JERZY NEYMAN

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I. NEYMAN'S EARLY LIFE, AND SUBSEQUENT CAREER
BY D. G. KENDALL

The early years of Jerzy Neyman are known to us through anecdote rather than through record. Amplification of the few facts set out here must await substantial archival work, mainly in Poland and in the Soviet Union. Further information will be found in Reid [**R19**].*

Neyman was born on 16 April 1894 at Bendery, which lies in Moldavia on the banks of the river Dniester about sixty miles from its outlet into the Black Sea at Odessa. He was the son of Polish parents, Czeslaw Neyman and his wife Kazimiera Lutoslawska. A family tree compiled by Stanisław Warchałowski (a member of a branch of the family now living in Brazil) goes back to about 1700. Jerzy Neyman appears on this together with a brother Karol, these two being the only children of the couple just named, apart from two daughters who died in infancy. The father Czeslaw Neyman is listed there as one of the numerous children (tradition tells us that there were eleven sons and three daughters) of Hermogenes Spława-Neyman, Marshal of the gentry in the district of Kaniow, who in turn is shown as one of the two sons of Sebald Spława-Neyman, whose wife was a Chrząszczewska. Here the tree stops; no dates of births or deaths are given but the names are grouped into 50-year intervals; thus Sebald Neyman is in the 1700–1750 group, and Jerzy Neyman is in the 1850–1900 group. The same tradition makes Czeslaw five years of age in 1863, so born about 1858; he is also described as being the youngest of the eleven sons, so that Hermogenes may have been born about 1813. Very tentatively, therefore, we can think of Sebald as being born say during the period 1753–1783, or at any rate not earlier than the very end of the stated period 1700–1750. These details will be important in what follows.

A large correspondence has been generated by my enquiries about the prefix 'Spława'. All of Jerzy Neyman's earliest scientific articles are published as by 'Jerzy Spława-Neyman' or 'J. S. Neyman'. It has been pointed out to me that these would have been communicated by the senior scientist to whom he was then responsible. As soon as he gained scientific independence, and could submit his work directly to editors, he always described himself as 'Jerzy Neyman' or 'J. Neyman'. The 'S(pława)' was dropped, and he did not care for it to be referred to. 'It is the coat of arms', he said to me testily and (I thought) obscurely on the one occasion when I asked about it. This remark seems to have given rise to a tradition that 'Spława' is a Polish prefix

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* Numbers prefixed by **R** relate to items in the list of References.

J. S. NEYMAN IN WARSAW, APRIL 1974
(Portrait by permission of the magazine *Poland*; inset MS. arms by permission of the Syndics of the University Library, Cambridge.)

facing p. 160

cognate with the English suffix 'Esquire' (in its strict sense, meaning 'armigerous'), but we now know that this interpretation is wrong. I am greatly indebted to Michael Maclagan, F.S.A., Richmond Herald of the College of Arms, for clarifying the situation and pointing me in the right direction for further enquiries. He found in the *Armorial Général* of Rietstap [**R20**] the following entry under 'Neymann or Neymann-Spława':

de gueulles, à deux bandes ondées d'argent;
casque couronné; cimier, un vol d'argent.

The coat is illustrated by Rietstap, and he further notes 'ennobled 26 October 1775'. There is a similar reference under 'Neyman' in the *Herbarz Polski* of Stupnicki-Niesiecki [**R21**], but here there is no illustration and no further detail.

Further searches led me to Ostrowski's *Księga Herbowa Rodòw Polskich* [**R18**]. This huge work contains illustrations of a vast number of Polish coats, with a valuable commentary. The copy of this book in the Cambridge University Library is incomplete, but it has been completed in manuscript, and the quotations which follow come from the MS. additions.

Thus there is an ink drawing (number 3502) of the above coat (with crest, consisting, however, of two wings), listed as 'Spława'; it is shown here as an inset to the photograph of Jerzy Neyman. Before giving the commentary it is necessary to remind the reader of some of the unusual features of Polish heraldry.

