observations and work, which had led to the publication of books and journals on, for example, agriculture, horticulture, fish, and mosquitoes. During visits some 20 years later, I thought the disparity between East and West Africa seemed to have disappeared and in some respects medical research seemed more active in West Africa.

Bradley: We now have to look at medical education. Eldryd Parry has been Dean of most medical schools in Africa I think at one time or another, and, Eldryd, you might just be able to say whether you felt there were particular differences.

Professor Eldryd Parry:¹⁵² I have a problem, because we haven't defined our terms. What is 'after the Second World War'? If we take a cut-off point, rather like blood

¹⁵¹ Robert Desowitz remembers 'the Colonel', Professor H E Shortt, saying, 'Desowitz, malaria is about to be totally eradicated, and you will never make a career, let alone a living, from it'. See Desowitz R S. (1981) *New Guinea Tapeworms and Jewish Grandmothers: Tales of parasites and people*. New York: W W Norton & Co, 12. See also Garnham P C C. (1988) Henry Edward Shortt 1887–1987. *Biographical Memoirs of Fellows of the Royal Society* 34: 714–751.

¹⁵² Professor Eldryd Parry OBE FRCP (b. 1930) has been Visiting Professor at the London School of Hygiene and Tropical Medicine since 1985 and since 1989 Chairman of the Tropical Health and Education Trust, which works with medical schools and other training institutions in Africa to provide services relevant to local needs. He has worked at University College Hospital, Ibadan, Nigeria, from 1960 to 1963 and at Haile Selassie I University,

pressure, we will end up with trouble. We will omit certain important variables. But I think one cannot take education out of the context of the history of the time and we really have to look at the phases. It has just been briefly mentioned by Ralph Hendrikse, first of all there was the pre-independence phase, when all institutions were beholden to London and the General Medical Council, and the University of London had to approve their programmes. Then there was the phase of independence, when capital cities got their medical schools and people boomed ahead with great confidence.¹⁵³ Then there was the phase of disorder, which began earlier in some countries than others. Nigeria's civil war began in 1967, with inevitable effects upon the Enugu Medical School. Amin came to power in Uganda not long after that, with effects on Makerere; I was external examiner in Makerere in 1974, and it was quite an interesting experience, but not so interesting as 1979 when I examined to the sound of gun-fire as the soldiers liberated the country from Amin. The period of disorder was followed by the rise in the price of oil, which in Nigeria led to the proliferation of all sorts of extravagant enterprises, but it was the reverse in East Africa, where it led to impoverishment, because of the rise of the price of oil for countries like Tanzania, so that the Muhimbili Medical School suffered drastically as there was no money. What was happening on one side was the very reverse of what was happening on the other side of the continent. And then in 1974 Ethiopia, which had been the epitome of stability, fell to a Marxist takeover, but the medical school showed its astonishing resilience and kept going throughout.

Then the phase of the oil boom came to its end, and so the phase of poverty developed and poverty of the intellectual, which has led to the diaspora of the educated. For example, there were 12 people in the Department of Medicine in Ibadan on the academic staff: when I last heard there were four, and this diaspora has been very serious. And then there was the next phase of the Alma-Ata Declaration,¹⁵⁴ and the denigration of teaching hospitals.

Now it is important to understand that many of the teaching hospitals which were established, took over Government hospitals. I speak of Zaria, Ilorin, Benin, and

Addis Ababa, Ethiopia, from 1966 to 1969, was Professor of Medicine at Ahmadu Bello University, Zaria, Nigeria, from 1969 to 1977; Foundation Dean of the Faculty of Health Sciences at the University of Ilorin, Nigeria, from 1977 to 1980, and Dean and Professor of Medicine at the School of Medical Sciences, Kumasi, from 1980 to 1985. In 1985 he became Director of the Wellcome Tropical Institute (formerly the Wellcome Museum of Medical Science) until 1990. See Parry E H O, Ikeme A C. (1966) *Cardiovascular Disease in Nigeria*. Ibadan: Department of Medicine, University College Hospital, Ibadan University. Parry E H O. (ed.) (1976) *Principles of Medicine in Africa*. Oxford: Oxford University Press.

¹⁵³ See, for example, Ashby E. (1963) *Community of Universities: An informal portrait of the Association of Universities of the British Commonwealth, 1913–1963*. Cambridge: Cambridge University Press. Carr-Saunders A M. (1961) *New Universities Overseas*. London: George Allen & Unwin Ltd.

¹⁵⁴ The Declaration of Alma-Ata was made following the International Conference on Primary Health Care, held at Alma-Ata, Kazakhstan, USSR, 6–12 September 1978. 'The Conference strongly reaffirms that health, which is a state of complete physical, mental and social well being, and not merely the absence of disease or infirmity, is a fundamental human right and that the attainment of the highest possible level of health is a most important worldwide social goal whose realization requires the action of many other social and economic sectors in addition to the health sector.' Point one, Declaration of Alma-Ata, World Health Organization, 12 September 1978. See www.who.dk/policy/AlmaAta.htm (visited 15 November 2000).

others, and they were charged by Government to fulfil the functions of the original Government hospitals. They acted effectively as primary care centres. In Ahmadu Bello University (ABU), Zaria, Brian [Greenwood] and I used to see regularly some of the 700 or more people who came to the general outpatients every morning. That was no ivory tower, and the mischievous idea perpetuated by politically correct people was that the medical schools and teaching hospitals were ivory towers. No such thing at all. But of course, as a result of Alma-Ata, the WHO and others poured money into primary healthcare and into departments of community medicine. And then again, the final phase, which we are going through now, is the phase after structural adjustment, which has had dire effects on both sides of Africa. Professor Akinkugbe,¹⁵⁵ a distinguished Nigerian, has a beautiful diagram [see Figure 8] which showed the number of admissions to University College Hospital, Ibadan, before structural adjustment. It was running at about 11 000 a year. The Glorious Twelfth is when grouse fall from the sky and the same thing appears on his diagram. It goes down to about 4500. Now that has dire effects upon the training of medical students.

The two sides of Africa were very different. One had two large federations, the East African Federation and the Central African Federation;¹⁵⁶ the other had two language groups, anglophone and francophone. One had Asian immigrants, the other had none. So in a way one is really not comparing like with like, and if we talk about medical education, it's education of people to do the task that has to be done, and I think this is what every medical institute has tried to do from the beginning. Let's not worry too much about curricula, which can become a plaything of academics. I think that all of us in every place have been trying to equip people with the skills to do the jobs. Now this was done very obviously at Ibadan when the Igbo-Ora Centre was developed by Rockefeller.¹⁵⁷ Later, some of us wanted to see medical schools with a whole emphasis towards the community – not just an isolated focus, so that the growth of medical schools outside capital cities was a very important development. Zaria was a pre-eminent example: it gave the opportunity to people like David Warrell and Brian Greenwood to do field work as practising, front-line specialist physicians

¹⁵⁵ Professor O O Akinkugbe FRCP FWACP did his DPhil with Sir George Pickering at Oxford and then returned to University College Hospital, Ibadan, Nigeria. He became Dean of the Faculty of Medicine at Ibadan in 1965, in 1975 was appointed Vice-Chancellor of the new University of Ilorin, and in 1979 as Vice-Chancellor of Ahmadu Bello University, Zaria, Nigeria, where he stayed for only one year. He made significant contributions to the study of hypertension in West Africa. Akinkugbe O O, Falase A O. (1987) *Cardiovascular Disease*. Oxford: Blackwell Scientific. Additional information from Professor Eldryd Parry, 4 December 2000.

¹⁵⁶ Kenya, Tanganyika (Tanzania from 1964) and Uganda formed a natural anglophone block, but were never formally constituted into a political federation, although that was a dream of Julius Nyerere, Tanganyika's first president in 1961. The East African Community acted as an economic block from 1967 to 1977 (see note 108). The Federation of Rhodesia and Nyasaland, which operated from 1953 to 1963, was made up of Southern Rhodesia (Zimbabwe from 1980), Northern Rhodesia (Zambia from 1964) and Nyasaland (Malawi from 1966).

¹⁵⁷ See note 43. For a discussion of an earlier involvement of the Rockefeller Foundation with tropical medicine, see Fisher D. (1978) Rockefeller philanthropy and the British Empire: the creation of the London School of Hygiene and Tropical Medicine. *History of Education* 7: 129–143. Wilkinson L. (2000) Burgeoning visions of global public health: The Rockefeller Foundation, the London School of Hygiene and Tropical Medicine, and the 'hookworm connection'. *Studies in History and Philosophy of Science Part C* 31: 397–407.

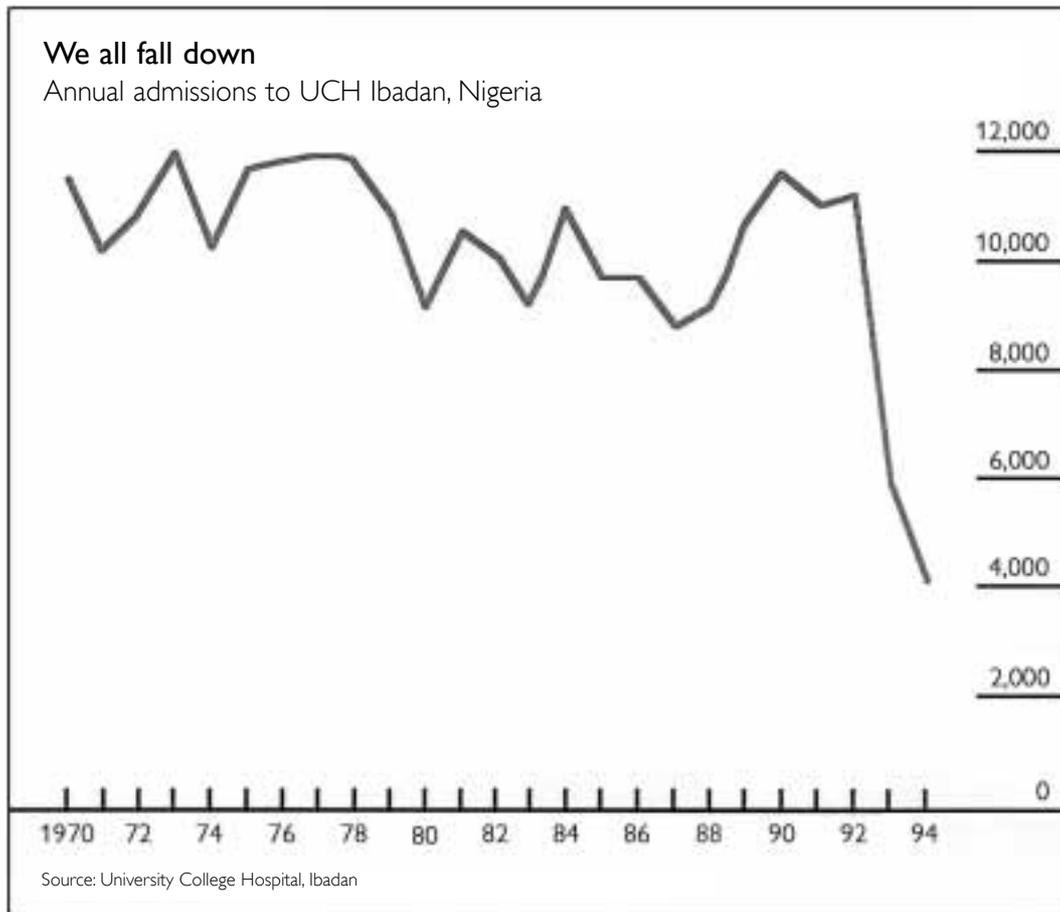


Figure 8: Annual admissions to University College Hospital, Ibadan, Nigeria, 1970–1994.

and to show that clinical work and field work were inseparable. And I would like to pay credit here to Peter Williams and Murray Baker, who had the vision in the Wellcome Trust and the Medical Research Council to support our efforts at that time so that young, ungreyed men, fresh and virile, could go and work in the field. It was a wonderfully visionary support that they gave, because it enabled a new generation of tropical experts to grow up within the context of an academic institution, setting very high standards for their indigenous colleagues. But let's not worry whether the East is better than the West. The test of an institution is the people it produces and if one looks at the history of Nigeria, for example, although they may not have been trained there, people from Ibadan established the Lagos and other medical schools; [Gottlieb, later Lobe] Monekoso went to Lagos, after H O Thomas, [Chukwuedu] Nwokolo went to Enugu, [Ishaya] Audu went to Ahmadu Bello and [T Adesanya Ige] Grillo went to Ile-Ife. Thereafter those institutions grew by themselves. From our own institution in Zaria in the north, the medical services of the north of Nigeria are now run by its own graduates, almost without exception. I think one doesn't look to say whether one place is better than another, but actually what those whom they produced have since done.

Just a note on Ethiopia, I could go on for a long time, because this is a hobby and an occupation – Ethiopia is a peculiar case. We have heard a little bit about it. When there were no children at secondary school when the country was liberated from the Italians

in 1941, the Emperor [Haile Selassie] was determined to get his own medical school and his own university, which he did by giving up his palace. We had a medical school partly in the old teaching hospital, named after his daughter [Princess Tsehai], and partly on a main campus which had been his own palace. The first six students came, as commonly happened, from doing preclinical studies elsewhere, at the American University of Beirut. That model went on in other places. Preclinical studies were done in one place and then clinical studies somewhere else, because there were inadequate facilities. At that time there was a wonderful team in the medical school; the Swedes ran the paediatrics, the Ethiopians with Australians ran the surgery, we were dominantly British in medicine, Anthony Bryceson¹⁵⁸ was also there, and it was a very United Nations group.

Finally, one other point, I think, which is important: we cannot take the growth of books and journals out of the context of medical education in East and West Africa.¹⁵⁹ The *East African Medical Journal* had been there for a long time. The *West African Medical Journal* which was privately owned, was going in 1960, and continued. The *African Journal of Medicine and Medical Sciences* developed, only to fall foul of the oil price rise and the slack in the economy. Other journals arose, the *Ethiopian Medical Journal*, the *Uganda Medical Journal*, the *Medical Journal of Malawi*, and this was very important for medical education, because it enabled local people to publish locally and not to get their papers turned down, 'because they were not well written'. This was an important stimulus to postgraduate expression. Finally, there were also the books which came and went, for example, John Lawson's book,¹⁶⁰ which was a very important obstetric text, and other specialist books like *Davey's Companion to Surgery*.¹⁶¹

It has been and still is a very exciting period, but I think one has to see it in the context of the history at the time, and those seven periods which I have used, I think, are an important background to whatever one says about the differences or the similarities between East and West African medical education.

