

Oxford University Department of Statistics

A Brief History

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Preface

It has been a pleasure to compile this brief history. It is a story of great achievement which needed to be told, and current and past members of the department have kindly supplied the anecdotal material which gives it a human face. Much of this achievement has taken place since my retirement in 2005, and I apologise for the cursory treatment of this important period. It would be marvellous if someone with first-hand knowledge was moved to describe it properly.

I should like to thank Steffen Lauritzen for entrusting me with this task, and all those whose contributions in various ways have made it possible. These have included Doug Altman, Nancy Amery, Shahzia Anjum, Peter Armitage, Simon Bailey, John Bithell, Jan Boylan, Charlotte Deane, Peter Donnelly, Gerald Draper, David Edwards, David Finney, Paul Griffiths, David Hendry, John Kingman, Alison Macfarlane, Jennie McKenzie, Gilean McVean, Madeline Mitchell, Rafael Perera, Anne Pope, Brian Ripley, Ruth Ripley, Christine Stone, Dominic Welsh, Matthias Winkel and Stephanie Wright.

Wikipedia was also a valuable source of information.

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1 Genesis

Florence Nightingale, the pioneer of modern nursing, following her experiences during the Crimean war, was also an enthusiast for statistical methods. In the 1870s she discussed the possibility with her friend Benjamin Jowett, Master of Balliol College, of endowing a Professorship of Statistics in Oxford to which they both agreed to contribute, and later further discussed the idea with Francis Galton, another pioneer of applied statistics. In a letter to Galton in 1891 she suggested that the professorship should address the need for statistics relating to education, penology, workhouses and India. In his response Galton stressed the importance of the new professor doing research as well as teaching, and also questioned the suitability of Oxford as the home for this venture. Neither comment blended well with Miss Nightingale's vision and, partly for these reasons, sadly the proposal foundered.

However, Oxford did appoint a statistician to a chair in 1891, although not to a chair in statistics. Francis Ysidro Edgeworth was an Irish philosopher and political economist who made significant contributions to the methods of statistics during the 1880s. He was a highly influential figure in the development of neo-classical economics. In 1891 he was appointed Drummond Professor of Political Economy. Also in 1891 he was appointed the founding editor of 'The Economic Journal'. He continued to be the editor or joint-editor until his death 35 years later. 'The Economic Journal' remains one of the leading scholarly publications in economics today. In statistics Edgeworth is most remembered by giving his name to the Edgeworth series, which approximates a probability density function in terms of its cumulants. The Royal Statistical Society awarded him the Guy Medal in 1907. He served as the president of the Royal Statistical Society, 1912-14.

A contemporary significant figure in the development of statistical methods was Walter Weldon. Weldon was an evolutionary biologist and one of the founders of biometry. He was Linacre Professor of Zoology in Oxford from 1899 until his early death in 1906. Together with Francis Galton and Karl Pearson he was in 1901 joint founding editor of the journal 'Biometrika'.

The next significant moves in the development of Oxford statistics were by economists, who were increasingly keen to build economic theory on a foundation of sound data analysis. This led to the creation in 1935 of an Institute of Statistics with a director holding a new Readership in Statistics. As Oxford's first research institute in economics the new institute was from the outset concerned with economics as well as statistics, and with statistics mainly in relation to economic data. These features were made more obvious in 1962 when the institute was renamed as the Institute of Economics and Statistics.

The first director of the institute was Jacob Marschak. Marschak was born in Kiev in 1898 as a son of a Jewish jeweller. He lived an eventful life in Russia and then Germany until 1935, when he was appointed as a Reader by Oxford University, and as the first Director of the Institute of Statistics. In 1940 he moved to the USA and a distinguished further career as an economist.

During the war years the acting director of the institute was Sir Arthur Bowley, a distinguished economic statistician who had recently retired from a chair at the London School of Economics. The readership remained vacant until 1945, when it was filled by David Champernowne, who also became director of the institute.

Champernowne read mathematics and then economics at Cambridge University, graduating in 1934. He went on to do research on income distribution, for which he was the first to provide a statistical model. In 1937 this work earned him a prize fellowship at King's College Cambridge. He continued to work on income distribution for the rest of his academic career. He was Director of the Oxford Institute of Statistics from 1945 to 48, and Professor of Statistics from 1948 to 59, after which he returned to Cambridge.

A hugely influential contemporary was David Kendall. Kendall graduated in mathematics in Oxford in 1939. He worked on rocketry during the second world war, before becoming a fellow of Magdalen College in 1946. He was appointed the first Professor of Mathematical Statistics in the Statistical Laboratory, University of Cambridge in 1962. Kendall was a world expert in probability and data analysis, and pioneered statistical shape analysis including the study of ley lines. He defined the standard notation for queueing theory, and supervised fourteen doctoral students, many of whom became distinguished academics.

Another key figure was David Finney. Finney read mathematics at Cambridge University, graduating in 1937. He was awarded a postgraduate scholarship for statistical work in agriculture under Ronald Fisher at the Galton Laboratory, University College London, where he worked on statistical estimation for human genetics. He became assistant to Frank Yates at Rothamsted Experimental Station in 1939.

2 LIDASE and its Successors

The sequence of events which led directly to the establishment of the present Department of Statistics began with the appointment in 1945 of David Finney as the university's first Lecturer in the Design and Analysis of Scientific Experiment (LIDASE), a title carefully designed so as not to trespass on the territory of the Institute of Statistics. He writes 'I moved to Oxford late in the summer of 1945. I soon learned that my Lectureship had been created because a group of Oxford's biological scientists (notably H G Champion, Forestry; R B Fisher, Physiology; E B Ford, Entomology; and P B Medawar, Zoology) had perceived the need for access to and assistance with the use of modern statistical science. The only statutory obligations laid upon the lecturer were to live within a specified distance of Carfax and to lecture (to an unspecified extent) on the design and analysis of scientific experiment; this phrase, capable of wide interpretation, had been ingeniously generalized by the word

"experiment" being deliberately in the singular. How I should act in relation to the general background of my appointment was left entirely to my judgment. I soon found my task enjoyable and stimulating. I began my Oxford life with an office comprising two large rooms in a tall Victorian house at 6 Keble Road.'

Thus in the late 1940s the leaders of Oxford statistics were Champernowne, Finney and Kendall, in different parts of the university. One of Finney's priorities was to set up 'a more formal pattern of graduate teaching'. With the help of Champernowne and Kendall he was able to establish in 1947 or 1948 a Diploma in Statistics, the forerunner of the current MSc in Applied Statistics, making Oxford one of the first British universities to offer formal statistical teaching for graduate students. The word 'applied' here is a further example of Finney's lasting influence. In his view 'University statisticians, however strongly their personal research is directed at extending the mathematical or philosophical theory of their discipline, should see it as a duty to be willing to advise and collaborate with academic colleagues in any field where research or other activities can benefit from use of statistical principles and methods.' Finney himself fulfilled this duty by lecturing to biologists and, as he writes, 'I also endeavoured to make clear that my door was open to anyone who wanted to discuss statistical problems in pure and applied biology and for the next few years I was very active in a wide range of consultation'.