For our purposes it will suffice to give what is perhaps an oversimplified account of an extremely complicated situation. Roughly speaking, each Polish nobleman has two inherited names; one of these is what we should call his surname (e.g. 'Neyman'), and the other is his *Herb* or armorial name (e.g. 'Spława'). The *Herb* is also the name of the coat-of-arms itself, i.e. *of the actual device.* It is further the name of what may be a very extended 'clan' of related *or unrelated* families each one of which bears this coat, or some slight variation of it. There is no necessary implication that the families within the *Herb* are descended from a common ancestor, and indeed completely unrelated families could be and sometimes were admitted to and incorporated within a particular *Herb* at the time of ennoblement. One work on the subject (Gumowski [**R10**]) lists 26 such *Herb*-clans each containing more than 100 distinct families, and mentions a particular *Herb*-clan containing more than 500 families.

Another general point concerns the charges on early Polish arms. To western eyes these seem very strange, and remind one of masons' or merchants' marks; some at least of them are thought to be of runic origin. Later such 'runic' charges were 'filled out' to resemble traditional western charges, and then it became possible to describe them using the accepted language of western heraldry.

We now return to the MS. entry under 'Spława' in Ostrowski's work. This is

SPŁAWA: Nadany wraz z nobilitacya Mateùszowi Neymanowi,
właścicielowi dóbr Sierosław w poznanskiem,
26 października 1775 roku przez Stan. Aùgùst.
króla polskiego. (Vol. Leg. VIII, 310; *Małach. Nies. Przyp.*
Riet. Bork. Zem.)

This is a record of the grant of arms to and ennoblement of Mateusz Neyman by Stanislaus Augustus, King of Poland, in respect of his estate Sierosław in the Poznan district, on 26 October 1775. The entry makes it clear that Mateusz Neyman is *either*

being granted a new coat Spława (as illustrated) with *Herb*-name Spława, *or* is being admitted into a previously existing *Herb*-clan Spława. In either case he and his descendants would subsequently be known by the appellation Spława-Neyman. We do not know it as a fact, but it seems very plausible that this Mateusz was the father of Sebald.

It now becomes of interest to look for early occurrences of the *Herb* Spława, but I have found none. There are, however, two early references (in [**R22**]) worth noting in this connection.

One refers to a marriage between W. Spławia of Poznan and Dorota Spławska; the date is 1620. However, 'Spławski' is a family-name and not a *herb*-name; its *herb* is 'Leliwa' and the arms are entirely different from those of Spława.

The other reference is dated 1519, and is a proclamation by King Sigismund I concerning the entitlement to nobility of three of his mercenary knights in the Grand Duchy of Lithuania. It is of interest because

Joannes de Spławye Posnaniensis, judex,

occurs among the sponsors together with 'magnificus Nikolaus de Lubrancz palatinus'. From the description of Joannes we cannot tell what his *herb* may have been; the form of reference suggests that 'Spławia' is here being used as the name of an estate (again in the region of Poznan). It appears that a *herb*-name could have many alternative derivations. Thus it could be a war-cry, it could actually describe the principal charge on the coat (although in that case it will never be obvious which gave rise to which), or it could be a family- or estate-name.

In fact the Polish word 'Spław' describes something floating, and 'Spława' can mean a confluence of two rivers. Thus it would be interesting to look for an estate near Poznan and situated between two rivers at their confluence.

We can now supplement the above general discussion based on at least one or two solid facts, with further but now anecdotal detail supplied to me by Professor Elizabeth Scott. She writes as follows.

> 'Spława-Neyman was his official name in the Polish book of nobility (in the second book he always said, indicating that his family was not high up). The name is believed to have been awarded for help in defending a Polish city against the Teutonic knights. The word "spława" is said to mean "two rivers", and these rivers are on the coat of arms of the Neyman family'.

It is not clear what period of history is being referred to here. If the reference is to the battle of Grünberg, 1410, then perhaps the Spława-coat goes back to that, but we have no evidence for this. The observation that the two silver wavy bendlets in the coat (on a red field) can be and were interpreted as two rivers is most interesting, and it makes it clear that we may have here to do with a *herb* whose name is a literal description of itself, as well perhaps as a geographical description of an estate, and possibly also a military recollection referring to a river-battle. Later, Professor Scott told me of a family photograph-album bound in a cover decorated with a repeating pattern containing, in alternate cells, a representation of a sailing ship, and the (reflected) Spława coat as previously described. She also mentions another tradition (somewhat discounted by Neyman) about the floating of supplies across a river on a raft, to relieve a besieged Polish king.