Bradley: Thank you very much indeed.

Williams: Thank you, Eldryd, for those kind words. As almost everything we have

¹⁵⁸ Professor Anthony Bryceson (b. 1934) has been Professor of Tropical Medicine at the London School of Hygiene and Tropical Medicine since 1996. He was Assistant Professor at Haile Selassie I University, Addis Ababa, Ethiopia, from 1965 to 1967; Wellcome Research Fellow from 1968 to 1970 and external scientific MRC staff at Ahmadu Bello University, Zaria, Nigeria, from 1970 to 1974, returning to London as Consultant Physician at the Hospital for Tropical Diseases and Senior Lecturer at the London School of Hygiene and Tropical Medicine.

¹⁵⁹ The *East African Medical Journal*, published monthly by the Kenya Medical Association House, Nairobi, Kenya, from 1923. See Dobson M, Malowany M, Ombongi K S, Snow R W. (1998) The *East African Medical Journal*: its history and contribution to regional malaria research during the last 75 years. *East African Medical Journal* 75: S10–S19. The *West African Medical Journal*, published by J M P Services (West Africa) Ltd, Lagos, Nigeria, bimonthly, New Series, from 1952.

¹⁶⁰ See note 39.

¹⁶¹ Adeloje A. (ed.) (1987) *Davey's Companion to Surgery in Africa*, second edition. Edinburgh: Churchill Livingstone. First published in 1968 by Professor W W Davey FRCS, who had been Head of the Department of Surgery at the University of Ibadan from 1958 to 1964.

talked about so far has been government-sponsored in one form or another, I think it would be worthwhile to look at what the Wellcome Trust did. Sir Henry Wellcome had personally funded a medical research institute in Khartoum at the beginning of the century.¹⁶² Sir John Boyd was a Wellcome Trustee.¹⁶³ So there was an interest and wish and provision in Wellcome's will to do something about tropical medicine. I was recruited to the Wellcome Trust from the MRC because I knew something about the tropical medicine situation. There wasn't much happening. Henry Foy and Athena Kondi¹⁶⁴ were in Nairobi working on anaemias and there was a little group under Selwyn Baker¹⁶⁵ working on sprue in Vellore in southern India. What then happened in the 1960s was that many of the organizations that worked in Africa began to break up as a consequence of independence. Colonial Office money was no longer available for support in the independent states. There was therefore a role for the [Wellcome] Trust to play. The unit in Nairobi was extended to the coast at Kilifi. The Department of Medicine at Ahmadu Bello [University] in Nigeria under Eldryd Parry created the conditions in which people could work. Our principal concern was to recruit people to tropical medicine, in which there was no longer a career. Eldryd Parry was running a research-oriented department and he recruited a remarkable group of people who between them became key to the next generation of tropical researchers. They were largely supported by the Trust. It was also possible to give support to the universities. There were other activities in the tropics outside Africa. I think, in one way and another, the Wellcome Trust at this time was very significant in keeping a British interest in tropical medicine in Africa and elsewhere.

And now I would like to add one other small but important innovation. The Wellcome Trust, together with Ian McGregor, invented the elective system whereby medical students could work for three to six months in the tropics. The first elective students went to The Gambia. They also went to Jamaica with John Waterlow and Entebbe with Alex Haddow.¹⁶⁶ One of those elective students has become – what is he, Ian?

¹⁶² See note 3, 11–18.

¹⁶³ For biographical details, see note 84.

¹⁶⁴ Mr Henry Foy, a physiologist, began his investigations into malaria in 1932, supported by the League of Nations and the Wellcome Trustees, in a small laboratory in Salonika, Greece, later joined by Dr Athena Kondi. In 1949 Foy moved to Nairobi, Kenya, where the Wellcome Trust Research Laboratory was established in 1961. See Hall A R, Bembridge B A. (1986), note 2, 220–233.

¹⁶⁵ From January 1957 the Wellcome Trustees supported a research unit to investigate tropical sprue, set up by two Australian doctors, Dr Selwyn Baker and Dr I A Hansen, at Vellore Hospital in south India. Dr Baker continued to direct the unit until his retirement in 1975. See Hall A R, Bembridge B A. (1986), note 2, 235–239.

¹⁶⁶ Professor Alexander Haddow CMG FRCP FRS (1912–1978) was an entomologist at the Yellow Fever Research Institute (later East African Virus Research Institute), Entebbe, Uganda, from 1942 to 1955 (during this period the Institute was part of the International Health Division of the Rockefeller Foundation from 1942 to 1945, the Colonial Research Service from 1945 to 1949 and finally the East African High Commission from 1950) and a member of the Overseas Research Service from 1950 to 1965. He became Acting Director and, a year later, Director of the East African Virus Research Institute from 1952 to 1965 and Honorary Professor of Medical Entomology at Makerere University College, Kampala, Uganda, from 1962 to 1965. On returning to the UK in 1965 he was Administrative Dean for Medicine and Professor of Administrative Medicine at the University of Glasgow from 1971 until his retirement in 1978. See Garnham P C C. (1980) Alexander John Haddow. *Biographical Memoirs of Fellows of the Royal Society* 26: 225–254.

McGregor: He's now a specialist in respiratory medicine at Southampton University with a particular interest in diseases of warm climate countries. He, Richard Godfrey, was one of the first two elective students to work with me in The Gambia.

Bradley: Thank you very much. I think, looking at the clock, I am going to have to move us away from that subject, or at least on from that subject, not away, and before we move on to the infectious diseases and stay with those for the rest of the afternoon, I am going to ask Gerry Shaper to say a bit about the non-infectious diseases side of things, and then Roger [Whitehead], if you would amplify some of the things that have been said about nutrition.

Professor Gerry Shaper:¹⁶⁷ Thank you very much. I am going to address two questions that were posed in the correspondence from the organizers. What ideas affected Africa from outside, and then, how did discoveries and ideas from Africa influence the rest of the world?

Although I am supposed to be talking about chronic diseases, this presentation is a bit more general. The first issue is 'What ideas affected Africa from outside?' I think we have to go back quite far. I am specifically thinking of Michael Gelfand's book, *The Sick African*, which came out in the late 1940s.¹⁶⁸ It was a rather clumsy but a very sincere attempt to indicate that one needed to know a lot more than medicine in order to practise in the developing world. Maurice King later referred to this as the 'invisible elements of another culture'¹⁶⁹ and in his own way Michael Gelfand started this. He also showed in this very unusual book, *The Sick African*, that research was possible even in crowded, understaffed, ill-equipped, African hospitals, and I was glad to spend my first year after qualifying with him. I would also take you back a little further in time, to the impact that Cape Town and Johannesburg Medical Schools, but Cape Town in particular, had on the rest of Africa. The research approaches that were used there showed people how to use the diversity of cultures, races, ethnic groups, in order to make comparisons. It was a crude form of epidemiology, but they looked at cardiovascular disease in particular and began to show how one might use the juxtaposition of ethnic groups, in order to do research. This spread throughout the rest of Africa, and eventually it even caught up with the UK.

¹⁶⁷ Professor A G (Gerry) Shaper FRCP FRCPath (b. 1927) qualified in Cape Town, joining the Department of Medicine at Makerere University Medical School, Kampala, Uganda, in 1957, moving to the MRC Social Medicine Unit at the London School of Hygiene and Tropical Medicine in 1970 and in 1975 to the Department of Epidemiology and Public Health as Professor of Clinical Epidemiology at the Royal Free Hospital School of Medicine, London, until his retirement in 1992, later Emeritus.

¹⁶⁸ Gelfand M. (1944) *The Sick African: A clinical study*. Cape Town: Postgraduate Press in association with the Stewart Printing Co. See also *idem* (1961) *Northern Rhodesia in the Days of the Charter: A medical and social study, 1878-1924*. Oxford: Blackwell Scientific Publications.

¹⁶⁹ Dr Maurice King (b. 1927) was Senior Lecturer in Microbiology at Makerere University, Kampala, Uganda, in 1966. He moved to the Medical School at Lusaka, Zambia, as Professor of Community Medicine and is currently based in the UK and Switzerland. See King M. (1966) *Medical Care in Developing Countries: A primer on the medicine of poverty and a symposium from Makerere*. Nairobi and London: Oxford University Press. King M with King F, Martodipoero S. (1979) *Primary Child Care*. 2 vols. Oxford: Oxford University Press for the World Health Organization and UNICEF.

The critical role of nutrition was another thing that was very early emphasized in Cape Town and Johannesburg. The Gillmans¹⁷⁰ went to Ghana, but not everybody was touched by God,¹⁷¹ and people like Brock and Autret, who wrote a WHO monograph on malnutrition,¹⁷² had a tremendous impact on the ideas of chronic disease that people were developing. At that same time, Himsworth produced his book on liver diseases,¹⁷³ so there was a concatenation that had an effect on Africa, African thinking and African medicine.

There was one other thing. The MRC produced a series of special reports, and ‘Studies of Undernutrition, Wuppertal, 1946–49’, by McCance, Widdowson, Rex Dean and others,¹⁷⁴ was monumental in encouraging people to look at poor or starving populations. The work that Rex Dean eventually went on to establish in Uganda set a gold standard for medical research in most of Africa.

I also want to pay tribute to the Liverpool School of Tropical Medicine.¹⁷⁵ Most of us who went to Africa, went armed with an Adams and Maegraith,¹⁷⁶ but we also went with the prescient words of Tom Davey, the Professor of Tropical Hygiene,¹⁷⁷ who had remarkably advanced views on demography and the effect of controlling disease on population structure. This was in the very early 1950s, way before most people had come to those realizations. And, finally, as already referred to, there was ‘the wind of change’ blowing through the whole of Africa in the early 1950s.¹⁷⁸ It suggested to many people, particularly those living in places like South Africa, where the gathering clouds of despair were above us, that there might be other places in Africa where one’s skills and enterprize could be used. And I pay tribute not only to people like Ralph Hendrickse, who went to West Africa, but people like

¹⁷⁰ See note 104.

¹⁷¹ See note 103.

¹⁷² Brock J F, Autret M. (1952) *Kwashiorkor in Africa*. WHO Monograph Series 8. Geneva: WHO.

¹⁷³ Himsworth H. (1947) *The Liver and its Diseases*. Oxford: Blackwell Scientific Publications.

¹⁷⁴ McCance R A, Widdowson E M, Dean R F A, Thrussel L A, Barratt A M, Berridge F R, Davis D R, Glaser E M, Gunther M H D, Howarth S M, Hutchinson A O, Jones P E A, Kekurk R A, Newman M D, Prior K M, Sherlock S P V, Staines J E, Tomson P R V, Walshe J M. (1951) Studies of Undernutrition, Wuppertal, 1946–49. *MRC Special Report 275*: 1–404.

¹⁷⁵ Miller P J. (1998) *Malaria Liverpool: An illustrated history of the Liverpool School of Tropical Medicine 1898–1998*. Liverpool: Liverpool School of Tropical Medicine. See also Power H. (1999), note 76.

¹⁷⁶ Dr Alfred Robert Davies Adams (1901–1992) was appointed Lecturer in Protozoology at the Liverpool School of Tropical Medicine in 1925, seconded to Entebbe, Uganda, to work on techniques of parasite research. Adams joined the Emergency Medical Service as Medical Officer in 1940, as well as acting as Head of the Department of Tropical Medicine in 1943 while working on Paludrine with ICI. He was later a Ministry of Health Physician and Specialist in Tropical Diseases. See Adams A R D, Maegraith B G. (1953) *Clinical Tropical Diseases*. Oxford: Blackwell Scientific Publications.

¹⁷⁷ Professor Thomas Herbert Davey OBE (1899–1978) was Professor of Tropical Hygiene at the Liverpool School of Tropical Medicine from 1945 until his retirement in 1961, later Emeritus. Davey was the third and final director of the Alfred Jones Laboratory in Freetown, Sierra Leone, from 1938 to 1941. See Davey T H. (1958) *Disease and Population Pressure in the Tropics*. Ibadan: Ibadan University Press.

¹⁷⁸ See note 87.

George Gale,¹⁷⁹ who initiated health centres in South Africa. When the Nationalist Government came to South Africa in 1948, he had to leave, and was responsible for starting community medicine in East Africa, which was picked up later by John Bennett¹⁸⁰ and others. And of course people like Sandy Galloway,¹⁸¹ the first Professor of Anatomy in Makerere, and Ian McAdam,¹⁸² Professor of Surgery, all had South African origins. So despite the barriers that later developed between southern Africa and the rest of Africa, there was still a trickle of information passing through the whole time.

One other thing about the people who went to West Africa, East Africa and the Caribbean. They had a freedom from the restrictions and the constraints of the British professional and social systems. They weren't under the heel of the establishment. It allowed the 'young Turks' in all of these areas to play a real role in the development of curricula and the development of medical services. And I think of the mavericks who became the norm. Dick Jelliffe and Pat Jelliffe,¹⁸³ Rex Dean,¹⁸⁴ Jack Davies,¹⁸⁵ all of these people were a little larger than life, but they played a very important role, because they were not part of the establishment. One of the other things that happened to the people who worked in these situations was that they were overwhelmed by the reality of the population demands. There was no chance of playing ivory-tower games.

¹⁷⁹ Professor George Gale studied botany in South Africa and qualified in Scotland before returning to Natal as a medical missionary and lecturer at Fort Hare College, then Medical Officer of Health in Witwatersrand. He became Secretary and Chief Minister of Health in 1945, working on the Gluckman Report, which recommended a network of primary health centres as the foundation for national health services. He helped develop the Institute of Family and Community Health in Durban. He was Professor of Preventive Medicine at Makerere University, Kampala, Uganda, from 1955 to 1960, when he left Africa for a WHO Chair of Preventive Medicine in Malaysia and Thailand. Gale G W. (1959) Medical schools in Africa: a short historical and contemporary survey. *Journal of Medical Education* 34: 712. Additional information from Professor Gerry Shaper, 6 December 2000.

¹⁸⁰ Professor John Bennett qualified at Cape Town, South Africa, and joined George Gale in Makerere University, Kampala, Uganda, as Senior Lecturer, Reader and Professor of Preventive Medicine from 1958 to 1972. He moved to Dar es Salaam, Tanzania, as Professor of Community Medicine from 1973 to 1975, then to various posts in UNICEF in Nairobi, Kenya, and Namibia. Additional information from Professor Gerry Shaper, 6 December 2000.

