*Galtonia candicans*

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A Matter of Life and Death

To condemn the study of complex genetic issues as eugenics is to wriggle out of an essential debate

By Steve Jones, President of the Galton Institute

The past, it seems, is no longer another country. Instead, the present is to blame. Anyone with an ancestor who behaved in a manner not precisely in accord with today's moral climate inherits a stain of guilt and must grovel before the court of history.

That is bad news for the descendants of slave-owners but worse for anyone with an interest in human inheritance. That net snares many unsavoury characters in its historical folds. The Great Beast of the Genes is, to most people, Sir Francis Galton. With his 1869 book *Hereditary Genius* Galton has some claim to be the founder of human genetics; but it is clear that his ideas about selective breeding to improve the human race were used as an excuse for evil in many parts of the world (although not particularly in Britain).

Now the E word he invented – Eugenics – is being bandied about again, with the same sense of horror as is slavery itself. The thoughtless labelling of a complex issue is everywhere. The Institute has, for example, recently been dragged into a spat between some Oxford students and one of our members. The students disapprove of his work on human migration (although, generously, they “are not expecting the professor to be sacked straight away”) and complain of his association with the Galton Institute and its “research on eugenics”.

But what does that mean? Our stated aim is to promote the public understand-

ing of human heredity and to facilitate informed debate about the ethical issues so raised. That seems to me uncontentious: we do the job with conferences, publications, a web-site, and with assistance to groups that produce handbooks for nurses, arrange debates on the subject, and give advice to government. Like genetics itself the Institute has moved on from the simplistic views of its predecessors.

Even so, undergraduate hearts, if not always their brains, are usually in more or less the right place: and it is as well for biologists to remind themselves of their ancestral sins from time to time. The *Guardian* blogs are buzzing with neo-Galtonism, and in last week's *Observer* came the bizarre statement that even studies on the inheritance of human height have “a dark reputation” because of their “links with eugenics”.

Geneticists roll their eyes when they read such stuff, but beneath the aerated opinions serious questions remain. What is their science up to – and would Galton have approved? Gene therapy has at last begun to work, and a few children who would once have died are now living happy lives. Many more survive for reasons that have nothing to do with molecular biology. I start my first-year course at UCL by pointing out to the students that at the time of *Romeo and Juliet* two-thirds of them would already have been dead, at *David Copperfield*'s publication half would have suffered that fate, but that a British baby born, like them, in 1988 had a 99% chance of making it to 18 (although to cheer things up I add that their DNA will get them in the end in the form of heart disease, diabetes, and other heritable killers of the western world).

They're wonderful figures, but mean that many who once died for genetic reasons – inborn failure to resist disease, or to exit at sufficient speed when pursued by a bear – survive and pass on

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their genes. Does that matter? Most people would of course say no: but it is hard to deny that there will be effects on the biological future. Is there nothing to discuss?

Twenty lectures later, I turn to the other side of the eugenical coin. Consider, I say, the fate of unborn males and females. Boys are much more likely than girls to suffer diseases such as muscular dystrophy. Parents with an affected son are reluctant to repeat the experience and, long ago, would some-

times ask for pregnancy termination for any male fetus. Then came a test, but it was far from precise, and some still made that demand. Today's probes are much better and the damaged fetus can be identified – but should we act on that information; or use it or ban it in illnesses such as hemophilia, which can be helped by medicine? And what about IVF, where it is easy to identify eggs that will become male? Should the technology be made available (or perhaps it should be outlawed) in India, where

abortion has in some places led to a ratio of 120 males to every 100 females? Such issues are not simple and to condemn them as “eugenics” is to wriggle out of an essential discussion.

This year, though, I abandoned the lecture when I realised that the only question I ever face is: “Is this going to be in the exam?”

A version of this article was published in the Guardian on 27 March 2007.

Centenary Symposium

The annual symposium of the Galton Institute, to be held on November 7-8 at University College London, under the title ‘What makes us human?’, celebrates one hundred years of existence and activity of the Institute in several historical phases.