He was soon joined by Michael Sampford and John Hammersley as graduate assistants. Hammersley writes 'This Lectureship was a small department headed by the lecturer (D J Finney) and having two graduate assistants (Sampford and myself) together with a secretary and a couple of girls with desk calculators. At that time it was the only established provider of statistical services at Oxford, and its remit was spread quite generally over any and all queries that might be thrown up in various branches of service. It also had to offer lectures and instructions on statistics; for example, it fell to me to give the lecture course in the Department of Forestry for overseas forest officers on the collection and analysis of data on trees and their growth.' Hammersley later became a reader in the Institute of Economics and Statistics.

In 1952 Finney began a year in New Delhi as a consultant to the United Nations Food and Agriculture Organisation. Shortly after his return to Oxford he was asked by the Agricultural Research Council to establish a Unit of Statistics at the University of Aberdeen, to which he moved in 1954.

At this point the lectureship was upgraded to a readership, and in 1955 Norman Bailey was appointed as reader. Bailey read mathematics at Cambridge University, graduating in 1943. This was followed by: war service at the Admiralty; return to Cambridge, for further study, and then as statistician to the Medical School; and two years working on medical matters for the Nuffield Foundation.

Bailey writes 'The name of the department was changed after two years to the more suitable and euphonious "Unit of Biometry", following a sensible proposal previously put forward by David Finney. My duties involved providing a statistical consulting service to other

departments in the Faculty of Biology, to which the unit belonged and also, by simple extension of subject matter, to departments within the Faculty of Medicine. I was ably supported by two lecturers: John Scott, who was an excellent teacher with very practical interests, and Morris Walker on whom we all relied for support in the intricacies of mathematical and statistical theory. We provided courses of lectures for the postgraduate Certificate in Statistics (one year) and the Diploma in Statistics (usually two years). I learned a lot about the design of experiments by lecturing to those who knew less than I did. Undergraduate-level lectures on elementary applied statistics were also given on an increasing scale for individual biological departments.'

Bailey developed a world-wide reputation in epidemiology. He was appointed as Professor of Biomathematics at Cornell University in 1966. From 1967 to 1983 he was a senior statistician at the World Health Organisation in Geneva.

3 The Department of Biomathematics

Bailey's departure, following those of Champernowne (whose chair was not refilled when he left) and Kendall, left Oxford very short of leadership in statistics. The university responded by upgrading Bailey's readership to a chair, now in Biomathematics, while the Unit of Biometry became the Department of Biomathematics. The new chair was filled in 1967 by the already distinguished statistician Maurice Bartlett. Bartlett read mathematics at Cambridge University, graduating in 1932. His appointment to the Oxford chair followed periods as Professor of Statistics at Manchester University, and then at University College London.

In 1969 the Oxford statistical scene was strengthened further by the appointment of John Kingman to a chair in mathematics at the Mathematical Institute. A Cambridge mathematics graduate in 1960, currently Professor of Mathematics and Statistics at the University of Sussex and still only 30 years old, Kingman had already made major advances in queueing theory and went on to outstanding further achievements both in research and in administration. He was elected vice-chancellor of the University of Bristol in 1985, and in 2001 became director of the Isaac Newton Institute at the University of Cambridge.

Kingman writes that 'Statistics in Oxford in 1969 was frankly a mess. Of course, Maurice (and his successor Peter Armitage) and I conspired to persuade Oxford to take statistics seriously... .' Bartlett's Department of Biomathematics at this time had grown to include four lecturers: John Anderson, Michael Bulmer, Bob Hiorns, and Francis Marriott. Bartlett himself continued a very active research life, the main emphases during his eight years in Oxford being on the theory of population biology, biometry, and the statistical analysis of spatial pattern.

In 1975 Bartlett retired, to be succeeded in 1976 by Peter Armitage as professor and head of department. Armitage graduated in mathematics from Cambridge University in 1944. For the remainder of the second world war he worked in the Ministry of Supply, the weapons procurement agency. He worked as a statistician for the Medical Research Council from

1947 to 1961. From 1961 to 1976 he was Professor of Medical Statistics at the London School of Hygiene and Tropical Medicine.

He writes, ‘The Professor of Biomathematics was automatically the Head of the Department of Biomathematics and a Professorial Fellow of St Peter’s College. On my pre-appointment visit to Oxford I was met at the station by my friend Richard Doll (who had recently been appointed to the Regius Professorship in Medicine) who immediately gave me three good pieces of information: Oxford is a highly complex institution, in the workings of which you are given little guidance; for a few months everyone will want to meet you, after which they will ignore you; and Oxford is full of very bright people.’

Also, ‘The Department of Biomathematics was the only department so-named in the UK. It was the smallest department in the Faculty of Biological Sciences, and was responsible for one or two courses in statistics and mathematics to students to undergraduates in biology, psychology and human sciences, together with a graduate course for the Diploma and MSc in Applied Statistics. A small number of graduate students were registered for research degrees. The existence of the Biomathematics Department was symptomatic of the general tendency in Oxford to separate specialists amongst different departments as well as between different colleges. Thus, statistics was taught to mathematics undergraduates by a group of statisticians in the Faculty of Mathematics led by John Kingman, while the name ‘statistics’ was jealously guarded by the Institute of Economics and Statistics. At the same time there were important research groups in the Faculty of Medicine, with statisticians such as Richard Peto supported by epidemiologists such as Richard Doll.’

Throughout his 13 years as head of the Department of Biomathematics, Armitage was assisted by the same four lecturers. These were in fact the same lecturers who had been there in Bartlett’s time, except that John Anderson was succeeded by John Bithell. The MSc in Applied Statistics remained the main teaching responsibility of the department, with 10 to 15 students per year.

All four lecturers became established figures in different aspects of the application of statistical methods to the life sciences. For example Bulmer’s book on the theory of genetics has achieved the status of a classic. Meanwhile Armitage focused mainly on medical statistics; he was an acknowledged expert in both the theory and practice of clinical trials, and served on the data monitoring committees for many trials.

4 Early Days of the Department of Statistics

‘During the 1980s’ Armitage writes ‘I felt increasingly that Oxford was losing out in the face of developments in statistics in other UK universities, and I pressed the case for a Department of Statistics which would present a clearer picture to the outside world’. Accordingly in 1985 the general board of the university appointed a working party under the chairmanship of Sir Claus Moser ‘To consider the position and organisation of statistics within the University, whether the present arrangements are satisfactory or whether changes are necessary and, if

so, to recommend them.’ Sir Claus was Warden of Wadham College and a former director of the Central Statistical Office.