¹⁸¹ Professor Sandy Galloway was one of the three Foundation Professors at the Makerere University, Kampala, Uganda, in 1953. Galloway A. (1961) The growth of medical education in East Africa. *Journal of Medical Education* 36: 305–321.

¹⁸² See note 127.

¹⁸³ Professor Dick Jelliffe (see note 112) and his wife, Pat Jelliffe, were at Makerere University in the 1960s. Professor Pat Jelliffe was a nurse, later laboratory technologist, who took higher degrees in public health and was appointed to a Chair at the University of California in Los Angeles. See Jelliffe D B, Jelliffe E F P. (1978) *Human Milk in the Modern World*. Oxford: Oxford University Press.

¹⁸⁴ See note 132.

¹⁸⁵ Professor Jack Davies (1915–1998) qualified at Bristol and joined the Colonial Medical Service in Uganda in 1946. He was Foundation Professor of Pathology at Makerere University Medical School, Kampala, Uganda, from 1953 to 1962, when he moved to the Royal Postgraduate Medical School, Hammersmith Hospital, London. He was Professor of Pathology at the Albany Medical College, New York, New York, from 1964 to 1980. He founded the Kampala Cancer Registry in 1953 and established the Albert Cook Memorial Library at Makerere University Medical School. Davies J N P. (1948) Endomyocardial necrosis: a heart disease of obscure aetiology in Africans. MD thesis, University of Bristol. *idem* (1948) Endocardial fibrosis in Africans. *East African Medical Journal* 25: 10–14.

I will say something about the second question posed by the organizers. How did discoveries and ideas from Africa influence the rest of the world? Some of the ideas that were proposed 30 or 40 years ago in East and West Africa, are still being taken up and developed; sometimes it takes quite a long time, as in the cardiovascular field, and in all the areas we are talking about. I must say that during the 1950s and 1960s the communication between Ibadan, Makerere and the West Indies was continuous. We were all copying and learning from each other, watching what each other did, we were trying to get there first, but we were quite happy to emulate what the others did. Rheumatic heart disease was one example. There was a tremendous awareness that this was a major cardiovascular problem for the whole of Africa, and sadly it still remains one. Totally preventable, totally unprevented. The coronary heart disease story is another example. When Trowell and Singh reported a single case of coronary heart disease in an African judge in the 1940s, it merited attention and publication.¹⁸⁶ And so a lot of work went on in the South African style, looking at populations, African, Asian and European, and comparing the problems of coronary heart disease. And work in collaboration with Albany Medical College from New York, which started in the 1960s, presaged a lot of the international work that was to follow in coagulation, fibrinolysis¹⁸⁷ and atherosclerosis, 20 years later in this country [UK]. Blood lipids and blood pressure were other areas of study. There was good work emerging from these tropical schools which showed that a rise in blood pressure with age and a rise in blood cholesterol concentration with age, were not necessary accompaniments of ageing; they were environmental effects. Awareness of these findings is still percolating through to many countries.

As soon as clinics were established, both diabetes and hypertension were realized to be common diseases. In West and East Africa the tropical diabetic syndrome of pancreatic calcification, possibly a nutritional problem, was uncovered and then shown to be common in many other countries, for example, south India.

There was a very early interest in the cardiomyopathies such as endomyocardial fibrosis from Jack Davies and others,¹⁸⁸ and also in the big hearts of unknown origin that stemmed from the South African experience. This was mirrored in other countries and led to a WHO Cardiomyopathies Group, which included people like

¹⁸⁶ Singh S A. (1959) Fatal coronary thrombosis in an African. *East African Medical Journal* 36: 557–564.

¹⁸⁷ Merskey C, Gordon H, Lachner H. (1960) Blood coagulation and fibrinolysis in relation to coronary disease. A comparative study of normal white men, white men with overt coronary heart disease and normal Bantu men. *British Medical Journal* i: 219–227. Shaper A G, Jones D W E, Kyobe J, Jones M. (1966) Fibrinolysis in relation to body fatness, serum lipids and coronary heart disease in African and Asian men in Uganda. *Journal of Atherosclerosis Research* 6: 313–327.

¹⁸⁸ Williams A W, Ball J D, Davies J N P. (1954) Endomyocardial fibrosis in Africa: its diagnosis, distribution and nature. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 48: 290–305. Connor D H, Somers K, Hutt M S R, Manion W C, D'Arbela P G. (1968) Endomyocardial fibrosis in Uganda (Davies' disease) Part I. An epidemiologic, clinical, and pathologic study. *American Heart Journal* 74: 687–709; *idem* (1968) Endomyocardial fibrosis in Uganda (Davies' disease). II. An epidemiologic, clinical, and pathologic study. *ibid.* 75: 107–124. Valiathan M S, Somers K, Kartha C C. (eds) (1993) *Endomyocardial Fibrosis*. Delhi: Oxford University Press.

Michael Hutt, Ken Stuart,¹⁸⁹ and others, and people from India, from the United Kingdom and the United States. It was a perfect example of a minor disease problem bringing together people with effects that rippled throughout cardiovascular work in all of these countries. I am not going to say anything about cancer, but Eldryd [Parry] has drawn attention to the fact that journals and books were a product of all of this activity, and they did have a ripple effect on other places. Although few have read the *West Indian*, the *West African*, or the *East African Medical Journals*,¹⁹⁰ the data are there still if people want to look for them. And we produced *Cardiovascular Disease in the Tropics* and *Medicine in a Tropical Environment*,¹⁹¹ books that we hoped would have an effect beyond East Africa.

Throughout the 1960s medical students were actively involved in work on a paid basis in laboratories, in field studies and in outpatient surveys, during their vacations and in their out-of-hours. They did a tremendous amount of work and were encouraged to publish what they'd done. We founded a *Mulago Medical Journal* which went on for many years, publishing the results of student work, and the self-esteem that came from that work was considerable. Young people in East Africa realized that they were capable of producing what workers in other parts of the world had produced. And all of this was part of the ethos that I sensed when I arrived there in the late 1950s, the awareness that we were training people to take our place. I am delighted to say that both in the West Indies, East Africa and Central Africa, most of us by the time we left were able to see that there were people who could more than readily take our places.

Dr Roger Whitehead:¹⁹² Inevitably when one is speaking at the beginning of the fourth hour of a four-hour meeting, many of the things that you have thought about saying have already been said, so I am not going to try to repeat them. I will tell you very briefly a little about myself for those of you who don't know me, and then I am going to try and pick up one or two things that have been raised during the course of the meeting.

First of all, I think I am different from the rest of the people who have spoken so far,

¹⁸⁹ Professor Sir Kenneth Lamonte Stuart Kt FRCP (b. 1920) was Consultant Physician at University College Hospital of the West Indies (University of the West Indies from 1972), Kingston, Jamaica, from 1954 to 1976 and Professor of Medicine from 1966, Dean of the Medical Faculty from 1969 and Head of the Department of Medicine from 1972. He was Medical Adviser to the Commonwealth Secretariat on his return to London from 1976 to 1984, Gresham Professor of Physic, London, from 1988 to 1992 and Chairman of the Commonwealth Caribbean Medical Research Council from 1989 to 1996 and has been Honorary Medical and Scientific Adviser to the Barbados High Commission, London, since 1991.

¹⁹⁰ The *West Indian Medical Journal*, published quarterly by the University of the West Indies, Kingston, Jamaica, from 1951 (supersedes *Jamaica Medical Review*, which first appeared in 1947). See note 159.

¹⁹¹ Shaper A G, Kibukamusoke J W, Hutt M S R. (eds) (1972) *Medicine in a Tropical Environment*. London: British Medical Association. Shaper A G, Hutt M S R, Fejfar Z. (eds) (1974) *Cardiovascular Disease in the Tropics*. London: British Medical Association for the International Society of Cardiology.

¹⁹² Dr Roger Whitehead CBE FIBiol (b. 1933) joined the scientific staff of the MRC in 1959, becoming Director of the Child Nutrition Unit in Kampala, Uganda, in 1968. He was Director of the MRC Dunn Nutrition Centre at Cambridge and at Keneba, The Gambia, from 1973 until his retirement in 1998. See Whitehead R G. (1969) Factors which may affect the biochemical response to protein-calorie malnutrition, in Mural A V. (ed.) *Protein-Calorie Malnutrition*. Berlin: Springer, 38-47.

in that I entered the field as a non-medic. At the time, I in fact was a biochemist, and indeed the Medical Research Council official who initially interviewed me and recommended my appointment is actually in this room, so I feel rather vulnerable. I feel vulnerable because so many of you have known me at a very much younger age, I went to Uganda in 1959 to work for what was called the MRC Infantile Malnutrition Research Unit at Mulago Hospital.¹⁹³ It was directed by the late Rex Dean and I am very pleased that his name has been mentioned so many times this afternoon.¹⁹⁴ There is a danger of people like Rex Dean being forgotten. In fact, he scientifically stimulated a huge number of people. I always link John Waterlow with Rex Dean, because I think that those two have done more than most towards the development of nutritional science, not only in the Third World, but also in the UK as well.

The Infantile Malnutrition Unit eventually became the Child Nutrition Unit.¹⁹⁵ I was Director from 1968. In fact I was the Director of an MRC unit, either in Uganda, The Gambia, or the UK, for about 30 years. I am only going to talk about the Uganda part of my life, except just to say one thing. It was very different working in these two African countries. When I was in Uganda I was surrounded by a first-class medical school and clinical school. I was part of a first-class university. There were always people from all sorts of disciplines that I could go to talk to. In The Gambia, the MRC Laboratories had to be this flagship, the main academic flagship in The Gambia, and the major source of inspiration that I had in The Gambia. One has to remember that the transfer in 1973, because of Field Marshal Amin, of the nutrition unit from Kampala to Keneba, did create new opportunities for comparative research. It has enabled us to make what I think is a very reasonable contribution to the subject.

Can I just emphasize one point that George Nelson made very early on. My first impressions when I went to Uganda in 1959, were of a dedicated group of academics, a dedicated group of clinicians, people that I really could go to see, to talk to, to get ideas from. They had a huge amount of experience and I will always be very grateful to them. Perhaps from time to time I did think that their minds were a bit buried in the past, but maybe that was inevitable. In many ways the past represented a more positive time than things became later on. After the early 1960s we did have lots of new expatriate scientists coming along, full of new ideas, but they couldn't be committed in the same way that the people that I first met in Uganda were. These people had been able to live much of their lives there. Their careers were spent in

¹⁹³ The MRC Group for Research in Infantile Malnutrition (later Infantile Malnutrition Research Unit, later MRC Child Nutrition Unit), whose work was mainly devoted to kwashiorkor, was established at Mulago Hospital, Kampala, Uganda, in 1953, directed by R F A Dean from 1953 until his death in 1964 (see note 132), Professor R A McCance from 1964 to 1968 (see note 174), and Dr R G Whitehead (see note 192) from 1968 until its relocation in 1973 to Keneba.

¹⁹⁴ For a later evaluation of Dean's work, see Whitehead R G. (1992) Kwashiorkor in Uganda, in Widdowson E M, Mathers J C. (eds) *The Contribution of Nutrition to Human and Animal Health*. Cambridge: Cambridge University Press, 303–313.

¹⁹⁵ See note 193.

Uganda. Later on, the careers of young academics couldn't be centred on Uganda, and there could not be, therefore, the same level of dedication.

Now I want to take up another issue. Chris [Booth] was a bit critical of the MRC's record in Africa and I will just tell you what my feelings are about this. First of all, working for the Medical Research Council was very good for one's career development, both nationally within the UK and internationally. There is no doubt about that. At the same time, there were no brownie points issued by the Medical Research Council or by their visiting subgroups for investigations targeted at more practical orientated issues. In general, the MRC were more interested in fundamental research, developments of importance to fundamental science. I wonder whether this is what Chris meant when he said the Medical Research Council's record in Africa was poor. I think the Medical Research Council's record in Africa, when viewed internationally in terms of contributions to international science, is pre-eminent. Perhaps in terms of applying that knowledge, the MRC's record was not so good. This isn't a new view. The same criticisms were being voiced in the 1960s. I remember one of them went something like, 'We are now in danger of knowing more and more and doing less and less'.

There's one topic on which I would agree with Chris [Booth] absolutely, and that is to deplore the loss of the TMRB. As a young man in Uganda, I owed a lot to the Tropical Medicine Research Board visiting subgroups. In the TMRB visiting groups there were always people with a large amount of practical, on-the-spot experience. When, for example, they could see you juggling with the balance between fundamental research at a molecular level and more applied things, the things that were of much more interest to practising doctors, to public health departments, etc., they understood what you were trying to do. I think it is much more difficult for my present-day colleagues when the TMRB doesn't exist. They can be assessed by a group of people who haven't had that sort of background.

Just one other final thing. Looking back I only wish I could have left behind Ugandan scientists who could have carried on the sort of in-depth investigations we had been able to do. Just towards the very end, in 1971, 1972, 1973, such people were emerging and when I went to Cambridge, some of them did follow me and worked for Master's degrees, PhDs, and the like, but I am afraid that most of those people are now working elsewhere, not in Uganda.

Somebody else raised the issue about the poor research applications that now tend to come from people in developing countries like Uganda.¹⁹⁶ What you have to remember is that in order to produce a good research programme you have to have at least three to five years' postdoctoral experience. During that critical period of self-development you have also to receive a living wage to keep your dependants. This isn't there any more. Providing a living wage for young investigators, as well as established

¹⁹⁶ See page 50.

investigators plus some degree of continuity and security, represents a key issue if African science is to evolve. In The Gambia it's rather different, we have got a whole cohort of people now with PhDs etc., who could, I think, become self-sufficient, but again the critical thing is going to be whether arrangements can be made for living wages to be provided for those people so that they can develop their careers. I am not sure that the strictures within which the MRC has to work represent the best solution.

Bradley: Thank you very much indeed, Roger. You have raised a lot of issues, some of which I think would be for the Wellcome Trust or anyone else who wants to organize a seminar, well worth taking up and spending a whole afternoon on. Certainly issues of career structures for research today are very major concerns for quite a number of bodies.