A final comment is that the wavy bendlets in the Spława coat could originally have been two 'parallel' zigzag lines of runic character, later 'filled out' to become

bendlets. This would give the original coat a more characteristically Polish appearance. But that is just speculation.

Professor Scott goes on to say that Neyman's grandfather (that would be Hermogenes) participated in an insurrection against Russia in 1863. Hermogenes was killed, his home was burned, and ten of his sons were sent to Siberia. The eleventh and youngest son, about five years of age at the time, was Neyman's father Czeslaw. He was spared, but was forbidden to live in or to visit Poland. By 1894 he was practising as a judge in Bessarabia, but six months after Jerzy Neyman's birth he was transferred to Simferopol' in the Crimea, where he died when Jerzy Neyman was twelve years of age. The family then joined Mrs Neyman's brother in Kharkov. It is of interest that Jerzy Neyman revisited this old home many years later when he was in the Soviet Union for a meeting of the International Astronomical Union, and making a tour of the observatories in the south of that country.

It appears that the Neyman family owned estates in the Ukraine, and so they would have been called 'eastern Poles' rather than 'western Poles'. It is said that Jerzy Neyman's 'eastern' Polish origin was quite obvious to his friends in present-day Poland, and that it was reflected in his accent, in his ideas about Polish cooking, and in his behaviour in general. His devotion to Poland and its culture and traditions was very marked, and when his influence on statistics and statisticians had become world wide it was fashionable (and still is) to say that 'we have all learned to speak statistics with a Polish accent', so perhaps it is worth while noting just what kind of a Polish accent this was.

J.N. (as I shall now call him) was educated as a mathematician at the University of Kharkov, 1912–16. After this he became a Lecturer at the Kharkov Institute of Technology with the title of Candidate. When speaking of these years he always stressed his debt to Sergei Bernstein, and his friendship with Otto Struve (later to meet him again in Berkeley). His thesis was entitled 'Integral of Lebesgue'. I do not know if it was ever published in full; the paper [**I2**]* seems to have been an extract. There is a copy of the thesis in Berkeley.

During the turbulent years that followed J.N. was arrested as an enemy alien, and later forcibly sent to Poland in an exchange of prisoners. Thus the random fortunes of war forced J.N. to leave the land of his birth and take up residence in the land of his fathers, and these same events also caused him to abandon a career in pure mathematics and turn to statistics.

At first in Warsaw J.N. worked in association with Sierpinski on the Lebesgue integral and related topics, but what he needed was a job, and in 1921 he found one as statistician in the Institute of Agricultural Research at Bydgoszcz, halfway between Poznan and Gdansk. Later he moved to Warsaw as Head of the Biometric Laboratory in the Nencki Institute. His work in Poland lasted until 1934 (by which time he ranked as a Docent), and included some association with the University of Cracow which I have not been able to trace. This was the year of his appointment first as special lecturer and then as Reader in Statistics at University College London, and from then onwards his career developed in the U.K. and later in the U.S.A. But he made repeated visits to Poland where he had many friends, which he deeply loved, and where he was respected with great and increasing affection. Some of us remember with intense pleasure the 80th birthday party [**R4**] offered to him by the Mathematical Institute of the Polish Academy of Sciences in 1974, on which

* References in this form are to Part I of the Bibliography.

occasion he became an honorary D.Sc. of Warsaw University, possibly the one of his numerous honours that pleased him the most. The photograph illustrating the present memoir was taken on that occasion.

Professor M. S. Bartlett in a later section gives a detailed account of the U.C.L. years, and of Neyman's interaction with E. S. Pearson and R. A. Fisher. But there was also, and first, an interaction with Karl Pearson; I recount this incident as I heard it from J.N. himself.

It was made clear to Neyman that his visits to London and Paris, first on a Polish government fellowship in 1924/5, and then as Rockefeller Fellow in 1926, would make or break his reputation as a statistician in Poland, and that it was vital for his future career that he should carry back with him the seal of K.P.'s approval. J.N.'s knowledge of English at that time was poor, and the two men could only communicate with difficulty. K.P. suggested to him that he should study the statistical dependence of the sample variance s^2 on the sample mean m; J.N. replied 'I have solved that problem already; I did it in Poland'. K.P. was delighted and insisted that an English translation be prepared and published in *Biometrika* [**I11**]. But the translation was found to be linguistically unacceptable. 'See here', said K.P., 'you must not say that in certain circumstances s^2 and m are *independent*; the word we use in England is *uncorrelated*'. This led at once to a severe breach, and for some time J.N. was in deep disgrace, and convinced that his future as a statistician was doomed. In despair he turned to J. O. Irwin, who contrived with the assistance of E.S.P. to placate K.P., and then to explain to him the nice distinction that was intended. One morning after this, K.P. came into the Laboratory with the MS. paper in his hand and said 'You remember I told you that your English is dreadful; you must not use the word *independent*; what you must say is that in these circumstances s^2 and m have a joint distribution which can be factored in such a way that...'.