The working party made a careful analysis of the organisation of statistics in Oxford, which it compared with the setup in a number of overseas universities. It found fragmentation to be ‘the dominant feature of Oxford statistics’ and concluded that ‘fragmentation has serious disadvantages’ as ‘statistics in Oxford presents a confusing picture to the outside world, in spite of individual achievements. This has an adverse effect on recruitment, both of staff and of students and affects the prospects for external funding. In short, the whole is less than the sum of its parts.’ Also ‘Absence of a central authority means that statistics lacks the platform from which to present its case adequately within the University’.

To provide the missing central focus, the working party’s report recommended the creation of a university statistics department. The new department was to include the former Department of Biomathematics, together with a new Professorship in Statistical Science and the two existing lecturerships in statistics within the Mathematical Institute, which were then held by Peter Clifford and John Gittins. Its administration was to be entrusted to the Mathematics Board, and to underline the hoped for broadening of outlook the Faculty of Mathematics was to be renamed the Faculty of Mathematical Sciences.

These major recommendations were all accepted by the university, and the chair in Biomathematics was also renamed as a chair in Applied Statistics. The new Department of Statistics was created in 1988, and moved to its present home at 1, South Parks Road in 1989. The first academic appointment was that of David Balding to a one-year junior lecturership.

Anthony Davison joined the department as a lecturer in 1989 and Colin McDiarmid, a lecturer in operational research under the Social Studies Board, was given a room in the department.

David Hinkley was appointed as the first Professor of Statistical Science from 1989. In 1990 Peter Armitage retired and was succeeded as Professor of Applied Statistics and as Head of Department by Brian Ripley. For several years the headship of the department then changed rather rapidly, with Ripley for two years followed by John Gittins for two separate years, sandwiching a two year stint by Hinkley, for whom the attraction of Oxford eventually proved insufficient to bring him and his family permanently over from the USA.

Hinkley is a leading authority on statistical bootstrap methods. Ripley has a world-wide reputation for his substantial contributions to statistical computing. In the department he has always been the senior academic with particular responsibility and concern for the provision of computing services and for the administration of the MSc in Applied Statistics. Gittins is an operational researcher, best known for his contributions to the theory of optimal resource allocation under uncertainty.

In 1996 Hinkley was succeeded as Professor of Statistical Science by Peter Donnelly, who also picked up the baton as head of department. At that time the new department was

functioning reasonably well and had grown appreciably. There were now 8 academic staff in addition to the 2 statutory professors and 16 research students. It was however a year in which the department scored an undistinguished rating of 4 in the national Research Assessment Exercise, no doubt partly because of a lack of stable leadership. At that stage there were no postdoctoral researchers.

5 Rapid Growth

Donnelly's appointment marked the start of an exciting period of development and growth. This owed much to his dynamic and inspirational leadership, both as head of department and subsequently. By 2005 there were 4 statutory professors, 19 other members of academic staff, 19 postdoctoral researchers and 50 research students, so on each of these measures the department had at least doubled in size over a 9 year period.

The following developments took place during this period.

2001, Opening of Bioinformatics Unit with initial joint research council funding of a new statutory professorship (Jotun Hein) and lectureship (Ian Holmes).

2002, Admission of first students to the new degree course in Mathematics and Statistics.

2002, Admission of first students to the new MSc in Bioinformatics, a joint venture with the Department of Continuing Education, with initial funding from EPSRC.

2002, Admission of first students to the new Doctoral Training Centre at the Life Sciences Interface, a joint venture with the Computing, Engineering and Physics Departments, with initial funding from EPSRC.

2003, Opening by Jim Watson, co-discoverer with Crick of the DNA double helix, of the Oxford Centre for Gene Function (OCGF), in a beautiful new building. This was funded by a £10M grant given in 1999 from a fund set up jointly by the government and the Wellcome Trust. The directors of this interdisciplinary venture were Frances Ashcroft (Physiology), Kay Davies (Anatomy) and Peter Donnelly (Statistics).

2004, Appointment of Steffen Lauritzen to the new statutory Professorship of Statistics. This new post was designed to provide leadership in main-stream statistical methodology, and was funded from existing DofS income streams.

These developments actually came to fruition during Gittins' next and final period as head of department (2001–05). However, Donnelly was the entrepreneur who made it all happen. One consequence is that Oxford University is currently (see Section 8) the leading British university in statistical research. Another has been to establish Oxford as internationally outstanding in research on mathematical and statistical genetics (see also Section 6).

Other innovations were the establishment of an annual Florence Nightingale general interest public lecture, and of an undergraduate introduction to research vacation bursary scheme.

A notable bonus to the department throughout this period was the presence of Sir David Cox, a quite amazingly productive researcher and writer, and arguably the world's leading statistician of his generation. Following his retirement as Warden of Nuffield College in 1994, he gave his time generously to the department, as lecturer and as research supervisor. In 2010 he was awarded the Royal Society's Copley Medal. This is the Royal Society's most prestigious medal. It is awarded for "outstanding achievements in research in any branch of science".

6 Mathematical Genetics and Bioinformatics

The main inputs for this section were provided by Gil McVean.

The study of genetics has long been a major theme of research within Oxford statistics. In 1969 Bob Hiorns co-led a famous genetically-based study into patterns of migration among the Otmoor villages around Oxford. Michael Bulmer worked on patterns of genome composition and published a biography of Galton; his classic text on quantitative genetics appeared in 1980. John Kingman made a number of important contributions to the theory of genetics, in particular his formulation of the coalescent in 1982. The coalescent is probably the most important advance in theoretical population genetics in the latter part of the 20th century. It studies the genetic composition of evolving populations by looking backwards in time and focussing on the ancestry of chromosomes sampled from the population.

The recent history of mathematical genetics in the DofS dates from the arrival of Peter Donnelly as Professor of Statistical Science and Head of department in 1996. Originally a DPhil student in Mathematics with John Kingman and then with Dominic Welsh in Oxford, he worked on theoretical population genetics while holding professorships in London and Chicago, as well as helping develop the statistical analysis of forensic genetic data. He was followed in 1997 by Alison Etheridge, whose work on stochastic processes includes applications within genetics and in 1998 by Bob Griffiths, who pioneered the use of coalescent models for inference in population genetics. In 2010 Griffiths became the fourth living Oxford mathematical/statistical geneticist to achieve the distinction of election as a Fellow of the Royal Society. The other three were Kingman (1971), Bulmer (1997) and Donnelly (2006).

In 2000 Gil McVean, who works on the process of genetic recombination, joined the department, followed by Jotun Hein (2001) as Professor of Bioinformatics, who has a long interest in genomics and population genetics. Further appointments of Charlotte Deane (2002), Chris Holmes (2004), Jonathan Marchini (2005), Geoff Nicholls (2005) and Simon Myers (2007), all of whose research has, or has had, a major focus on genetics or genomics, mean that Oxford now has one of the largest concentrations of researchers in population and statistical genetics in the world. Oxford is widely recognised as one of the best, if not the best, place in the world for mathematical and statistical genetics.