Waterlow: What is particularly valuable is when it is possible for somebody to work on the same problem in both East and West Africa or in any contrasting parts of the world. This seems to happen very seldom. One of the most important papers that has been produced by Roger Whitehead and his group is a comparison of nutritional intakes of children in Uganda and The Gambia, a paper¹⁹⁷ that in my opinion, is of great theoretical importance. It sounds not very interesting, but it is extremely interesting. Another sort of comparison is between the West Indies and The Gambia, or Senegal, where malaria is intense, while in the West Indies it hardly exists. In the 1970s the infant and child mortality rates were many times higher in West Africa than in Jamaica, although the nutritional state of the children was not very different. I have always felt that people working on nutrition don't pay enough attention to malaria, the manifestations of which in children, as somebody has already said, are very obscure and difficult to diagnose or at any rate used to be. I want to stress the importance of comparative studies.

Dr Sheila Howarth:¹⁹⁸ Can I just say that I was rather saddened by Chris Booth's derogatory remarks about the MRC's support for medical research in Africa? I think Roger Whitehead has in fact made all the points that I was going to make. What maybe a lot of people don't realize is that when the MRC's budget was falling in the 1970s there was a certain body of opinion in the office and outside among Council members, especially those working in the basic sciences, that it would be nice if we could slash the tropical budget just a bit to make some of the necessary savings. And curiously enough support for maintaining the tropical budget at its then level and not cutting it came from the Health Department representatives. In fact the Chief

¹⁹⁷ Whitehead R G, Coward W A, Lunn P G, Rutishauser I H E. (1977) A comparison of the pathogenesis of protein-energy malnutrition in Uganda and The Gambia. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 71: 189–195.

¹⁹⁸ Dr Sheila Howarth FRCP (1920–2000) joined the staff of the Medical Research Council's headquarters office in 1964. She retired as Principal Medical Officer in 1980, having held responsibilities at office level for much of the MRC clinical research programme, including the Clinical Research Centre. She had previously (1943–1945) been engaged in research, mainly on the cardiovascular system, at the British Postgraduate Medical Federation, University College London and the Institute of Cardiology, London. See Sharpey-Schafer J. (2000) Sheila Mary Howarth. *British Medical Journal* 321: 964.

Medical Officer at that time,¹⁹⁹ and also his successor, both at various times, said that the support given by Great Britain and the Medical Research Council for medical research in the tropics was a jewel in the UK crown, as he put it, and it was of immense value to those who had to go from the health departments and argue budgets and things at WHO where it was accepted internationally that the UK effort was much to be commended.

On the question of careers, I know the Council has come under criticism. I think that this is part of a general situation. I mean if one can't recruit the people to go into academic medicine in this country, owing to the stringency of the requirements for career structures, it is scarcely surprising that it is difficult to recruit people to units overseas.

Bradley: Thank you very much. A lot of very important points, which I wish we could pursue. I am going to move on to infectious diseases now. Tony Jordan, I wondered if you would like to lead off perhaps with a bit about sleeping sickness and then perhaps Ian [McGregor], would you like to kick off on malaria. Then we can get a general discussion going with everyone who's interested in these topics.

Dr Tony Jordan:²⁰⁰ Thank you. Sleeping sickness is in some ways a little off the main track, in that the organization of research on this disease after the Second World War was rather different to the organization of research on other vector-borne human diseases. This was undoubtedly because the vector of sleeping sickness, the tsetse fly,²⁰¹ is also the vector of what is considered by most people to be the major cattle disease of Africa. In West Africa, the West African Institute for Trypanosomiasis Research (WAITR) in Nigeria was one of a group of agriculture institutes which were looking at various agricultural problems in the then British colonies in West Africa, Nigeria, Ghana, Sierra Leone and The Gambia. I joined WAITR in 1955 and worked at the Institute for ten years during the last five years of the colonial era in Nigeria and the first five years of independence. I saw it at a rather transitional stage.

The multidisciplinary nature of the WAITR is clear from the fact that the first Director, Hugh Mulligan, was medically qualified; the second Director was an

¹⁹⁹ Sir Henry Yellowlees KCB FRCS (b. 1919) was Chief Medical Officer at the Department of Health and Social Security, the Department of Education and Science and the Home Office from 1973 to 1983. He had been Deputy Chief Medical Officer to Sir George Godber in 1967, and second Chief Medical Officer in 1972 until Godber's retirement in 1973.

²⁰⁰ Dr Tony Jordan (b. 1931) was an entomologist at the West African Institute for Trypanosomiasis Research from 1955 to 1965, working in both northern and southern Nigeria. He joined the staff of the Tsetse Research Laboratory, a unit funded by the (then) Ministry of Overseas Development and located at the University of Bristol, as an entomologist in 1965, becoming Director in 1972. Since his retirement in 1993 he has undertaken consultancies in a number of African countries. See Jordan A M. (1986) *Trypanosomiasis Control and African Rural Development*. London: Longman.

²⁰¹ The main vector of human sleeping sickness in Africa is the tsetse fly, of the species *Glossina*, particularly *Glossina palpalis* for *Trypanosoma brucei gambiense* from The Gambia to Lake Victoria, and *G. morsitans* for *T. brucei rhodesiense* from Sudan to Zimbabwe and Senegal to the Congo. See Cook G C. (ed.) (1996), note 95, 1712–1720.

entomologist, Tam Nash; it reverted to a medically qualified third Director, Kay Willett; and then the fourth Director, Tom Leach, was a veterinarian. As far as I know, most of the subsequent national Directors (WAITR became NITR [Nigerian Institute for Trypanosomiasis Research] soon after Nigerian independence) have been veterinarians. I can't say very much about the East African Institute covering the same field, but it was essentially organized along the same lines – a multidisciplinary institute looking at both medical and veterinary aspects of trypanosomiasis. With hindsight it is, I think, fair to say that there wasn't the cooperation that there should have been between East and West Africa. Transportation between East and West Africa was not as good in those days as it is now, and I'd worked in Nigeria for some nine years before I visited East Africa, whereas today's national scientists in East and West Africa are constantly moving around.

The question of coordination between research and control of sleeping sickness in Nigeria has been touched on earlier this afternoon. The remit of WAITR was strictly research, whereas control of human sleeping sickness, by drugs and by vector control where appropriate, was the responsibility of the Sleeping Sickness Service. Similarly, control of animal trypanosomiasis, also by drugs and vector control, was the responsibility of the veterinary department. Tony Duggan has touched on the poor coordination between organizations responsible for research and control, and I agree with his remarks. I think at the individual scientist level relations were extremely good. There were problems between individuals at the top of various organizations in Nigeria, but this is a little bit simplistic; it wasn't just personalities, although I think there was an element of that, both in colonial times and, at least in the early years, since nationals have taken over control of these organizations.²⁰²

What has been the pay-off from all the research that was carried out in East and West Africa? Undoubtedly we have extensive knowledge on all aspects of trypanosomiasis, and yet a speaker earlier this afternoon said, quite rightly, that as far as sleeping sickness is concerned, there is now a huge resurgence of the problem. When I joined WAITR in 1955 it was a disease that was rather looked on as not being terribly important. I joined just when the big epidemics were dying down, control measures were effective, and really the problem had 'gone away', and the emphasis of research was very much on animal trypanosomiasis. Now we have this big resurgence. It is ironic that, despite the mass of information collected in colonial and postcolonial times, we are relying on drugs for control of both the human and the animal disease that have been around for at least 40 years, and in some cases longer. Much money has been spent on the hoped-for development of a vaccine to combat animal trypanosomiasis, but I think it's fair to say that in practical terms this has so far achieved nothing. The highlight of extensive research on the vector over the years has

²⁰² Dr Tony Jordan wrote: 'The situation in Nigeria in those years has to be seen in a wider context. It would be possible to quote numerous examples where there were, and still are, difficulties in coordinating research and control activities – and such difficulties are by no means restricted to the trypanosomiasis field.' Note on draft transcript, 16 April 2000.

been the development of a range of control techniques that can be effective in a variety of local circumstances. However, these are not in widespread use and the main problems today are not so much a lack of information, but a lack of the means to implement this information to achieve effective disease control.

There are many reasons for this situation, mostly of a political, and/or administrative nature, rather than technical. For example many of the sleeping sickness epidemics today are in areas of political unrest. I think it is true to say that more than half of the cases are still in the Democratic Republic of Congo (formerly Zaire) where there was an extremely effective control service, but which has broken down. Nobody really knows how many cases there are now. Similarly, there's a major epidemic in southern Sudan, where again there are major political problems.

The second issue is the question of organization, and here I would like to go back a little bit into colonial and just immediately postcolonial times when there were some very large-scale vector control campaigns using insecticides in Nigeria, Uganda, and what was then Southern Rhodesia [Zimbabwe from 1980] that were effective in their own right. They were mainly directed against animal trypanosomiasis, but there was necessarily a spin-off as far as the human disease was concerned, because some of the foci of the human disease were in areas which were within areas covered by these control campaigns. The big lesson to be learnt from these campaigns, organized particularly in the 1960s and 1970s, was the importance of organization on the ground, whatever techniques you were using. One suspects that this type of campaign will never be repeated. Since then techniques have improved and new ones have been developed, but problems of effective organization in the field and of cost and sustainability remain. I would say that so many of the problems that were alluded to in the context of WAITR, concerning filtering down of research findings to the control level, are the same problems facing people in the field today. We have the research knowledge, but it's a question of getting it into the field and actually doing something about the problem.²⁰³

Bradley: Thank you very much. Let's just have a bit on malaria by way of introduction and then general discussion.

²⁰³ Dr Tony Jordan wrote: 'Although it can be argued that more research on some aspects of trypanosomiasis is required, that is not, in my opinion, today's main practical priority. We have an extensive knowledge of this disease and of its vector, the tsetse fly, and of how to control them. The bottleneck is to be able to get into affected areas, with safety and with appropriate resources, and then actually do something about the problem. In retrospect, I believe that a word or two should be added about the British contribution to trypanosomiasis research and control after the immediate postcolonial years. At that time many scientists left Africa, some with years of overseas experience, and returned to the UK. There was no concerted effort to retain this expertise, and many individuals moved into other fields, but some continued to make contributions to research and to practical field control from bases in the UK. The funding of these activities in universities and research institutions was somewhat *ad hoc* and often of a short-term nature but, despite this, some significant contributions were made. Support came particularly from the Colonial Office (and its successors), guided for several years by a Trypanosomiasis Advisory Panel and the MRC. The level of support has declined in more recent years and the pool of individuals in this country with practical experience of field problems, an area in which we were once pre-eminent, is now rather shallow.' Note on draft transcript, 16 April 2000.

McGregor: I really ought to speak as an out-of-date worker now and on aspects of malaria that people didn't think were very important at one time. I arrived in The Gambia in 1949 having been recruited by Ben Platt, as I mentioned earlier, specifically to identify the various parasitic diseases that existed in the country, to determine their prevalence and, if possible, to assess the effect they had on the nutritional state of Gambians of all ages. Now that seems an odd sort of brief, but in those days, we knew virtually nothing of what existed and who suffered from it. Prior to my arrival I had been trained in malariology by the British Army, and for nearly two years had been Command Malariologist to Palestine and Transjordan. I therefore had a particular interest in looking at malaria in West Africa, and comparing its epidemiological and demographic effects with what I had seen in Palestine. I very soon found that very little was known of Gambian malaria, or, indeed, of parasitic diseases. One species of parasite had been recognized, *Plasmodium falciparum*. The occurrence of *Plasmodium malariae* and *Plasmodium ovale* had not. Nor was the virtual absence of *Plasmodium vivax* appreciated. Very little was known of the vectors and their bionomics, except relating to one small urban area, and nothing of what happened in the rural areas. To my mind, the great difference between Palestinian malaria and Gambian malaria was that in Palestine individuals of all age groups were liable to suffer acute clinical malaria when they were infected with *Plasmodium falciparum* and very frequently to die from that infection. In The Gambia, clinical illness in the adult population due to *falciparum* malaria was rare, and very rarely lethal. Gambian children, on the other hand, showed dense levels of parasitaemia, severe clinical illness was frequent, including the serious manifestations like cerebral malaria and profound anaemia, and lethality was high, particularly in the rainy season of the year.

In the course of the surveys that I made in rural village communities, changes in the prevalence and density of parasitaemia with age supported a view that, as Gambians progressed through childhood, they appeared to be developing an acquired immunity to the disease. However, the widely prevalent view of that time among physicians with tropical experience was that parasitic diseases did not induce an effective immunity, and that, if malaria did evoke immune responses in humans, these were liable to be weak and short lived.

In 1951 it became possible for me to devise a closer study of young children which could conceivably illuminate some aspects of malarial immunity in Gambians. My parent unit was a nutritional unit and it had a special interest in hepatomegaly and the possibility that it was a manifestation of malnutrition. John Waterlow was working there. My village surveys had adduced evidence that hepatomegaly seemed very closely associated with malaria and less with nutritional disease. Himsworth, who had visited The Gambia and had looked at the available information, including my own, supported my inclination to stage an investigation which might illuminate that. This was done by studying two groups of children from birth onwards. These were very small groups with only 25 subjects in each, because that was as much as we could

possibly handle. One group was kept free from malaria from birth onwards, by weekly chemoprophylaxis, whilst the other group was exposed to malaria, normal malaria, and treated only when they developed malarial illness. The results were interesting; the malarial group all developed hepatomegaly when they developed malaria, but the incidence of hepatomegaly in the malaria-free group was very much smaller. In the third year of life the malarious children show evidence of acquiring immunity, they were beginning to show signs of being able to control the clinical effects of malaria.²⁰⁴

Field studies into malaria immunity did not receive very much support at all. First, because the general view was that parasitic diseases did not induce a lasting and effective immunity, and second, because the World Health Organization had announced around 1955 that there were sufficient drugs and insecticides for the control of malaria and their policy should be one of global eradication.²⁰⁵ If I had worked for any other organization, I think, I would never have been permitted to go beyond the stage we had reached at that time. Because Himsworth himself had been associated with and interested in the hepatomegaly and liver pathology, this led him to take a particular interest in the malaria story, including the gammaglobulins, and he supported this work. The second individual who supported it was Sir John Boyd,²⁰⁶ Director of the Wellcome Tropical Laboratories and a member of the subcommittee that had visited The Gambia to decide on the future of the unit. Boyd was probably the most influential tropical adviser in the United Kingdom at the time, and certainly Himsworth paid a great deal of attention to his views, as did the [Medical Research] Council. I was given the authority to go ahead, so Herbert Gilles and I planned further field studies over four to five years on the association of serum hypergammaglobulin with malaria in further groups of children and also in Gambian adults. We confirmed that the original findings of increasing immunity being associated with increasing gammaglobulin levels represented a specific antibody reaction and the immunity to malaria was, at least in part, due to antibody mediation

²⁰⁴ Professor Sir Ian McGregor wrote: 'The malarious children showed evidence of acquiring resistance to the clinical effects of malaria that was associated with a marked increase in serum gammaglobulin; their mean values were about a third greater than levels in malaria-free children. Since at the time the study was made gammaglobulin was widely considered to be the serum protein fraction in which antibodies resided, the possibility existed that the increased gammaglobulin induced by malaria represented specific malarial antibodies capable of modulating clinical illness.' Note on draft transcript, 26 June 2000. McGregor I A, Gilles H M, Walter J H, Davies A H, Pearson F A P. (1956) Effects of heavy and repeated malaria infections on Gambian infants and children. Effects of erythrocytic parasitization. *British Medical Journal* ii: 686–692.