J.N. liked to call this story 'How Dr. Irwin saved my life', but I have always felt that, while we must be grateful to Irwin for bringing it about, the reconciliation between the two men reflected equal credit on each of them. In later years J.N. was to strive for a similar reconciliation with R.A.F., but that was never to be achieved.

The marvellously productive period at U.C.L. is fully described by Professor Bartlett; we must take up the story again in 1938 when J.N. left the U.K. for the U.S.A., and U.C.L. for Berkeley. I have seen it stated somewhere that J.N. had the choice of two offers from the U.S.A. at that time. One was to Berkeley, where no statistics activity existed, and the other was to another prestigious institution where the subject was already richly developed. As we all know, J.N. chose Berkeley as a place where he could build a department along his own lines; what emerged was the Statistical Laboratory to which all statistical magnets now point.

Both J.N. himself and some of his colleagues have written about the Berkeley years [**I160, R15, R16**] but none of these articles gives much detail about the building up of the Laboratory. I hope that this omission will be repaired in one of the numerous obituaries now no doubt being written. When I went to Berkeley in 1953 the task was complete; it was already eight years since the first of the six famous Berkeley Symposia, and one knew that one was visiting 'the world headquarters'. The Symposia had already established a beaten track to Berkeley, and one that was open to everyone to tread because J.N.'s large collection of projects funded by public bodies meant that finance was never an obstacle. These projects were almost entirely problem-oriented; I do not think any were concerned with statistical theory in the abstract. The best known were on cloud-seeding, on the biometrics of population growth (especially Tom Park's beetles), on accident statistics, on cancer problems,

and on the statistics of the distribution of the extra-galactic nebulae. So every one could be fitted in somewhere; I remember that I once visited Berkeley as a 'cancer expert', and then once again as an 'astronomer'. It was rather like my 1952 visit to Princeton as a 'small-sample expert'; 'That's all right', said Sam Wilks, 'stochastic process theory is about samples of size one'.

Once there, a visitor to Berkeley would have a great deal of freedom and could work on anything he pleased, provided that he loyally participated in such S.L. activities as feasts of Polish splendour, weekend visits to the High Sierra, and trips to the Lick Observatory. J.N.'s involvement with astronomy was an important part of his life and may have been associated with the influence of the Struve family in Kharkov days. I am very fortunate in that Professor T. L. Page (my own first mentor in astronomy) has kindly consented to write about this in Section III.

Another enthusiasm which played an important role in J.N.'s life was concerned with the advancement of statistics (and of statisticians) in the less fully developed countries, and this led to an enormous range of international scientific contacts at all levels. On the whole I think J.N. enjoyed best talking to the very youngest students, but he also enjoyed taking on the top brass of the International Statistical Institute, an exclusive academy of established professionals (based in the Netherlands) whose coverage of the subject is now fully representative, but was not always so.

The I.S.I. statutes did, however, permit the creation of daughter sections, with open membership, associated with particular geographical groupings or with particular branches of the subject, and J.N. set himself the task of creating one of these which could provide a home for mathematically minded statisticians as well as for those concerned with the scientific problems which primarily interested Neyman himself. This led to I.A.S.P.S. (the International Association for Statistics in the Physical Sciences), which did good work on an all but fundless basis during the few years of its existence, but which was destined to pave the way for the creation of a much more representative body in the future, and in due course these hopes were realized. In 1975 I.A.S.P.S. was dissolved and replaced by the Bernoulli Society (again a section of the I.S.I.), which also absorbed as subsections of itself two other immensely influential groupings of statisticians: the European Meeting of Statisticians (initially set up and generously maintained by the U.S.A.-based Institute of Mathematical Statistics), and an international group concerned with organizing Conferences on Stochastic Processes. This has meant not only that all mathematically and scientifically oriented statisticians now have an open society which they can freely join, but also that the I.S.I. activities themselves have been dramatically transformed, following a decision by its Bureau in 1975 that the Bernoulli Society should be invited to play a substantial role in the planning of all its biennial meetings. The inspiration for all this came from Neyman, who also chose the name for the new body. When anyone asks 'which Bernoulli', we always answer, 'all the Bernoullis'. It was pleasantly symbolic that the I.S.I. meeting at which these decisions were taken was held in Warsaw.