The group as a whole is known as the Mathematical Genetics and Bioinformatics Group. As well as the ten established academic staff already mentioned, as of December 2012 it

included nine postdocs and 48 research students. In addition to research in core statistics and stochastic processes, interests of members of the group range from protein structure prediction to genome annotation, demographic inference and disease genetics.

The international profile of the DofS was further enhanced by the involvement of several researchers in leading roles in large-scale genetics projects. The International HapMap Project (2002-2007, Donnelly, McVean, Marchini and Myers) characterised common genetic variation across the genomes of 270 people from around the globe. The Wellcome Trust Case Control Consortium (2005-2012, Donnelly, Marchini and Holmes) a UK based collaboration of 25 research groups led by Donnelly, mapped the genetic basis of disease susceptibility in many human diseases through genome-wide association studies and published the widely acclaimed landmark paper in this field in 2007. The 1000 Genomes Project (2008-2013, McVean, Marchini, Donnelly and Myers – McVean co-led the project) sequenced the genomes of over 1,000 people from across the world to define a map of genomic variation. Also a collaboration between Donnelly, McVean and Myers and their research teams from 2003 onwards has led to many new discoveries in the structure of recombination in humans and the identification of the gene that determines the location of recombination hotspots.

The work of the Mathematical Genetics and Biomathematics Group has achieved many marks of international recognition. Some of these are listed in Section 20. There have also been numerous invitations to give key-note presentations at major conferences. In 2007 Peter Donnelly became director of the interdisciplinary Wellcome Trust Centre for Human Genetics in Oxford. This is a joint appointment between the Nuffield Department of Medicine and DofS. The centre houses around 450 scientists (including postdocs and research students) in 40 research groups and includes substantial strength in statistical genetics.

7 Other Recent Developments

The entire recent history of DofS deserves a detailed account from someone with first-hand experience, as given in the previous section to the mathematical genetics and biomathematics side of things. Meantime here is a skeleton summary.

Heads of department: 2005-09 Colin McDiarmid, 2009-12 Steffen Lauritzen, 2012- Geoffrey Nicholls.

2006. Election of Tom Snijders to the new statutory Professorship of Statistics in the Social Sciences.

Election as Fellows of the Royal Society: Peter Donnelly 2006, Robert Griffiths 2010, Steffen Lauritzen 2011.

Election as Fellow of the Academy of Medical Sciences: Peter Donnelly 2008.

Between 1992 and 2012 there were 18 appointments as University Lecturer. Ten of these have strong interests in genetics and/or bioinformatics. Eight have been awarded the title of Professor. The names of all academic members of DofS are listed separately (see section 18). Further details of those still in post are given on the DofS website.

8 Research Assessment Exercises

In 1986 the first national Research Assessment Exercise (RAE) was carried out. Its purpose was to evaluate the quality of research in universities, and to use this assessment for each subject area as a basis for determining some of the funding to be allocated to each university. Further RAEs have been held in 1989, 1992, 1996, 2001 and 2008.

From 1992 onwards one of the units of assessment has been Statistics and Operational Research (SAOR). In Oxford this unit corresponds almost exactly with the DofS. For 1992, 1996 and 2001 subject areas were rated on a five-point scale of excellence, with the possibility of a top grade of 5* in 1996 and 2001. Oxford University Unit 22 scored 5, 4 and 5* in those years, respectively, for SAOR.

The 2008 RAE used a four-point quality scale, and returned a profile, rather than a single aggregate quality score. The quality profile shows the proportion of the research that meets each of four quality levels, the top two levels being 4* - internationally outstanding, and 3* - internationally excellent, though not of the highest standard. The Oxford submission for SAOR achieved 40% in category 4* and 90% in categories 3* and 4* combined. This was easily the best performance nationwide for SAOR, the next best university scoring 30% in category 4* and 75% in categories 3* and 4* combined and second among the 67 subject area submissions for Oxford University

9 Location

When David Finney became Oxford's first Lecturer in the Design and Analysis of Scientific Experiment in 1945 his accommodation was modest. He writes

'I began my Oxford life with an office comprising two large rooms in a tall Victorian house at 6 Keble Road. The rooms were initially completely bare, but I was authorized to find and purchase suitable furniture, calculators, and other essentials; in those immediately post-war months, these were not easy to obtain. After a few days, David Lack, whose Institute (of Field Ornithology) occupied the remainder of the house, kindly lent me a chair and a small table. Until then, I had been obliged to sit on the lower steps of the staircase, writing and working with papers on my knee. Eventually, delivery of a large second-hand desk, my own chair, and other furnishings enabled me to accommodate discussion with professional clients and a secretary.'

Keble Road continued to be the home of LIDASE, later the Unit of Biometry, for a while. In 1958 Nancy Amery joined the staff briefly as a Statistical Assistant, returning a little later. She writes:

‘In 1963 I was taken on again by Dr Bailey to look after the newly-installed computer - the first departmental computer in the university - which took up the whole of a large room at 7 Keble Road.

After Dr Bailey left and Professor Bartlett took over we moved (1968) to Pusey Street and became the Department of Biomathematics.

When Professor Bartlett retired, Peter Armitage was appointed (1976) and some time later (1978) Pat Searle came as secretary. Some years later (1984) the department moved to 5 South Parks Road - a rather splendid house with a nice little garden for lunch! A few years later and another move to a tall, narrow house in St Giles where we squeezed in with some difficulty. Then after a year or so it was back to 1 South Parks Road (1988).’

Thus in 1988 No. 1 South Parks Road became the home of the new Department of Statistics. It is a fine gothic style Victorian building, originally a private house. It became a Grade II listed building in 2004. Until 2012 it still housed the head of department (now next-door in 2 SPR) and the senior administrative officers. However the continued, for a time almost explosive, growth of the department has led to a parallel expansion of the department’s real estate.

In the 1990’s the department expanded into 2 South Parks Road, finally taking over the whole building in 2001. Also in that year DofS research groups working in mathematical genetics and bioinformatics moved into one and a half floors of the Medawar building adjoining the Zoology Department at the other end of South Parks Road.

In 2003 the Henry Wellcome Building of Gene Function (aka the Oxford Centre for Gene Function, or OCGF) was opened by Jim Watson, co-discoverer with Francis Crick of the DNA double helix. This inter-disciplinary venture was set up by the departments of Anatomy, Physiology and Statistics, with Peter Donnelly as Co-director representing Statistics. It is a fine purpose-built building in the Science Area near South Parks Road and houses DofS research groups working in mathematical genetics and bioinformatics and, unusually for a statistics department, laboratory facilities for experimental research.

10 Administrative, Financial and Secretarial

David Finney remarks that his assistant lecturer Michael Sampford, together with his secretary Mary Callow, ‘rapidly became the backbone of LIDASE’, and of course secretarial and administrative staff play a vital role in any university department. The DofS has been well-served in this way. Several of the following people have had a great influence on the smooth running and general tone of the department, nearly always very positively.