²⁰⁵ 'At its fourth session, held in Kampala, Uganda, in December 1950, the Expert Committee on Malaria of the World Health Organization expressed the opinion that it was desirable to bring together for the benefit of the medical profession factual information on the properties of antimalarial drugs.' The findings were published in Covell G, Coatney G R, Field J W, Singh J. (1955) *Chemotherapy of Malaria*. Monograph Series No. 27. Geneva: World Health Organization. Quote above on page 7. The 1955 Global Malaria Eradication Programme, with the exception of sub-Saharan Africa, which was considered not ready to undergo a major eradication or control programme, was launched by the World Health Organization. See WHO. (1955) *Eighth World Health Assembly: Malaria eradication*. Geneva: WHO. See Bruce-Chwatt L J. (1988) History of malaria from prehistory to eradication, in Wernsdorfer W H, McGregor I A. (eds) (1988) *Malaria: Principles and practice of malariology*. Vol. 1. Edinburgh, New York: Churchill Livingstone, 1–59. See also Dobson M, Malowany M, Snow R W. (2000), note 8.

²⁰⁶ See note 84.

in this, and also that in adult Gambians on antimalarials, their gammaglobulin levels slowly fell and progressively became lower and lower.

We were asked to write a report for the Annual Report of the MRC,²⁰⁷ giving a brief account of this work, which was seen by Dr Sydney Cohen, then working as a chemical pathologist at the National Institute for Medical Research at Mill Hill. He was very interested in measuring the daily rates of synthesis and catabolism, rates of turnover of serum proteins, and he thought he would very much like to have a look at the turnover rates of gammaglobulin in malarious and non-malarious Gambian adults. So this he did. It was agreed with Sir Charles Harington, the Director of Mill Hill, and Sir Harold Himsworth, at MRC head office, gave his blessing. So Sydney joined us and found that the rates of turnover of gammaglobulin were fantastically higher in Gambians than in healthy British adults. He reported that Gambian adults not protected from malaria possessed rates of synthesis and catabolism that were some seven times greater than rates of healthy British adults and that chemoprophylaxis against malaria significantly reduced these rates in Gambians.²⁰⁸

Now obviously there had to come a time when a crucial test had to be done. Were these antibodies? We had no real test for antibodies against malaria at this time, and if these were antibodies, were they protective? We staged investigations which eventually showed that the 7-S gammaglobulin that was extracted from the serum of immune, or what we considered to be immune, Gambians and given to young African children with malaria, cured the clinical illness and greatly diminished, and cleared up in many instances, the associated parasitaemia. This was the first evidence of a successful *passive* transfer, and the important thing about this was, I think, that it convinced many immunologists the world over that there was an effective immunity against malaria and therefore a vaccine against malaria was at least a feasibility. The only other point is that working on from this we went on to show that malaria did not only produce an effective immunity, but it also exerted an immunosuppressant effect in certain circumstances against vaccines and this was the first instance where it was shown that malaria might well modulate the immunological response to other non-malarial illnesses. From there we had to develop other systems of detection of antibodies to look at the complexity of the antigenic structure and this was done using immunoprecipitation methods and all of this had to be done using techniques that involved collecting antigen from placentae. The only organ that we could get that was heavily infected with mature parasites was the placenta, so we had to run a continuous service of collecting placentae and processing the antigen, and using it to study what was happening in the course of malaria. This allowed us then to move in to look eventually at placental malaria in women and to show that primigravidae were

²⁰⁷ Medical Research Council. (1959) Some aspects of medical research: the hyperendemic malaria of The Gambia. op. cit. note 77, 6–9.

²⁰⁸ Cohen S, McGregor I A, Carrington S. (1961) Gamma-globulin and acquired immunity to malaria. *Nature* 192: 733–737.

particularly susceptible, and wherever malaria was hyperendemic special attention had to be paid to them.²⁰⁹

Professor Wallace Peters:²¹⁰ I have been rather reluctant to contribute so far because, compared with most of the people who have spoken, I have really only dipped my toes in the African waters. A couple of years in the RAMC [Royal Army Medical Corps] in West Africa, two years in the highlands of Tanganyika (as it was then), which were fascinating, and then two years ‘eradicating’ malaria from Liberia. We all know how successful that was!²¹¹ But the aspect of malaria that Ian [McGregor] has not had time to touch on, of course, is the immense amount of research on chemotherapy and the drug resistance in malaria that has been carried out in Africa. The British contributions in that field have been enormous.²¹² I obviously cannot refer to

²⁰⁹ Professor Sir Ian McGregor wrote: ‘Further studies in The Gambia assessed diverse aspects of malarial immunity and included: (a) with Molly Barr, a widely experienced serologist of the Wellcome Foundation, it was shown that malaria could modulate and suppress immune responses to nonmalarial vaccines; (b) field studies showed how serology employing the fluorescent antibody test (FAT) could be used to yield valuable information on the epidemiology and prevalence of malaria in different geographical locations; (c) using immunoprecipitation techniques it was shown that antigenaemia was a frequent occurrence during clinical episodes of malaria, thus raising the question of the possible role of such antigens in the development of immunopathological sequels; (d) with R J M (Iain) Wilson, a research scientist on special appointment to the Department of Parasitology at the NIMR (National Institute for Medical Research) at Mill Hill, the antigens of *Plasmodium falciparum* were classified according to their susceptibility to heat and the heat-stable group (S-antigens) were studied to demonstrate that *P. falciparum* parasites in The Gambia showed considerable genetic diversity; (e) studies made on parturient women illuminated the vulnerability of primiparous women to malaria and the frequent occurrence of low birth weight in their children.’ Note on draft transcript, 2 January 2001.

²¹⁰ Professor Wallace Peters FRCP (b. 1924) was a general physician in the Royal Army Medical Corps in West Africa from 1948 to 1950 and in the Colonial Development Corporation, Njombe, Tanganyika, from 1951 to 1953. After working with the WHO in Liberia as a scientist–entomologist and malariologist, he continued in tropical medicine and parasitology at the Liverpool School of Tropical Medicine as Walter Myers Professor from 1965 to 1978 and at the London School of Hygiene and Tropical Medicine until his retirement as Professor of Protozoology in 1979, later Emeritus. He is currently Director of the Tropical Parasitic Diseases Unit at Northwick Park Institute for Medical Research, Harrow.

²¹¹ Professor Wallace Peters wrote: ‘In 1952 a pilot malaria control programme based on the dispersal of residual insecticides and presumptive chemotherapy (mainly with chloroquine) was established in the north of Liberia by WHO as part of the global programme to eradicate malaria [see note 242]. I was the Acting Director of the project from 1953 to 1954 when it was taken over by Dr S Avery Jones who had served as a malariologist in Kenya and was seconded to WHO. (He later returned to Kenya where he continued his field research on the resistance of malaria to proguanil and pyrimethamine.) Avery Jones was succeeded by an experienced Italian malariologist, Dr (later Professor) Marco Giglioli, but the project was closed in 1961. In a nearby area of Liberia another control project was initiated in 1963 by a Swedish team, initially using residual insecticides and, later, chemotherapy with chloroquine. After 20 years of continuous control, malariological surveys revealed that there was virtually no change in the underlying pattern of malaria endemicity in this part of West Africa. Broad experience in the holoendemic areas of tropical Africa finally led WHO to accept by 1979 that the eradication of malaria with existing tools was impossible in such conditions.’ Letter to Mrs Lois Reynolds, 28 November 2000.

²¹² Professor Wallace Peters wrote: ‘British contributions to research on the prevention and treatment of malaria with drugs included many of the earliest clinical studies in Africa of proguanil, chlorproguanil and pyrimethamine, of combinations of pyrimethamine with sulphadiazine or dapsone, dapsone with chlorproguanil and, most recently, combinations containing one of the artemisinin series. Key field studies were also made on the emergence of resistance to these compounds as well as to chloroquine and amodiaquine. Prominent among the investigators were H M Archibald, S Avery Jones, Leonard Bruce-Chwatt, David Clyde, Chris Draper, Len Goodwin, Brian Greenwood, Ralph Hendrickse, A G B Laing, Sir Ian McGregor and Bill Watkins.’ Letter to Mrs Lois Reynolds, 28 November 2000. See Garnham P C C. (1968) Britain’s contribution to tropical medicine, 1869–1968. *Practitioner* 201: 153–161. Peters W. (1970) *Chemotherapy and Drug Resistance in Malaria*, second edition, 1987. London: Academic Press.

everybody who has been involved in this, but, for example, Len Goodwin,²¹³ who is sitting here today, was one of the first to carry out some seminal chemotherapeutic studies in West Africa, and, I recall, in East Africa, David Clyde,²¹⁴ who unfortunately is too ill to join us now, did magnificent work, not only on the activity of pyrimethamine,²¹⁵ but also on the problem of drug resistance and, of course, we cannot let such a meeting go by without mentioning the late Leonard Bruce-Chwatt,²¹⁶ who made an enormous contribution to chemotherapy drug trials in West Africa. I do not want to take up too much time, but I would like to get it firmly on record that Britain has contributed a considerable amount to the field of malaria chemotherapy and drug resistance in Africa, and continues to do so to this day.²¹⁷

Duggan: I refer to the points that Tony Jordan made about cooperation between those in the ivory tower and those at the coal face. When WAITR (West African Institute for Trypanosomiasis Research) was set up in Kaduna [Nigeria], we in the Service expected that one day somebody would come along from the Institute and ask what areas of research would be helpful in dealing with field problems, but that was never done.

However, it emerged that WAITR was making a significant contribution. For example, in West Africa there were four British territories where human trypanosomiasis was endemic – Nigeria, Sierra Leone, Ghana (the Gold Coast in those days) and The Gambia – and sometimes epidemic. If you worked in one of them, you had precious little idea of what went on in the other three.

But the workers in WAITR, chiefly Michael Hutchinson,²¹⁸ conducted a series of epidemiological studies in The Gambia, Sierra Leone and Nigeria, which provided

²¹³ For biographical note, see note 262.

²¹⁴ Professor David Clyde (b. 1925) was in the Medical Service of the Government of Tanganyika (later Tanzania) from 1949 to 1966, as Medical Officer (1949–1960), Specialist Malariologist (1960–1964) then Deputy Chief Medical Officer and Senior Consultant in Epidemiology (1964–1966). He pioneered the investigation of pyrimethamine resistance in East Africa. In 1967 he was appointed to the academic staff of the University of Maryland, later University of Louisiana, as Professor, and from 1979 to 1985 as Senior Public Health Administrator and Malaria Adviser with the South East Asia region of the WHO, returning as Professor at Johns Hopkins University School of Hygiene and Public Health since 1986. Additional information provided by Professor Wallace Peters, 28 November 2000.

²¹⁵ See note 266.

²¹⁶ Professor Leonard Bruce-Chwatt CMG OBE FRCP FIBiol (1907–1989) was Professor of Tropical Hygiene and Director of the Ross Institute of the London School of Hygiene and Tropical Medicine from 1969 until 1974 when he was succeeded by David Bradley, later Emeritus. He had been malariologist in charge of the Federal Malaria Service of Lagos, Nigeria, from 1946 to 1958 and Chief of Research and Technical Intelligence in the Division of Malaria Eradication in the WHO from 1956. He was consultant to the Wellcome Tropical Institute (formerly the Wellcome Museum of Medical Science) from 1975.

²¹⁷ Greenwood D. (1995) Historical perspective: conflicts of interest: the genesis of synthetic antimalarial agents in peace and war. *Journal of Antimicrobial Chemotherapy* 36: 857–872.

²¹⁸ Dr Tony Duggan wrote: 'Dr Michael Hutchinson OBE (1919–1997) joined the Sleeping Sickness Service in Sierra Leone in 1943. He thereafter worked on sleeping sickness problems in ten other countries, including a period of five years at the West African Institute for Trypanosomiasis Research and as a Field Officer for WHO in Ethiopia, Sudan and Zaire. He died in Somerset in 1997. See Bray R S, Duggan A J. (1998) Obituary: Michael Hutchinson. *Bulletin of Tropical Medicine and International Health* 6: 1–2.' Letter to Mrs Lois Reynolds, 8 December 2000.

much understanding of the overall position in West Africa, which was never there before. Also at that time, the melarsen group of trypanocidal drugs²¹⁹ was coming out, and Hutchinson and I together did the field trials on them. Also the entomologists in WAITR were working on the resting places of the riverine tsetse [*Glossina palpalis*, *G. tachinoides*] by day and night, and their findings proved most useful when the [Sleeping Sickness] Service attacked tsetse with insecticide to eliminate them from an epidemic flood plain about 120 miles long. It made a tremendous difference as to whether you had to spray the whole tree, or only the lower four feet of the bole. So our informal links with WAITR saved us an awful lot of trouble. I suppose it's a pretty British way of doing things. You don't make a lot of song and dance about it, but in the end it happens and comes right. Perhaps too much homage was paid to institutional correctitude, where more informal cooperation finally produced results.

Tyrrell: I would like us to remind ourselves that one of the greatest killers in Africa and the rest of the world is tuberculosis, and that there was a lot of work done in Africa through the MRC by Wallace Fox²²⁰ and others, to evaluate treatment measures that have since been used internationally. This could probably not have been done effectively in areas of lower incidence such as they could find in the United Kingdom at that time.