I should like to close with some personal remarks about Neyman as some of his younger contemporaries knew him. To us he was already a patriarchal figure, but eminently approachable and unstuffy. In all parts of the world one finds his pupils and almost-pupils, and recognises the fact from the 'Neyman touch' which they display in presiding over their own institutions, providing a home for happy and productive groups with characteristically catholic interests. To many of these I wrote seeking material for this memoir. It is impossible to make full use of the generously

long replies received, which will be preserved in the Royal Society archives. A few must be quoted, however.

Professor P. A. P. Moran writes as follows:

> 'He was much influenced by Karl Pearson's *Grammar of science*. Brought up as a Catholic, he soon left the Church "because of the stupidity of the priests", as he wrote somewhere. His first paper was on sets of points—curiously his friend A. S. Besicovitch wrote his first paper on the central limit theorem. J.N. got A.S.B. to Berkeley for a year as "professor of statistics", and A.S.B. wrote an interesting paper related to the Problem of the Nile [**R5**], probably inspired by J.N. J.N.'s biggest work was the Neyman–Pearson theory (to which I subscribe). I think he was always friendly with E.S.P. but was quite upset by E.S.P.'s article "The Neyman–Pearson story" in J.N.'s first festschrift [**R6**]—J.N. was very combative. However, in his relations with R.A.F. he preserved a certain dignity, unlike the latter. He had a certain nobility of spirit which comes out clearly in his two articles on R.A.F. [**I116, I143**]. He was very fond of parties, and of the toast, "to all the ladies present, and some of those absent". He was passionately Polish—but not Polish Catholic! He wrote too much at the end. In his work on rain-making he was mainly right, but he tended to attack bitterly anyone he thought dishonest or not competent. This was probably sometimes unfair'.

Professor P. Whittle writes as follows:

> 'I should very much like to furnish you with material—I know of no cause to which I would feel more sympathetic—but the only anecdotal material I have is a mildly improper story which he told against himself—a Royal Society Memoir is not the place for it. I enclose a photograph of his motto, which was always on his wall:
>
> Life is complicated, but not uninteresting.
>
> I always think of the two poles of his work as being the Neyman–Pearson lemma on the one hand, and all the work in the physical sciences (astronomy, cloud-seeding) on the other, but I know there was a great deal in between (agricultural design, discrete distributions, etc).
>
> 'His particular qualities as a person seemed to me to be:
>
> (1) he survived—he just kept on going for a very long time;
> (2) he preserved all his zest and energy to the end—a real interest in the subject, plus the instincts of an entrepreneur and fixer;
> (3) his great kindness and hospitality;
> (4) his rather puckish propensity for getting into scrapes—innocently and unbeknownst'.

Professor G. A. Barnard writes as follows:

> 'It is difficult to know where to begin, and where to stop, in writing about Jerzy Neyman. I very greatly admired his courage when, sent by the U.S.

and British Governments to overlook the Greek elections of 1946, and having concluded that the elections were fraudulent, he resigned from the Commission, went to Paris, and gave an interview to *Humanité* in which he forthrightly stated the views he had formed. In doing so he risked revocation of his U.S. citizenship which, considering the state of Poland at the time, would have been quite disastrous for him. And, of course, throughout the McCarthy period, and since, he has stood up publicly for unpopular causes.

'He enjoyed, and encouraged, polemic. At the Mahalanobis Memorial Conference in Calcutta I delivered a paper in which I attacked some of his views quite strongly (I had proved a result related to Linnik's, to the effect that requiring a *similar* test in the Behrens-Fisher problem led to absurdity). Afterwards, in the lounge, I indicated my respect to him, thinking he might have taken my talk personally. He almost rebuked me for what I was *then* saying, giving me to understand that progress comes by conflict of views, and the sharper the expression of views, the better progress. In this, of course, he was the very opposite of Fisher. Whether Fisher enjoyed polemic is arguable; but he certainly did not encourage it (though he was prepared to *discuss* in private).