Mary Callow (after later marriage, Mary Parke) joined LIDASE as Secretary and Computing Assistant in 1947. Mary served until some point in the 1950s. Between 1958 and 1963 Kay Earnshaw became Secretary and stayed in post until shortly before her death in 1979. Kay was succeeded by Pat Searle, who retired in 1988, to be succeeded as Administrator/Secretary by Betty Green. Green in turn retired in 1995 and was succeeded by

Vivien Stchedroff, who died in office in 2001. Anna Beint was then appointed as Administrator and Jane Hornsby as Secretary to the head of department. This division of duties was in recognition of the greatly increased workload resulting from the rapid recent and projected expansion of the department. Simon Whitehead served for a year as Finance Officer from 2003. Hornsby left in 2004 and was succeeded by Christine Stone. Beint left in 2005, by which time Judith McIntyre had already (2004) been appointed as Senior Administrator. In 2004 Jennie Mckenzie was appointed as Financial Administrator and Jan Boylan as Academic Administrator. McIntyre retired in 2010 and was succeeded by Mckenzie as Administrator, with Boylan as Deputy.

The establishment of departmental groups in other locations led to corresponding secretarial provision. Victoria Hansford (2002-5) was initially based in the Medawar Building and later transferred to OCGF, where she was succeeded by Cathy Went (2005-6) and then by Madeline Mitchell from 2006. Maureen York was Administrator for the DTC during its stay (2002-5) in the Medawar building. From 2008 Beverley Lane has been based in Medawar, more recently as a PA. Other secretarial posts have been filled by Joan Braidwood (1975-99), mainly working with Bob Hiorns for the 'Journal of the Institute of Mathematics and its Applications', Catherine Richenburg (1980-4), Sarah Harrington (1991- 2), Anna Beint (1997- 9), Rita Thorpe (1995- 2001), Susan Wood (2002-7), Hazel Willoughby (2006), Eva Naszalyi (2006-8) and Emma Bodger (2008-).

11 Computing

Computing has always been a key feature of the DofS and of its predecessor departments. The first appointment made by David Finney as LIDASE was to the post of secretary and computing assistant. He writes 'I did not necessarily undertake analyses for those scientists who came to LIDASE for advice, but often this was the only effective way of giving help to someone who did not even have access to a barrel-type calculator. A consequence was that by the 1950s LIDASE was perhaps better equipped than any other part of the University for tackling large arithmetical tasks. One of these was my response to an appeal from the eminent crystallographer Dorothy Hodgkin for help in her current study of a crystalline protein that involved extensive accurate tabulations of simple trigonometric functions.'

In the 1940's and for some time after that the computing was done on mechanical and electrical desk calculators. Nancy Amery writes 'I first started work as a part-time statistical assistant at the Unit of Biometry in 1958 under Norman Bailey. All work was done on desk calculators at that time. There were two other girls doing similar work.'

In 1958 the Oxford University Computing Service was set up with the purchase of a Ferranti Mercury 'mainframe' electronic computer. The aim was to provide a computing service throughout the university. DofS was a major user of this service, to the extent that in 1964 the department was allowed to purchase its own Elliot 803 computer, the first departmental electronic computer in the university. It was managed by Nancy Amery. Bob Hiorns was appointed as a UL in 1967 with the responsibility of advising on the provision of calculators. Alison Margetts was computing assistant from 1985 to 1995.

The 1980's saw the rise in a big way of the personal computer and of work stations linked to compute servers. One of David Hinkley's first tasks on his appointment in 1989 was to replan the department's computing strategy. When Brian Ripley joined the department in 1990 he used his professorial dowry to set up a teaching lab, where students in a class sit at individual workstations. Ripley himself became chairman of the computing committee and with brief interruptions for leave has stayed in that post until 2013. His aim and achievement has been to ensure that the department enjoys a world-class computing environment. For the most part this has been based on the department's own computing staff and hardware. Two important milestones were in around 2000, since when every research student has had a computer on their desk and in 2004, when a second independent computer cluster was set up for researchers in mathematical genetics and bioinformatics.

As Ripley points out, people form the foundation of an effective computing service and the department has from LIDASE days onward been served by a well-functioning team. Amery having retired in 1989, Ripley's first task was to appoint a well qualified manager and Susan Hutchinson was appointed in 1990. Kenneth Wallace served as a computing officer for a year (1995-96) to cover Hutchinson's maternity leave.

As the department grew, the delivery of the computing service became more than a one-person job and Hutchinson was joined first by David Flitney (1997-98) and then by David del Campo (1998-) as computing officers. In 2001, Ashley Woltering became computer manager and Hutchinson became a part-time consultant. Saffron Greenwood joined the team as a second computing officer in 2003, bringing the team size up to around 3.5. Woltering was succeeded by Stuart McRobert in 2009.

12 Advisory Service

As its carefully worded title indicates, the main motivation for setting up the Lecturership in the Design and Analysis of Scientific Experiment in 1945 was to provide guidance to scientists in how to gather and analyse the data generated by their work. This role continued to be an important priority. For example, as mentioned in Section 2, but it is worth repeating, David Finney in a recent private communication writes as follows about his principles in that period. 'University statisticians, however strongly their personal research is directed at extending the mathematical or philosophical theory of their discipline, should see it as a duty to be willing to advise and collaborate with academic colleagues in any field where research or other activities can benefit from use of statistical principles and methods.'

From 1969, and throughout the 1970's and 1980's, there was a post of statistical research assistant. This post was occupied successively by Jennifer Brennan (later Pearce) and then Ioannis Vlachonikolis, both of whom offered consulting advice. There continued to be an expectation that academic members of staff would take part in this provision.

In more recent years most lecturers attached to the DofS have also been college tutors, with as a result substantial additional teaching loads. This, together with an increased emphasis on the production of top-class peer-reviewed research, has meant that advisory work is now

mainly carried out by specially designated people. These have included Matthew Eagle (1992-2002), Carmel Fung (1995), Mario Cortina Borja (1996-2000), Ruth Ripley (1999-2003), Paul Northrop (2000-1), Francis Marriott (2000-9), Wiesner Vos (2003-4), and Daniel Lunn (2010-), as well as a number of research students. A similar service was also provided over a long period by the university's Computing Service; the main advisors were Paul Griffiths (1972-2003), Glynis Jones (later Edwards) (1979-95), and David Rossiter (1986-2001).

In recent years the consultancy service has been available to research students and staff throughout the university on the basis of payment at an hourly rate, the first hour being free of charge. In the academic year 2011-12, 78.5 hours were charged.