There is another way in which the rest of the world owes the African research quite a lot. I have a private interest in acute respiratory diseases (ARD), so I will get them in somehow, by pointing out that they are major killers of children under the age of five. I was associated with WHO studies internationally on the definition of the aetiology of ARD and possible forms of management. One of the areas in which this work was done was Kenya, in association with the Kenyan Institute of Medical Research – other international laboratories supported some of the virus diagnostic work. The programme was carried out quite successfully. The results have been fed in due course into the present WHO programme for management of respiratory disease and integrated control of childhood infections.

Fleming:²²¹ Concerning the great infectious diseases, we now have HIV, which actually

²¹⁹ Melarsoprol, a trivalent arsenical from melarsenoxide by condensation with BAL (British anti-Lewisite or dimercaprol), was introduced in 1949. See Friedheim E A H. (1949) Mel B in the treatment of human trypanosomiasis. *American Journal of Tropical Medicine and Hygiene* 29: 173–180. Duggan A J, Hutchinson M P. (1951) The efficacy of certain trypanocidal compounds against *Trypanosoma gambiense* infection in man. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 44: 535–544. See also Hardman J G, Gilman A G, Limbird L E. (eds) (1996) *Goodman and Gilman's The Pharmacological Basis of Therapeutics*, ninth edition. New York: McGraw Hill, especially section 8 on the chemotherapy of parasitic infections, 955–1026.

²²⁰ Professor Wallace Fox CMG FRCP (b. 1920) was a member of the scientific staff of the MRC Tuberculosis and Chest Diseases Unit at the Brompton Hospital, London, from 1952 until 1956 and from 1961 to 1965, becoming Director of the MRC Tuberculosis and Chest Diseases Unit and Honorary Consultant Physician from 1965 to 1986, and Professor of Community Therapeutics, Cardiothoracic Institute, Brompton Hospital, London, from 1979 to 1986, now Emeritus. While seconded to the WHO from 1956 to 1961, he established and directed the Tuberculosis Chemotherapy Centre in Madras, India. See Fox W, Ellard G A, Mitchison D A. (1999) Studies on the treatment of tuberculosis undertaken by the British Medical Research Council Tuberculosis Units, 1946–1986, with relevant subsequent publications. *International Journal of Tuberculosis and Lung Disease* 3: S231–S279.

²²¹ For biographical details, see note 49.

last year killed more people in Africa than malaria.²²² This ties in with tuberculosis. There have been considerable British contributions to our knowledge of HIV in Africa since the mid-1980s. I would like to say of the British contributions, Wilson Carswell,²²³ who worked in Kenya, and Anne Bayley,²²⁴ who was Professor of Surgery and working on Kaposi's sarcoma in Zambia, first recognized that she had an epidemic of atypical Kaposi's in 1983. There are Sebastian Lucas,²²⁵ whose research on the pathology of this condition is fundamental and courageous, and the younger workers who are now studying tuberculosis in HIV patients in Africa, Paul Nunn,²²⁶ Peter Godfrey-Faussett²²⁷ and others. This is maybe a subject of another meeting, but don't let's forget it here.

Hendrickse: I would like to endorse the statements of both the previous speakers. Obviously malaria is one of the most killing parasitic diseases in tropical Africa, but in childhood, as has been said, pneumonia, gastroenteritis and things like that, kill children far more frequently. Tuberculosis has always been the most serious chronic infectious disease in the tropics. It's particularly bad at the moment. This disease has been very seriously misunderstood in Africa as recently as 1959. Dr Heaf,²²⁸ originator of the famous Heaf tuberculin test, chaired a session on tuberculosis at a conference in West Africa in Jos, Nigeria, and one of the strange statements that came out of that conference was that in spite of the high prevalence of tuberculosis, tuberculous meningitis was peculiarly rare in West Africa.²²⁹ I had never heard such arrant nonsense. We had been diagnosing tuberculous meningitis right, left and centre at the

²²² See note 6.

²²³ Dr John Wilson Carswell OBE FRCS was a surgeon working in Uganda and Kenya. Professor Alan Fleming wrote: 'Wilson Carswell was one of the first to realize the significance of the epidemic of HIV and AIDS. He prepared a report on HIV for the Kenyan Government, but was expelled from the country. He was adviser to the AIDS unit of the South African ('Nationalist') Government, but his work was sabotaged by the Ministry of Health.' Letter to Mrs Lois Reynolds, 4 December 2000.

²²⁴ Dr Anne Bayley OBE FRCS was Professor of Surgery at the University of Zambia, now retired. Bayley A C. (1984) Aggressive Kaposi's sarcoma in Zambia, 1983. *Lancet* i: 1318–1320.

²²⁵ Professor Sebastian Lucas FRCP FRCPath (b. 1947) has been Professor of Clinical Histopathology at United Medical and Dental Schools of Guy's and St Thomas' Hospitals (now Guy's, King's and St Thomas' School of Medicine, Dentistry and Biosciences) since 1995. See Lucas S B, Hounnou A, Peacock C, Beaumel A, Djomand G, N'Gbichi J M, Yeboue K, Honde M, Diomande M, Giordano C, Doorly R, Brattegaard K, Kestens L, Smithwick R, Kadio A, Ezani N, Yapi A, DeCock, K M. (1993) The mortality and pathology of HIV infection in a west African city. *AIDS* 7: 1569–1579.

²²⁶ Dr Paul Nunn (b. 1952) was Lecturer at the London School of Hygiene and Tropical Medicine from 1985 to 1992.

²²⁷ Dr Peter Godfrey-Faussett has been Senior Lecturer in Infectious Diseases and Tropical Medicine at the London School of Hygiene and Tropical Medicine since 1996, having been Lecturer since 1989.

²²⁸ Professor Frederick Heaf CMG FRCP (1894–1973) was David Davies Professor at the University of Wales from 1949 to 1960, later Emeritus, and Hon. Consulting Physician to the Welsh Hospital Board and the South-Eastern Metropolitan Hospital Board from 1949 until his death. The Heaf test is administered to determine whether the BCG vaccination against tuberculosis is needed. See Heaf F R G. (1951) The multiple-puncture tuberculin test. *Lancet* ii: 151–153. *idem* (1953) Tuberculosis in British West Africa. *West African Medical Journal* 2 (NS): 3–16.

²²⁹ The complete proceedings of a conference, 'Tuberculosis and Leprosy in West Africa', held in Jos, northern Nigeria, 18–20 February 1959, under the auspices of the West African Council for Medical Research under the presidency of R Lewthwaite (see note 99) of the Colonial Office, was published in the *West African Medical Journal* 8 (NS): 209–336. Professor Heaf chaired the session on tuberculosis, see pages 220–237.

teaching hospital for years, and I rushed to write one of the least well prepared papers I have ever published, because there were important clinical implications. I published 50 cases of TB meningitis, culled from our records department, in the *West African Medical Journal*.²³⁰ It is now known that apart from the epidemic meningococcal meningitis in the north, tuberculous meningitis is the commonest form of meningitis in childhood in West Africa and I suspect in East Africa too.

Dr Kay Hocking:²³¹ Can I say a little on behalf of the vectors? Somebody mentioned the work at WAITR with the resting places of tsetse flies. I started working on tsetse over 60 years ago and a great deal is known about them. They are very peculiar insects, as no doubt you know. The females produce one offspring at a time, instead of laying hundreds of eggs, as most insects do, and they produce probably six in their lifetime, which means that tsetse populations can grow only very slowly. From a control point of view, if you've knocked a population down in some way to a low level, it stays fluctuating about that new low level.²³² The opposite effect, of course, is that a very small population of tsetse, perhaps one per acre, is sufficient to keep an area uninhabitable if you like, by cattle, because they are able to infect them. Another important aspect is that they feed only once every four days, and they rest in particular places. As somebody pointed out, the savannah tsetse, for instance, rest under slopes of branches about a couple of metres high, just along the edges of clearings, and this means that you are able to work on them much more easily than you otherwise would.²³³ It doesn't mean, of course, that the tsetse problem is gone. In fact, as somebody mentioned, the position is worse now than it was 30 years ago in many cases, but that is merely economics, it isn't considered worthwhile spending money on the problem. No doubt, if enough money were spent, it could be dealt with.

Also, the same applies in mosquitoes. The more one knows about one's enemy, the easier it is to deal with and in the Pare–Taveta Scheme,²³⁴ for instance, a great deal of work was done on the behaviour of mosquitoes in huts, where they rest, and where they should be treated. It was found, interestingly enough, that three years after the spraying was finished, when the toxicity had disappeared from the walls, *Anopheles gambiae* had come back more or less to its pre-spraying numbers, whereas the other main vector in the area, *Anopheles funestus*, the type form anyway, has still not come back. That is obviously entirely due to a slight difference in the behaviour of the two

²³⁰ Hendrickse R G. (1961) Tuberculous meningitis as seen at University College Hospital, Ibadan. *West African Medical Journal* 10: 211–217.

²³¹ Dr Kaspar Hocking (b. 1913) was trained as an entomologist at Imperial College London. He joined the Tsetse Research Department in Tanganyika (later Tanzania) in 1938, spent his war service with the Royal Army Medical Corps in the Malaria Field Laboratory in the East Africa Command and was Director of the Tropical Pesticides Research Institute, first in Entebbe, then Arusha, from 1947 to 1967.

²³² Hocking K S. (1962) The population dynamics of tsetse with particular reference to their control by insecticides. *XI Internationaler Kongress für Entomologie*, Wien, 1960 Bd II.

²³³ Hocking K S. (1961) Discriminative application of insecticide against *Glossina morsitans westw.* *Bulletin of Entomological Research* 52: 17–22.

²³⁴ See note 56.

species. It is important to remember that when you are dealing with insects of this sort, they are capable of modifying their behaviour in certain circumstances, and it is important to learn all you can and keep learning all the time.

Hopwood: Could I ask the experts what is the chance of man-to-man transmission in trypanosomiasis?

Duggan: When you say man-to-man, I assume you mean direct mechanical transmission by tsetse. I think it is rare in humans. It is not like a herd of cattle being ravaged by *Glossina morsitans*. To give an actual figure would really be impossible. The only time I have ever experienced this was once in Nigeria with an important party of four distinguished visitors who were travelling up by train from Lagos to Kaduna, and shortly after, three of them developed trypanosomal fever. This caused a bit of a stir, so I followed their route myself, and found one station on that trip which was infested with *G. palpalis*. I reckoned that a single tsetse fly, already infected with metacyclic trypanosomes, must have got into the compartment and bitten them one after the other. It is possible you would have thought that that fly was using mechanical transmission, but I think that the chances of that are very, very rare indeed. I believe my explanation was much more likely to be correct. Mechanical transmission is of little or no significance in the epidemiology of human sleeping sickness.²³⁵

Snow: If I could ask one question of the revered participants of this seminar, it is simply this. We have heard that the Pare–Taveta Scheme was incredibly successful and that's true. I mean one can read their published papers and see dramatic declines in infant and childhood mortality. We have heard very much the same from studies done in Garki, Nigeria, where they again had tremendous success with mass drug administration, and propoxur spraying,²³⁶ and there is also the Kisumu experience, and the Nandi hills experiments done by J M D Roberts, the then Head of Division of Vector-borne Diseases (DVBD) in Kenya.²³⁷ The question really is, for malaria at least, that there have been tremendous successes in control and yet in all of these places I suspect mortality now is probably much higher than it was at base line before those experiments started. Have we missed something over the last 50 years?

²³⁵ Dr Tony Duggan wrote: 'The work of Molyneaux suggests that infected tsetse have lost the sense of repletion and feed repeatedly and voraciously.' Note on draft transcript, 27 June 2000. Professor David Hurst Molyneaux FIBiol (b. 1943) was Director of the Liverpool School of Tropical Medicine from 1991 to 2000 and Professor of Tropical Health Sciences at the University of Liverpool from 1991. He was seconded from the Liverpool School, where he had been a Lecturer in the Department of Parasitology from 1968, as Research Officer to the Nigerian Institute for Trypanosomiasis, Kaduna, Nigeria, from 1970 to 1972. See Molyneaux D H, Jefferies D. (1986) Feeding behaviour of pathogen-infected vectors. *Parasitology* 92: 721–736.

²³⁶ See note 149.

²³⁷ Professor Bob Snow wrote: 'I think Roberts took over at the transition period between the Division of Insect-borne Diseases and the Division of Vector-borne Diseases, Ministry of Health, Kenya.' E-mail to Mrs Lois Reynolds, 5 September 2000. See Roberts J M D. (1964) The control of epidemic malaria in the highlands of Western Kenya. Part I. Before the Campaign. *Journal of Tropical Medicine and Hygiene* 67: 161–168. *idem* The control of epidemic malaria in the highlands of Western Kenya. Part II. The Campaign. *ibid.* 67: 191–199. *idem* The control of epidemic malaria in the highlands of Western Kenya. Part III. After the Campaign. *ibid.* 67: 230–237.

Peters: Can I jump geographically to give a small answer to that question? I worked for quite a few years in Papua New Guinea, and we ran a pilot scheme up in the area around Maprik in the Sepik district, where we had a sufficient measure of control with insecticides and so forth, to reduce the infant parasite rate from the typical pattern of a holoendemic area, down to almost zero. Within two years of my departure, when somebody else, who ran the project, paid little or no attention to the quality of insecticides and various other major factors, malaria came back in the infant population on a massive scale and the mortality most certainly increased.²³⁸ I think, as the late Director of the Health Services there, John Gunther,²³⁹ said, ‘Once you start malaria control in a holoendemic area, you are riding the tiger,’ and I suspect this is what Bob [Snow] is really getting at.

Mr Tony Wilkes:²⁴⁰ I would like to comment on the Pare–Taveta Malaria Scheme where *Anopheles funestus* certainly was knocked out very quickly. However, I recall that *Anopheles rivulorum*, a mosquito closely related to *funestus* increased quite dramatically in its absence, about four- or five-fold, I believe.²⁴¹ Having worked in Africa many years, I have seen this happen several times. Controlling *funestus* can be relatively easy, but other closely related species appear to thrive in the ecological niche vacated by the main vector.

It has been shown recently that *rivulorum* for the first time was recorded as a vector of malaria in Tanzania, so one has to be careful when controlling one species that another species doesn’t emerge, presenting a new problem.

Snow: I think my question was really to try and draw out from you whether or not

²³⁸ Personal communication to Professor Wallace Peters from Dr D Parkinson. See also Peters W. (1962) A critical survey of the results of malaria-eradication and control programmes in the South West Pacific. *Annals of Tropical Medicine and Parasitology* 56: 20–32. Letter from Professor Wallace Peters to Mrs Lois Reynolds, 28 November 2000.