'He must have been responsible for inviting me to the 5th Berkeley Symposium, to talk about Likelihood. Perfectly well aware, as he was, of my deep disagreement with his approach to statistics, he had my wife and me to stay with him, and was most charming and hospitable. He—successfully—went well out of his way to make our trip most enjoyable.

'He had as strong a sense of humour as any statistician I know, and was really great fun to be with, though on occasion his humour was somewhat black—you will, I expect, have heard his story of how his grandmother died, aged 96, from "too much smocking", as he used to say.

'His major contribution to statistics came from his tremendous enthusiasm for statistical theory and practice, and the encouragement this gave to younger people. I vividly remember how, in the course of a contribution to discussion at the Amsterdam European Meeting of Statisticians he described Herb Robbins's work on tests of power one. In the coffee queue after the session I remarked to him that if he looked up the British Standard for testing contraceptives, he would find there a test, for a binomial p, of the hypothesis $p < p_0$, which had power one against the alternative $p \geqslant p_0$. After asking why on earth I didn't publish it in a more accessible place, he went on to insist that there should, at the next meeting of the I.S.I., be a special session devoted, on the one hand, to tests of power one, and, at the same time, to the world population problem.

'The precise extent of his own theoretical contribution has yet to be properly evaluated. As you may know, Robin Plackett and I are proposing to edit correspondence between Egon Pearson and Gosset, with comments by Egon, which suggest that Neyman began with the traditional Bayesian view, still widespread on the Continent in the 1920s, that he was educated out of this by Egon, and then characteristically, went much farther than Egon in eschewing, not only prior probabilities, but also "substitutes" such as likelihood. His unwillingness to take this last concept seriously was almost obsessional. Not only did it lead him to encourage such silliness as, for example, a recent article against "Maximum Likelihood", but also it must have been responsible for his failing to extend the argument of the

Neyman–Pearson lemma to a sequence of hypothesis-testing situations. Such an extension would have enabled him to see that the constraint implied by fixing the α-level in advance was bound to increase the long run frequency of both kinds of error; and this would have warned him against adopting his requirement of "similarity" in tests which leads to such absurdities as saying, once in twenty times, that

	treated	untreated
alive	0	0
dead	20	20

gives evidence, at the 5% level, in favour of the treatment.

'But I am here going beyond the point where I ought to stop. While, of course, I profoundly disagree with his rejection of the concept of "statistical inference" in favour of the notion of "inductive behaviour", there can be no doubt that the latter opened up the possibility of applying sophisticated mathematics to a whole host of important practical problems, where philosophical niceties have a secondary role. Because of this, the enormously powerful—perhaps sometimes over-powerful—position now occupied by statistics in science is in very large measure due to him'.

Jerzy Neyman died on 5 August 1981 in Berkeley, actively concerned with his papers and correspondence up to the end. There is one son, Michael John, to his marriage in 1920 with Olga Solodovnikova. My wife and I remember with great affection the warmth of the hospitality given to us by all three members of the family in our first meeting with them in 1953.

Neyman was greatly esteemed, and greatly loved. His own hero was Copernicus, whose statue stands outside the main University building in Warsaw, and Neyman was proud to be the editor of a book by numerous authors on *The Heritage of Copernicus* [**III20**]*. He had a special affection for the United Kingdom, and took immense pleasure in becoming a Foreign Member of the Royal Society in 1979. He leaves many friends who have in common a special style of thinking and acting; a gift from J.N., to be passed on to their own pupils.

The consolidated bibliography of Neyman's writings is based on one assembled under the supervision of Professor Scott in the Statistical Laboratory, University of California, Berkeley; I am most grateful for permission to reprint it here. (See however footnote on page 160.)

I also wish to thank the many colleagues who have generously contributed to the compilation of this work; they are too numerous to permit an individual listing. But special thanks must go to Professor Bartlett and Professor Page for their masterly articles on Neyman's scientific work, to Richmond Herald for expert heraldic advice, and to Professor Elizabeth Scott and Dr. J. M. Hammersley for access to huge collections of archival material, and to their own knowledge of the life of this remarkable man.

* References in this form are to Part III of the Bibliography.