13 External Advisory Panel

In 2005 the first meeting of the DofS External Advisory Panel took place. The members of the panel were Dr David Roberts (Chairman), Dr Simon Day, Dr Richard Durbin, Professor Byron Jones, Dr Merete Jørgensen, Dr Mark Mathieson, Dr Richard Saldanha and Mr Paul Thornton. Their backgrounds were the pharmaceutical industry (SD, BJ, MJ), financial services (MJM, RS, PT), genomic research (RD), and defence (DMR). Further meetings were held rather less frequently than annually, the meeting in 2012 being the sixth, at which point Dr Durbin and Mr Thornton had been replaced by Professor Andrew Lyall and Dr Paul King, with backgrounds in the pharmaceutical industry and financial services respectively. The other six panel members were the same as at the first meeting. The chairmanship switched from David Roberts to Simon Day at the fourth meeting in 2009.

The university's guidelines for EAPs were as follows.

'The meetings should provide an opportunity for the panel to contribute to teaching, learning and assessment strategy, course development, research training and broader strategic development and may suitably involve meetings (possible presentations) with staff and students, a tour of the premises (particularly where redevelopment is in prospect or underway) and an opportunity for feedback from panel members.'

Most meetings were for a complete day and focussed on the various issues facing the DofS along the lines set out in the guidelines. They have proved to be a useful means of encouraging clear thinking about our aims.

14 Mathematics and Statistics BA and MMath

In 2002 Oxford welcomed its first 27 undergraduates reading Mathematics and Statistics. This three or four year course (leading respectively to a BA or MMath degree) parallels closely the corresponding three or four year course in Mathematics, to the extent of having exactly the same first year lectures and examinations. In years two to four students choose from menus of lecture courses, menus which are very similar to those available to mathematics students. However Maths & Stats students choose half or more of their options from the list of Statistics courses, which is not a pathway available to straight Maths students.

Fourth year Maths & Stats students also write a dissertation on a topic in statistics. Crucially, the courses listed under Statistics, and the rules governing choices for Maths & Stats students, are devised by members of the Department of Statistics. This has been an important step in allowing statistics to flourish as a subject in its own right, not simply as a branch of, or an adjunct to, some other subject.

The numbers admitted have been consistently close to 27 per year, apart from 2012, when there were only 12. Over the eight years from 2003 to 2010 the total number admitted was 214, with 26 admitted for 2013. Of the 214, 74 were Home and EU students, with 140 from elsewhere, almost twice as many, a much higher proportion from outside the EU than the 11% for the University's 2012 undergraduate entry across all subjects or the 25% for straight Maths. Perhaps Asians like their studies to carry a label which emphasises their usefulness.

Immigration, particularly at the end of the first year, and particularly from straight Maths, has meant that when they completed (are about to complete in the case of the 2010 entry) their third year, the 214 starters had become 269 finishers, an average of 33.6 per year.

15 Actuarial Science and the Institute of Actuaries (IofA)

The main inputs for this section were provided by Matthias Winkler.

For many years the actuarial profession has been high on the list of careers for Oxford mathematics graduates. In 1990 the IofA transferred its teaching and research library to Oxford, and from around this time looked much more to universities to provide professional training than it had done previously. So it was natural, and not before time, that in 2000/01 for the first time Oxford mathematics undergraduates were offered a course of 32 lectures in Actuarial Science as one of their third year options.

The lecture course, together with classes, was given free of charge for the first two years by Spencer Bowman, an actuary working for the firm Watson-Wyatt. In April 2002, Matthias Winkel was appointed to a Departmental Lecturership in Actuarial Statistics, which was funded by the IofA for three years, and then for a further two years by the insurance company Aon. From 2002/03, the DofS was also able to call on Peter Clark, former President of the Institute of Actuaries, to provide lectures and classes in Actuarial Science, until his untimely death in 2006. Further reinforcement has been provided by James Martin, who was appointed to a University Lecturership in Actuarial Statistics in 2005 and Daniel Clarke, a Departmental Lecturer in Actuarial Science since 2006.

These lecturers have maintained the Actuarial Science lecture course up to date, and it has remained very popular for both Mathematics and Mathematics and Statistics undergraduates. In recent years the annual numbers attending the course has been over 90. Successful completion of the course confers exemption from the IofA Financial Mathematics paper. Since 2003/04 the lecture course has also been available to students taking the MSc in Applied Statistics.

Since 2004/5 a course of 16 lectures in Statistical Lifetime Modelling has also been available to undergraduates. This confers exemption from the IofA Models paper. Undergraduates taking third year courses in probability and statistics can also receive exemption from the IofA Probability and Mathematical Statistics paper, so this means that exemptions from three of the nine IofA ‘Core Technical’ papers which form part of the IofA requirements for professional qualification may be obtained by undergraduates who select appropriate optional courses.

16 MSc in Applied Statistics

This one-year taught course started life as a diploma course in 1946. It was run by David Finney with the help of David Champernowne. It is the longest-lived graduate statistics course in the UK and has always been an important strand in the department’s mix of activities. The word ‘applied’ in the name of the course bears witness to the department’s consistent aim, right from the outset, to be firmly rooted in practical applications.

Writing of his time as head of department (1976-89), Peter Armitage says

‘The MSc course in Applied Statistics provided the main teaching responsibility of the Department. Like other MSc courses in statistics in the UK, it was a one-year course, of which the summer vacation period was devoted to a practical project. Students not doing the practical could register for a Diploma rather than MSc. There were usually 10-15 students on the combined course, most of whom would take the MSc’.

In the 1990’s the overall setup and numbers of students remained much the same. There were, however, substantial developments in course content, guided by Brian Ripley, who since his appointment in 1990 has been responsible for the scientific direction of the course. Ripley’s overall aim has been the promotion of good statistical practice, both in the UK and more widely.

From 2001 onwards there has been substantial growth in the numbers of students taking the course. These were in the high twenties from 2002 to 2005, and have since been in the low forties. Since 2005 the Course Co-ordinators have been Tim Heaton (2005-8), Amber Tomas (2008-11) and Sofia Massa (2011-).

There have always been substantial numbers of overseas students taking the MSc. Ripley estimates that since 1990 their proportion of the total has risen from around 50% to around 60%. Recently most of these have come from South-East Asia, with increasing numbers from India.

17 Doctoral Training Centres

The main inputs for this section were provided by Charlotte Deane.

In the year 2000 Oxford University set up a new administrative structure based on academic divisions. The DofS became part of the Mathematical and Physical Sciences Division, to

which Life Sciences were added in 2007. Within the MPLS Division there are currently three closely related interdisciplinary Doctoral Training Centres. These provide a comprehensive training programme for graduates wishing to undertake research careers in the exciting new interdisciplinary fields opening up at the conjunction of the physical and life sciences. Students take a roughly 6 month run of taught modules, then explore possible DPhil research topics through two short projects before deciding on a three year DPhil research project in a particular department. Over the past 10 years, the DTCs have established themselves as a major focus of interdisciplinary graduate training, setting a higher standard for graduate teaching across the university.