²³⁹ Professor Wallace Peters wrote: ‘Sir John Thomson Gunther (1910–1984) was the first postwar Director of Public Health in the then Territory of Papua New Guinea. From 1946 to 1957 he built up a multilayered health service comprising both modern, central hospital services and primary level, peripheral health facilities, the latter staffed mainly by Papuans who received paramedical training in national training centres. Gunther recognized the need to initiate a national campaign to control malaria which ranged from holoendemic in most coastal areas to hypoendemic, seasonally epidemic malaria in the highlands. I was appointed as his first Assistant Director (Malariaology) in 1955 to plan and inaugurate the campaign. Gunther’s remark quoted here appeared in the opening article in the inaugural issue of the *Papua New Guinea Medical Journal* in 1955. Subsequently Gunther was appointed Assistant Administrator of Papua New Guinea (1957–1967), then the first Vice-Chancellor of the University of Papua New Guinea where he remained until his retirement in 1972.’ Letter to Mrs Lois Reynolds, 28 November 2000.

²⁴⁰ Mr Tony Wilkes MIBiol (b. 1933) was a field entomologist at the East African Malaria Institute in Amani, Tanzania (then called Tanganyika), from 1958 to 1964 working on the main vectors of malaria in Africa. Returning to the UK in 1965 he worked on the behaviour of mosquitoes at the University of Sussex’s School of Biology, moving to Imperial College, Silwood Park, Ascot, in 1980, working on sand fly biology and behaviour, and in 1987 to the London School of Hygiene and Tropical Medicine working on mosquito biology and control until his retirement in 1995. See Wilkes T J, Matola Y G, Charlwood, J D. (1996) *Anopheles rivulorum*, a vector of human malaria in Africa. *Medical and Veterinary Entomology* 10: 108–110.

²⁴¹ Wilson D B. (1960) *Report on the Pare–Taveta Malaria Scheme, 1954–1959*. Dar es Salaam: Government Printer for the East African High Commission. Gillies M T, Smith A. (1960) The effect of a residual house-spraying campaign in East Africa on species balance in the *Anopheles funestus* group. The replacement of *A. funestus* by *A. rivulorum* season. *Bulletin of Entomological Research* 51: 243–252.

you felt that experimental research that was done for control, actually took cognizance of what was feasible in the areas that you were working and was sustainable? Words that we use frequently now – sustainable control, integrated health systems, health sector development, health sector reform – are all part of control vernacular. But 50 years ago when control strategies were developing, when it was clear that you knew that the implications of reducing vector–man contact would be on disease, was this conceptual framework of sustainable development, integrating it into existing health services, involved then?

Smith: In 1955 when the World Health Assembly²⁴² met in Mexico, it concluded that there was sufficient information available to eradicate malaria in the world using modern insecticides, with the exception of Africa, because of its areas of holoendemic malaria transmitted by the extremely virulent vector, *Anopheles gambiae*. Although there was great success in controlling malaria in the small islands like Mauritius, and Madagascar, it was felt that it might not be feasible to control malaria in the interior of Africa. That was one of the reasons why the Pare–Taveta Malaria Scheme was set up in 1954 to 1959 to tackle this very point. Its purpose was to ascertain if residual spraying of houses could interrupt malaria transmission and what effect this would have on human health, particularly on the ‘immune’ African community. The situation did improve, although malaria was almost entirely eradicated, an extremely low level of transmission persisted, thought to be due to a combination of factors such as new huts built between cycles of spraying, movement of population in and out of the sprayed area, and some exophily in *Anopheles gambiae*. The Pare–Taveta findings supported the view that residual spraying of houses alone would not eradicate malaria from the interior of Africa.

Fleming: I was involved in the Garki project²⁴³ and that was the last attempt by WHO to break transmission, with larvicide application, insecticide spraying and mass drug administration. They reduced transmission to a very low rate indeed, but it was not possible to break transmission. Thereafter WHO policies were completely changed.

McGregor: The point that I would like to make is one of terminology. We should draw a line of distinction between malaria eradication procedures and malaria control. Eradication procedures were limited in time and when they were complete and effective there was no further need for antimalarial expenditure. The alternative was malaria control, which was not limited in time and if malaria was not eradicated, control went on *ad infinitum*. Everyone recognized that in any circumstance that you did not eliminate it, you were landed with a problem of maintaining control for a long time. That view was taken at Kampala [Uganda] and expressed very clearly that the time had passed for further experimentation, control should be practised in sub-Saharan Africa, not eradication.

Hendrickse: We are talking about health; we are talking about malaria control. Eldryd Parry made a very valid observation when he talked about declining standards of

²⁴² See World Health Organization (1955), note 205.

²⁴³ See note 148.

education, connected with national problems, financial problems, economic problems, political problems. What we are witnessing here is how the devil can you control any of these diseases in countries whose infrastructures are being destroyed, whose economic base has been destroyed. We would then have this Alma-Ata Declaration on Primary Health Care.²⁴⁴ What we have all forgotten is that they all agreed at that conference that primary healthcare would fail unless it's part of overall economic development in countries. And in many of the countries that we are talking about now, there has been a total decline in the economic status, and it's getting worse. Let's be sensible: we are doctors, but we should also be human beings, and the politics in the end will determine whether we are successful in medicine or not. The only country in Latin America that has freedom from malnutrition at the present time, funnily enough, is Cuba. More educated women. Maybe we have got something to learn from them.

Duggan: I would like to follow up something that Sir Ian [McGregor] has said and that is the difference between elimination and eradication. Not enough distinction is made between these words and their significance. When we did a tsetse control job in northern Nigeria, we eliminated tsetse from a 120-mile valley,²⁴⁵ and transmission ceased, but this could not be called eradication of sleeping sickness, because the campaign was based upon insecticide attack and the tsetse habitats were left intact. It only needed half a dozen tsetse to be accidentally introduced and some itinerants to move in with *T. gambiense* in their blood stream and 'bang' goes eradication. One has to be careful about using the word 'eradication'.

Bradley: I think there was a particular context of malaria discussions, where there was a fair amount of precision in the use of the word 'eradication', even if there was occasionally misuse. I think it was defined. I am very conscious that our time has just about run out. George [Nelson], the worms have got slightly squeezed out, haven't they? Well, I am going to let you talk. Can you give us two minutes on the worms, just so that we don't lose them, and then I am going to invite Len [Goodwin] to wind up for us from his Olympian view of the scene over the years.

Nelson: You know there are many more helminth diseases than there are other infectious diseases that we have been talking about, but I will restrict myself to two or three. The Vector-borne Diseases Institute in Nairobi, where I worked with Heisch and Garnham²⁴⁶ and others, was an Institute of the Government. I was a Government

²⁴⁴ See note 154.

²⁴⁵ See Duggan A J (1962), note 47.

²⁴⁶ Professor Cyril Garnham CMG FRCP FRS (1901–1994) served in the Colonial Medical Service from 1925, established Kenya's Division of Insect-borne Diseases (later the Division of Vector-borne Diseases), Nairobi, in 1931 and was later Director until his retirement in 1947 when he joined the staff of the London School of Hygiene and Tropical Medicine as Reader. He was Professor of Medical Protozoology in the University of London at the London School of Hygiene and Tropical Medicine, following Professor H E Shortt, and Head of the Department of Parasitology from 1952 until his retirement in 1968, later Emeritus. See Garnham P C C. (1971) *Progress in Parasitology*. London: Athlone Press. See also Lainson R, Killick-Kendrick R. (1997) Percy Cyril Claude Garnham CMG. *Biographical Memoirs of Fellows of the Royal Society* 43: 173–192. Garnham's personal papers, PP/PCG, are held in Archives and Manuscripts section, Wellcome Library, London.

Officer. As a Government Officer, the instructions were ‘to do research of the highest quality if possible, for the purposes of controlling disease’. Not eradicating, but controlling, whenever possible. I was in charge of helminths and Heisch was in charge of protozoa, following on from Garnham, who had been the Director of the Institute. We worked on the principle that we didn’t have sufficient competence ourselves to be able to cope with all these diseases in Kenya, so we needed collaboration with the London School of Hygiene and Tropical Medicine and the Liverpool School of Tropical Medicine, and in some cases, with people in other institutes in West Africa and in other parts of the world, and of course with the World Health Organization. We were very fortunate to have a lot of money, because the British Army Medical Officers during the [Second World] war had made the mistake of thinking that an epidemic of hepatitis was in fact an epidemic of yellow fever, so we had the yellow fever money to control all our helminth diseases.

For which diseases did we achieve what we set out to do? First, onchocerciasis [river blindness]:²⁴⁷ the work that we did on onchocerciasis in Kenya, where we found a completely new vector, was a total and complete eradication of the disease from Kenya, because we happened to have a vector that had a very short flight range.²⁴⁸ The technology that we developed in relation to onchocerciasis was one that Barnley and Prentice²⁴⁹ had been using on the control of onchocerciasis on the Nile in Jinja [Uganda], and this technology became the basis for the control of onchocerciasis throughout the whole of West Africa. We were trying not just to control the disease in Kenya, but on an international scale. The collaboration had to be continuous and it is still going on. The Liverpool School of Tropical Medicine, particularly with Bianco’s group and the veterinarians,²⁵⁰ are now developing a vaccine for the control of onchocerciasis and the first tests are being done on cattle in the Cameroon. It was in the London School at Winches Farm where we rediscovered that British cattle and horses were infected with onchocerciasis, and that is where the whole of the biological programme on animal hosts began. Secondly, with schistosomiasis, much the same thing happened.²⁵¹ We did work on *Schistosoma mansoni* and on *S. haematobium* in Kenya, first establishing it in laboratory animals, so that we could test the different chemotherapeutic agents. Next we

²⁴⁷ Professor George Nelson wrote: ‘East Africa became much more important in relation to vector control with the remarkable elimination of *Simulium damnosum* by Barnley and Prentice from the Nile in Uganda and the control of *S. neavei* by McMahon, Highton and Goiny in Kenya where Kenya became the first country in the world where onchocerciasis was eliminated.’ Note on draft transcript, 27 June 2000.

²⁴⁸ *Simulium neavei* with phoretic association (early larval stages are borne on the shell) with crabs.

²⁴⁹ Barnley G R, Prentice M A. (1958) *Simulium neavei* in Uganda. *East African Medical Journal* 35: 475–483.

²⁵⁰ Bianco A E. (1991) Onchocerciasis – River blindness, in Macpherson C N L, Craig P S. (eds) *Parasitic Helminths, Zoonoses, and Human Health in Africa*. London: Unwin Hyman Press, 138–203. This volume was a tribute to Professor George Nelson by his colleagues. For an alternative view, see Taylor M. (1992), note 64, key publications, 24–30. See also Wilkinson L, Hardy A. (2001), chapter 10 on the seminal earlier work in the 1940s of Buckley in Kenya’s ‘Valley of the Blind’, and Garnham and McMahon on methods for control of onchocerciasis there.

²⁵¹ Professor George Nelson wrote: ‘This led to collaborative research with [Gerry] Webbe, Martin Taylor and their colleagues in the London School [of Hygiene and Tropical Medicine] on bladder cancer cross-immunity between *S. mansoni* and *S. haematobium*, and between many other species especially bovine and human schistosomes.’ Note on draft transcript, 27 June 2000.

worked out the epidemiology and discovered that the baboon was an important reservoir.²⁵² This was the first time in history that a reservoir of *Schistosoma mansoni* had been found in animals and we then found animals infected with *haematobium*. Our collaboration with the London School was absolutely vital. The baboon was the only animal that could be infected with *Schistosoma haematobium*, not mice. The work that was done with Gerry Webbe²⁵³ and others at the London School on cancer of the bladder in relation to *Schistosoma haematobium* was done with baboons from the Division of Vector-borne Diseases in Kenya. The drug praziquantel is the most important drug in helminthology, because it is a single-dose drug that kills all three species of schistosomes, including the schistosomes in China. This drug was first tested at Winches Farm in the London School of Hygiene and Tropical Medicine on baboons that were infected with *Schistosoma haematobium*, on cats infected with *S. japonicum* and with monkeys [or] baboons infected with *Schistosoma mansoni*.²⁵⁴ All the work on the vaccines in relation to schistosomiasis were also a continuation of the work on heterologous immunity in the Division of Vector-borne Diseases in Nairobi, where we showed that cattle schistosomes could be used to protect against *S. mansoni*, and that *S. mansoni* could be used to protect against cattle. It was very much a veterinary collaboration and it has been used extensively in China for the control of the reservoir of *Schistosoma japonicum* using this principle of cross-immunity heterologous immunity that we developed in Nairobi.²⁵⁵ The same collaboration applied to our work on *Wuchereria bancrofti*, the discovery of *Brugia*,²⁵⁶ the work on *Trichinella* (now called *Trichinella nelsoni*)²⁵⁷ and the work on

²⁵² Professor George Nelson wrote: 'This deals with baboons. Nelson G S. (1960) Schistosome infections as zoonoses in Africa. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 54: 301–324.' Note on draft transcript, 6 December 2000.

²⁵³ Professor Gerald Webbe (1929–1999) joined the Colonial Medical Service in 1952 as medical entomologist in Tanganyika, moving to Mwanza, Tanganyika (now Tanzania) in 1958 as biologist and assistant Director of the East African Institute for Medical Research. In 1965 he went to West Germany to head the Clinical Tropical Trials Department of Bayer AG's Farbenfabriken, until appointed to the London School of Hygiene and Tropical Medicine as Reader in Medical Parasitology. He was the last Scientific Director of the London School of Hygiene and Tropical Medicine's Winches Farm Field Station from 1968 until its closure in 1992. He was appointed Professor of Applied Parasitology at the University of London in 1979 and Head of the Department of Medical Helminthology at the London School in 1980 until his retirement in 1994, later Emeritus.

²⁵⁴ Professor George Nelson wrote: 'We needed a great deal of effort to persuade Bayer that the veterinary anticestode product should be released for use against human schistosomiasis. But together with WHO we were successful and so far more than a billion doses of praziquantel have now been used for the control of schistosomiasis throughout the world, including China and South America.' Note on draft transcript, 27 June 2000. See note 65.

²⁵⁵ Webbe G T, James C, Nelson G S, Ismail M M, Shaw J R. (1979) Cross resistance between *Schistosoma haematobium* and *S. mansoni* in the baboon. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 73: 42–54.

²⁵⁶ *Wuchereria bancrofti* and *Brugia malayi* are lymphatic nematodes, thread-like white worms, transmitted by various mosquito species, causing hydrocele, lymphadenitis and elephantiasis. *Brugia malayi* has not been found in Africa. See Cook G C (ed.) 1996, note 95, 1321, 1633–1641. For the original discovery of the *Brugia* species, see Buckley J J C. (1960) On *Brugia* gen. nov. for *Wuchereria* ssp. Of the 'malayi' group ie *W. malayi* (Brug, 1927), *W. pahangi* (Buckley and Edeson, 1956), and *W. patei* (Buckley, Nelson and Heisch, 1958). *Annals of Tropical Medicine and Parasitology* 54: 75–77.

²⁵⁷ Trichinosis is a sometimes fatal infection caused in Africa by the species *Trichinella spiralis nelsoni*, with wild pigs as the source of human infection, but widespread in carnivores. See Cook G C. (ed.) 1996, note 219, 1403–1408. Nelson G S. (1982) Carrion feeding cannibalistic carnivores and human disease in Africa with special reference to trichinosis and hydatid disease in Kenya. *Symposium of the Zoological Society, London* 50: 181–198.

ivermectin, which was first tested on *Trichinella* and is now used for the control of onchocerciasis all over West Africa.²⁵⁸ Unfortunately I haven't even mentioned hydatid disease²⁵⁹ which was my main personal interest.

Duggan: Did you do anything about guinea worm?²⁶⁰

Nelson: Ralph Muller in my department in London became the world authority on guinea worm following his studies in Nigeria. This was the first multicellular organism to be preserved by cryopreservation and his studies have helped towards the eradication of guinea worm from parts of West Africa.²⁶¹

Bradley: I am going to ask Len [Goodwin] to follow that and wind up for us. And people can then pursue the tales of the guinea worm over a glass of wine in a moment.

Dr Len Goodwin:²⁶² Having reached this stage of the proceedings, all one can do is propose a vote of thanks. As a visitor, I know very nearly everyone here and they have remained my friends and colleagues because I have visited them in their places of work and they have helped me do my job. Just to remind you what my job was: I worked for the Wellcome Foundation [the pharmaceutical company], not for the Wellcome Trust. The Wellcome Foundation was a drug firm and it had to make money out of selling medicines. When Kellaway²⁶³ came and took over the Directorship and I was working

²⁵⁸ Ivermectin (Mecitizan, MSD, not on UK market), a single-dose treatment for onchocerciasis, replaced the more toxic DEC (diethylcarbamazine: Hertrasan, Lederle).

²⁵⁹ Hydatid disease in man found in Africa is caused by the larval stage of the tapeworm, *Echinococcus granulosus*, distributed by few animal hosts, causing cysts of various size, often found in the liver. See Cook G C (ed.) 1996, note 95, 1486–1494. Macpherson C N L, Craig P S. (1991) Echinococcosis – a plague on pastoralists, in Macpherson C N L, Craig P S. (eds) (1991), note 250, 25–53.

²⁶⁰ Guinea worm disease in man is a result of infection with *Dracunculus medinensis*. The traditional method of treatment is slow extraction combined with antibiotics and tetanus vaccination. Improvement of the quality of drinking water from boreholes is the most effective measure. See Cook G C. (ed.) 1996, note 95, 1358–1362.

²⁶¹ Dr Lise Wilkinson wrote: 'It was R T Leiper's definitive description, at Accra in 1907 [Leiper R T. (1907) The aetiology and prophylaxis of *Dracunculus*. *British Medical Journal* i: 129–132] when he completed the prematurely ended studies by A P Fedchenko (1844–1873), which finally brought control, and even in the long run, eradication of dracunculiasis, within the realm of possibility. The goal has not yet been reached; the WHO campaign which aimed at worldwide eradication by 1995 is still not complete on the Indian continent, although nearly complete in West Africa where Professor Sandy Cairncross, of the London School of Hygiene and Tropical Medicine, is involved.' Note on draft manuscript, 12 December 2000. Muller R. (1991) *Dracunculus* in Africa, in Macpherson C N L, Craig P S. (eds) (1991), note 250, 204–223.

²⁶² Dr Len Goodwin CMG FRCP FRS (b. 1915) worked on the chemotherapy of tropical diseases at the Wellcome Bureau of Scientific Research (later the Wellcome Laboratories of Tropical Medicine) from 1939 to 1963, moving to the Zoological Society of London as Scientific Director from 1963 until 1980. He was Director of the Wellcome Museum of Medical Science from 1981 to 1983. He served on the Tropical Medical Research Board of the MRC from 1962 to 1974 as well as various committees of the Tropical Diseases Research Programme of the World Health Organization. See Goodwin L G, Beveridge E. (1998) note 3.

²⁶³ Charles H Kellaway FRCP FRS (1889–1952) came to England from Australia in 1920 with a Foulerton Research Fellowship from the Royal Society and worked on anaphylaxis with Henry Dale at the National Institute for Medical Research and later with T R Elliott at University College London. He returned to Melbourne in 1923 to direct the Walter and Eliza Hall Institute for Research in Pathology until 1944, when he came back to London as Director-in-Chief of all the Wellcome Laboratories (Beckenham, Frant, Dartford and Euston Road) until he resigned in 1946. Dale H H. (1953) Charles Halliley Kellaway. *Obituary Notices of Fellows of the Royal Society* 8: 503–521.

upstairs in this building [183 Euston Road] in the Tropical Laboratories, he found quite a lot of people who were playing about with a lot of academic things, and not making any money. One of my jobs was to try and make some money. Therefore we did screening tests on a lot of compounds for the treatment of tropical diseases. Owen Standen,²⁶⁴ I and other people were to go out and test them. All the people here helped us enormously in this respect, because all over Africa and elsewhere there were places where there was expertise, where people knew what was going on, where the infections were, what they were, what the patients were like, how you could get to them, how you could follow them up, and all the things that were necessary in order to do a clinical trial of the kind that we used to do in those days. You must remember it was quite a different kind of clinical trial from the kind done today, because there were no lawyers looking over our shoulders with regulations, and it didn't cost you £100 million in order to get the drug passed by the US Food and Drug Administration (FDA). So when we'd got something that worked reasonably well on laboratory infections, we took a few doses ourselves to determine the basic pharmacodynamics and then persuaded somebody to let us try it in the field. I don't really think we did very much damage, and I think we did a bit of good. All the people here, I think, have been very helpful in this direction, not only to us, the Wellcome [pharmaceutical company], but to a lot of other companies. George [Nelson] goes on about praziquantel and ivermectin, but the London School [of Hygiene and Tropical Medicine] didn't make those. They were the end results of thousands of compounds which had been produced at a cost of millions of pounds [sterling], over decades, in order to find something that really worked and could be used.

Although Peter Williams may say I am romanticizing, I will just go on with one more little bit. In the years when we were doing this, the Wellcome Foundation was in a pretty bad way, and until blockbusters (such as Imuran, Septrin, Zovirax and AZT [azidothymidine]) from George Hitchings and Trudy Elion in America²⁶⁵ came along to raise the income, it was pretty borderline. And I think that perhaps while we were doing these trials – and we introduced Pentostam, pyrimethamine, antepar, alcopar, marboran, sulphetrone²⁶⁶ – we must have added quite a bit to the Foundation's

²⁶⁴ Dr Owen Standen took over the Helminthology Department at the Wellcome Laboratories of Tropical Medicine in 1948 and developed a series of tests on roundworms, hookworms, tapeworms, filarial worms and schistosomes in experimental animals. He became Director of the Wellcome Laboratories in 1963. The Laboratories were transferred from Euston Road to Beckenham in 1965. See Goodwin L G, Beveridge E. (1998), note 3.

²⁶⁵ George Herbert Hitchings Jr (1905–1998), Gertrude Belle Elion (1918–1999) and Sir James W Black (b. 1924) shared the 1988 Nobel Prize in Physiology or Medicine 'for discoveries of important principles for drug treatment'. See Krenitsky T A. (1998) George Hitchings. *Chemistry in Britain* 34: 73–74. Elion G B. (1993) The quest for a cure. *Annual Review of Pharmacology and Toxicology* 33: 1–33. Anonymous. (2000) The rewards of a life of commitment to science. *Nature Cell Biology* 2: E159–E160.

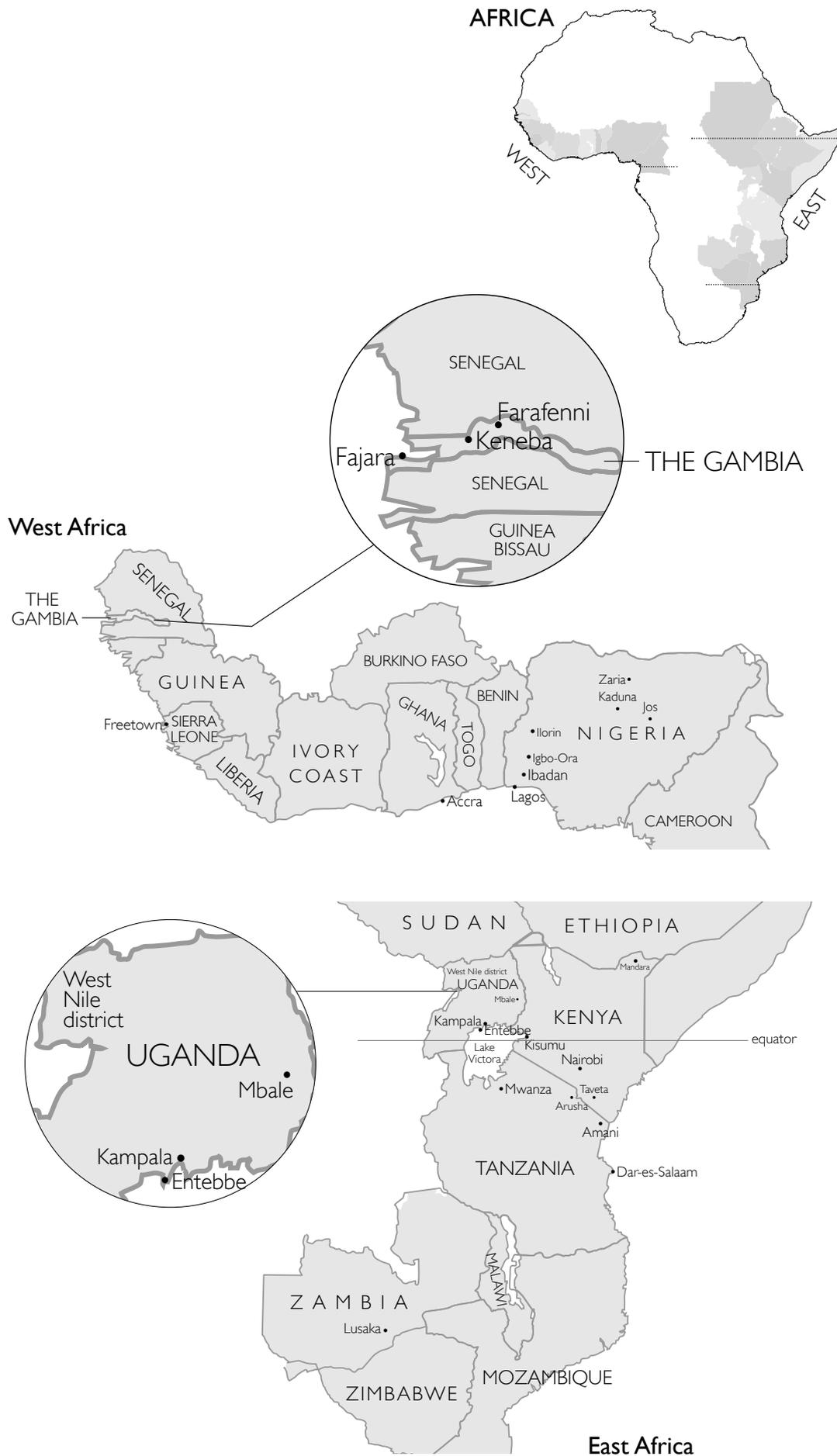
²⁶⁶ Pentostam (sodium stibogluconate or sodium antimony gluconate), was used only to treat leishmaniasis; pyrimethamine (Daraprim) was one of the series of antifolate compounds synthesized by Hitchings and Elion in America and was used to treat all forms of human malaria; Antepar (piperazine citrate) was used to treat intestinal worm infestations, especially roundworms (*Ascaris*) and threadworms (*Enterobius*); Alcopar (bephenium), released in 1958, was used as a treatment for hookworm (*Ankylostoma*) infestations; Marboran (methisazone) was one of the very first antiviral compounds effective against infections with pox viruses, used by the WHO smallpox eradication programme to treat complications following vaccination and held in reserve to treat any further outbreaks of the disease; sulphetrone (solasulfone) was an antileprotic treatment. See Goodwin L G. (1952)

income and saved it from disaster, in which case we are able to have a meeting in this building [183 Euston Road] today, and the Wellcome Trust can give away over £1 million a day for research. Thank you, sir.

Bradley: I think that gives a very nice perspective to end on. I would like to thank everyone who has come along, some from a very long way away, to share your memories with us. Clearly, I am left with a feeling that we haven't done justice to a lot of issues, and there are lots where I hope we will be able to persuade the people who organize these seminars to perhaps have some more so that we can go into detail on several of the topics that people have raised. On behalf of all of us here, I would like to thank the people who put in the work to create it, Mary [Dobson] for doing the intellectual background work and putting the meeting together, together with Maureen [Malowany], Tilli [Tansey] and Wendy [Kutner], and all the staff for the enormous amount of work they have put in to making it run very smoothly and simply. And now I would like to invite you to join us for a glass of wine next door.

Tansey: Before we do that, could I add all our thanks to the Chairman. We gave him a very unwieldy job to do. Thank you, David.

Daraprim (BW50–63) a new antimalarial: Trials in human volunteers. *British Medical Journal* *i*: 732–734. Goodwin L G, Standen O D. (1958) Treatment of ascariasis with various salts of piperazine. *British Medical Journal* *i*: 131–133. Goodwin L G. (1995) Pentostam® (sodium stibogluconate); a 50-year personal reminiscence. *Transactions of the Royal Society of Tropical Medicine and Hygiene* **89**: 339–341. Our thanks to Len Goodwin for additional details, 7 December 2000. See also note 3.



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