The DofS has been involved in these programmes from their start in 2002, when the first programme, the Life Sciences Interface (LSI) Doctoral Training Centre, was established through funding from EPSRC. The first cohort of nine students were based in the Medawar building alongside DofS research groups and this physical proximity helped to foster the strong relationship between the DofS and the DTC which had been intended in the original concept. The programme was designed to offer a broad training programme to facilitate leading-edge research in the mathematical, physical, and engineering science techniques that underpin the Life Sciences Interface. The DofS, and in particular the research of the Mathematical Genetics and Bioinformatics Group led by Peter Donnelly, was one of the four foundation pillars on which the LSI project rested, the others being research groups in the departments of Physics (Bionanotechnology) Engineering Science (Medical Imaging and Signals) and the Computing Laboratory (Integrative Biology).

LSI students undertook modules in a wide range of potential research areas from bioinformatics to biological physics, along with others designed to equip them with more generally applicable skills, including programming, presentation techniques and bioethics. They were empowered by the DTC's research training programme to take a completely new perspective on research, with the knowledge, skills and ability to draw upon a wide range of techniques from multiple disciplines not usually found in any individual researcher. Building on this model the DTC team has itself been able to expand substantially over recent years. A second programme, Systems Biology (in collaboration with the university's Centre for Integrative Systems Biology), began in 2008 and a third, Systems Approaches to Biomedical Science, in 2009. In total these programmes currently admit around 40 students each year.

The DofS has played a significant role in all aspects of DTC life. Statistics staff currently run two DTC modules annually and contribute substantially to a third; a wide range of the DofS post-docs and postgraduate students also participate in this teaching. The broadest level of contact between the DTC and Statistics has been through short projects and DPhil research. Since 2002 most academic staff engaged in research relating to statistical genetics and bioinformatics have supervised DTC DPhil research. In total there have been 14 DofS supervisors. Together they have supervised the doctoral research of no less than 43 DTC students; 30 on the original LSI programme, with an additional 9 from SysBio and 4 from SABS. 16 of these students have completed their degrees to date. As the DTC model seems

to be increasingly favoured as a method of preparing students for doctoral research, this fruitful relationship looks to have an excellent future.

18 Data Base

We plan shortly to put online at http://www.stats.ox.ac.uk/about_us/ lists of academic and research staff who have belonged either to the department or to one of its predecessor units, together with a list of DPhils awarded. If you would like your name to be excluded from these lists please email us as soon as possible at history@stats.ox.ac.uk. We will then ensure that your name does not appear, or will remove it if it already has appeared.

Academic Staff

The list will include links to sources of personal information, as far as possible specified by the person concerned. For current staff it may be sufficient simply to refer to the departmental web pages. In many other cases Wikipedia provides a good initial reference.

Postdoctoral researchers

By a postdoctoral researcher we mean someone who holds a temporary research post and we list those whose departmental base is or was the DofS or one of its predecessor departments. Many of the people listed have been funded by research grants held by particular academic principle investigators, in which case that person is also listed as the ‘supervisor’. In other cases there is no specific supervisor, for example for college junior research fellows affiliated to the DofS, in which case the type of post is listed.

DPhils

Successful DPhil submissions which were supervised within either the DofS or by a statistician in one of its predecessor departments.

19 Past and Present Oxford Statistics Groups

Oxford University had no official Department of Statistics until 1988. Since then there have continued to be more statisticians outside DofS than inside, which is probably no bad thing. In this section we take a brief look at the distribution of statistical expertise across the university. As well as the groups mentioned here there have been some relatively isolated individuals who have taught statistics to biologists, notably Colyear Dawkins in the Department of Forestry and Alan Grafen in the Department of Zoology.

1935 Institute of Statistics – 1962 Institute of Economics and Statistics – 2000

The first official Oxford base for the study of statistics resulted from the efforts of a group of economists who in 1935 set up the Institute of Statistics under the direction of Jacob Marschak. The main emphasis of the institute, not surprisingly, was from the outset on

economic statistics. This was recognised in 1962 by a change of name to the Institute of Economics and Statistics. In 2000, in the context of a general review of the university's departments and faculties, the institute was absorbed into the new Department of Economics.

The institute was the home of a steady stream of distinguished, mainly economic, statisticians. These include, in roughly chronological order, Jacob Marschak, Arthur Bowley, David Champernowne, John Hammersley, Frank Burchardt, Lawrence Klein, Gerhard Stuvell, Arthur Hazlewood, Christopher Winsten, N Schwartz, R W Bacon, David Hendry, Neil Shephard and Stephen Nickell.

David Hendry was Director from 1982 to 1984. He writes as follows.

'Lawrence Klein, the Nobel Prize winner, who worked there from 1954 to 1958 during the McCarthy era, helped develop the first UK macroeconomic model. The IES focused more on development economics after that under Teddy Jackson. When he retired in 1982, the University proposed closing IES as part of the savings needed, but offered me (newly arrived from LSE) the chance to run it (unpaid) to see if it could pay its way. I renegotiated the royalties accruing to its Bulletin sufficiently to fund a full-time director and in 1984 Steve Nickell was attracted to that role, which he held until the IES was merged into the new Department of Economics. My main objective (beyond fund raising) was moving the IES and its Bulletin firmly back to its statistical base, and achieved that fairly quickly by being at the forefront of the cointegration wave, soon becoming one of the most cited 'statistics' journals though read by few non-economics statisticians!'

1937 Nuffield College

Nuffield College is a graduate college of the university specialising in the social sciences, particularly economics, politics (especially psephology), and sociology. It had close ties with the Institute of (Economics and) Statistics, many of whose members were fellows of the college. Stephen Nickell was Warden from 2006 to 2012. Other statistician fellows have included Terence Gorman, Klim McPherson, Clive Payne, Lucy Carpenter, David Firth and Tom Snijders. David Cox was Warden from 1988 to 1994.

<http://www.nuffield.ox.ac.uk/>

1945 Lecturership in the Design and Analysis of Scientific Experiment

1954 Readership in the Design and Analysis of Scientific Experiment

1956 Biometry Unit - 1967 Biomathematics Department - 1988 Statistics Department

This unit was set up around David Finney on his appointment as a lecturer in 1945. It evolved and grew to become the present Department of Statistics. This development is one of the main themes of this history.

<http://www.stats.ox.ac.uk/>

1966 Mathematical Institute

Before the creation of DofS in 1988, and indeed before the opening of the Mathematical Institute in 1966, a good deal of the responsibility for teaching and research in statistics was borne by mathematicians, as described in Sections 1, 2 and 3. In the 1970's and 80's these included Peter Clifford, William Eplett, John Gittins, John Hammersley, John Kingman, Daniel Lunn, Bernard Silverman, Adrian Smith, David Stirzaker, Bruce Turnbull and Dominic Welsh. After the foundation of the Mathematical Institute it became the focus for this work. This responsibility, together with two university lecturers, was transferred to DofS in 1988. The Mathematical Institute officially became the University's mathematics department in 2000, and the links between the two departments remain strong.

<http://www.maths.ox.ac.uk/>

Medical Statistics

Oxford has long been a major centre for medical statistics. For example Walter Bodmer, Peter Donnelly and Richard Peto are all Oxford professors with strong interests in medical statistics and Fellows of the Royal Society, as was Richard Doll. Their work, and that of the many other Oxford medical statisticians, took place in a variety of different departments and units. The following list covers the major current statistics groups.

1968 Cancer Epidemiology Unit

The unit was formed by Richard Doll in 1968. Valerie Beral has been director since 1988. The main emphasis of research is on providing large-scale reliable evidence on the relationship between common exposures and common conditions of public health importance. In 2012 there were eight statisticians in the unit. The unit is part of the Department of Clinical Medicine.

<http://www.ceu.ox.ac.uk/>

1975 Childhood Cancer Research Group

The group was established in 1975. It was built around the National Registry of Childhood Tumours. This has been developed as an exemplar for childhood cancer classification and registration. The group also undertakes a wide range of epidemiological studies of all types. From 1975 until 2002 its director was Gerald Draper, who handed over to Michael Murphy, the present director.

<http://www.ccrp.ox.ac.uk/website.htm>

1975 Clinical Trials Service Unit

The unit was established in 1975 under the direction of Richard Peto, who is currently co-director. Its work chiefly involves studies of the causes and treatment of chronic diseases such as cancer, heart attack or stroke. In 2012 there were 19 statisticians in the unit,

including Sarah Darby, Richard Gray, Sarah Parish and Susan Richards, as well as Richard Peto.

<http://www.ctsu.ox.ac.uk/>

Department of Public Health

The department's areas of expertise include global health research, healthcare epidemiology, health economics, bioethics, infectious disease and cancer epidemiology, perinatal and occupational epidemiology, measurement of health status and health outcomes, cardiovascular disease prevention, health systems and evidence synthesis.

<http://www.dph.ox.ac.uk/>

1978 National Perinatal Epidemiology Unit. The unit is part of the Department of Public Health.

The purpose of the unit is to produce methodological rigorous research evidence to improve the care provided to women and their families during pregnancy, childbirth, the newborn period and early childhood, as well as promoting the effective use of resources by perinatal health services.

For many years the two statisticians in the unit were Alison Macfarlane and Diana Elbourne. Numbers have since risen, and in 2012 there were seven statisticians. These included Edmund Juszcak and Maria Quigley.

<https://www.npeu.ox.ac.uk/>

1994 Wellcome Trust Centre for Human Genetics.

The centre is part of the Nuffield Department of Medicine. It was opened in 1994 under the direction of the geneticist Mark Lathrop. Peter Donnelly, the present director, was appointed in 2007. It is composed of scientific research groups that work to understand the genetic foundations of human variation and disease through multi-disciplinary research. In 2012 scientists with a strong interest in statistical issues included Peter Donnelly, Gerton Lunter, Jonathan Marchini, Gil McVean, Andrew Morris, Richard Mott, Simon Myers, Chris Spencer and Krina Zondervan.

<http://www.well.ox.ac.uk/>

1995 Centre for Statistics in Medicine

The centre was established in 1995 under the direction of Douglas Altman. Its main aims are to collaborate in health care research, to conduct applied statistical research, and to run training courses and workshops for health care workers and statisticians. The CSM is within the Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences.

From 2 staff initially, in 2013 CSM has 25 staff including about 17 statisticians.

<http://www.csm-oxford.org.uk/home/>

1998 Department of Primary Care Health Sciences

In 1998, senior statistician Pat Yudkin was a founding member of the Department of Primary Health Care, becoming University Lecturer in Medical Statistics when the post was created in 2000. Rafael Perera, a former student of Brian Ripley and Francis Marriott at DofS, joined DPHC in 2002 and, after Yudkin's retirement, succeeded her as University Lecturer in Medical Statistics in 2007. Under Perera's direction the statistics group within the department (now Department of Primary Care Health Sciences (DPCHS)) expanded and in 2013 consists of nearly 20 people including 11 statisticians, 4 graduate students, and related specialists such as systematic reviewers and data managers.

The group's main activity is to provide support to the applied research carried by the DPCHS which in some cases include developing new methodological approaches. The group is also responsible for the teaching of Statistics to medical students.

<http://www.phc.ox.ac.uk/>

20 Honours

Oxford statisticians have received the following honours. This is an incomplete list.

Knights

David Cox 1985, John Kingman 1985, Richard Peto 1999, David Hendry 2009.

Fellows of the Royal Society

David Finney 1955, Maurice Bartlett 1961, David Kendall 1964, John Kingman 1971, David Cox 1973, Patrick Moran 1975, John Hammersley 1976, Richard Peto 1989, Bernard Silverman 1997, Michael Bulmer 1997, Peter Donnelly 2006, Robert Griffiths 2010, Steffen Lauritzen 2011.

Fellows of the British Academy

David Champernowne 1970, David Hendry 1987, Steve Nickell 1993, David Cox 1997, Neil Shephard 2006, David Firth 2008.

Fellows of the Academy of Medical Sciences

Richard Peto 1998, Klim McPherson 1998, Peter Donnelly 2008, Douglas Altman 2011.

Guy Medals

Guy Medals are awarded by the Royal Statistical Society in three categories: Gold, Silver and Bronze. The Gold Medal is awarded triennially, the other two are awarded annually.

The Guy Medal in Gold is awarded to those "who are judged to have merited a signal mark of distinction by reason of their innovative contributions to the theory or application of statistics". It can be awarded both to fellows (members) of the Society and to non-fellows.

The Guy Medal in Silver is awarded only to fellows and recognises a paper or papers "of special merit" formally presented at an Ordinary Meeting of the Society or published in its journals.

The Guy Medal in Bronze recognises a paper or papers presented at any meeting or conference run by the Society or by one of its sections or local groups, or published in the Society's journals. It is awarded only to fellows of the Society and members of one of its local groups or sections, with preference given to those under 35.

Gold Medal

Francis Edgeworth 1907, Maurice Bartlett 1969, David Cox 1973, David Kendall 1981, Peter Armitage 1990.

Silver Medal

Maurice Bartlett 1969, David Kendall 1955, David Cox 1961, Peter Armitage 1978, John Kingman 1981, John Gittins 1984, Richard Peto 1986, Bernard Silverman 1995, Steffen Lauritzen 1996, Peter Donnelly 2004, David Firth 2012, Brian Ripley 2013.

Bronze Medal

Peter Armitage 1962, Bernard Silverman 1984, David Hendry 1986, David Firth 1998, Matthew Stephens 2006, Paul Fearnhead 2007, Chris Holmes 2009, Nicolai Meinshausen 2011.

Weldon Memorial Prize

The prize is awarded 'without regard to nationality or membership of any University to the person who, in the judgement of the electors, has, in the ten years next preceding the date of the award, published the most noteworthy contribution to the development of mathematical or statistical methods applied to problems in Biology.'

David Finney 1956, Maurice Bartlett 1971, David Kendall 1974, David Cox 1983, Richard Peto 2003, Peter Donnelly 2008, Gilean McVean 2012.