Sir Francis Galton (1822-1911) was a scion of one of the group of connected, gifted and creative Midlands families which also included the Darwins and the Wedgwoods.

The ideas of this innovative polymath were extremely influential in their impact on several disciplines but it is those of his outputs which related to the distribution and determination of human abilities which are most relevant here, particularly his book ‘Hereditary Genius’ (1869).

The influence of Galton and others stimulated considerable ongoing interest in the nature and significance of the factors controlling human abilities in many countries, though the fact that the basic principles of genetics were not widely recognised until 1900 inevitably hampered progress in understanding. How-

ever, it is very probable that the new knowledge was in part responsible for the genesis, in 1907, of the Eugenics Education Society, the forerunner of the Galton Institute. The term eugenics was actually coined by Galton in 1883 in his book ‘Inquiries into Human Faculty’ and he served as Honorary President of the new society in the period 1907-11.

In 1926 the word ‘education’ was dropped from the title and the second phase, that of the Eugenics Society, began and was to last until 1989 when the name was changed to its current form. This last metamorphosis was not achieved without considerable debate and it is instructive to recognise that in the end it was a recognition that a widespread antipathy towards the word eugenics exists in the world around us that tipped the balance. Throughout the century the Institute has seen its role as that of a learned society engaged in gathering and promoting knowledge relevant to the human condition (particularly, but not exclusively, in human genetics and reproductive biology). In some other arenas, of course, there have been gross and inhuman abuses perpetrated in the name of eugenics and this has not only caused much suffering to significant

numbers of individual human beings but also hampered research and the advancement of knowledge.

In recent years advances in knowledge have led to an acceptance, in many cultures, that wisely regulated intervention in human reproduction, requested by parents, is in some circumstances both desirable and practicable. Even so, the boundaries of what is possible and acceptable are in a state of constant flux.

The intention in this symposium is to explore and discuss the nature of new knowledge, some of its applications and the implications of such use within a context which attempts to provide some insight into the human condition from a viewpoint of which we hope Galton would have approved. For the two days of the meeting we have brought together a group of talented expert speakers who will address a wide range of topics such as language, control of human reproduction, evolution, demography, genetic technologies and social and ethical implications of new knowledge.

We look forward to a stimulating and informative symposium. Details of speakers and topics will be posted on the Institute's web site when available.

Report of BSPS Conference 2006.

The 2006 BSPS Conference was held at the University of Southampton, with a plenary theme of **Global migration trends**. BSPS is grateful to the Galton Institute, for their contribution to Conference expenses, which funded the visits of the plenary speakers.

Attendance again exceeded expectations, with over 190 people participating during the three Conference days. Many of those taking part commented favourably on the broad spectrum of papers from academics and local and sub-

national government sources.

Plenary sessions

Prof Juha Alho (Dept of Statistics, University of Joensuu, Finland) began the plenary sessions of the conference with a timely presentation on the topic of ‘*Migration and ageing: Models and prospects*’. He addressed two main topics that have dominated recent demographic debate in western societies. In a well-structured paper Prof Alho took the standard model of a stable population – in which the number of mothers in a population replicates itself with the assumption of a constant mortality pattern – and introduced the impact of mi-

gration.

This enhanced formulation of Stable Population theory made it is relatively easy to study the roles of migration and fertility in population ageing. He found that that while migration can increase the growth rate, which tends to make the age-distribution younger; it is less effective in slowing down ageing than fertility, because of its typical age pattern. He then demonstrated the effect of migration levels on population ageing for European countries. Generally ageing populations tend to converge to the model of a stable population. The population dynamics observed in the Nordic countries served as an example. For the

UK he showed that for the long term (2004-2050) the UK growth rate without migration would be -0.8% annually. With prevailing migration levels in the model the growth rate would be -0.4%. Official forecasts have typically favoured migration assumptions that are closer to zero than empirical estimates. For the past decade or two, most EU countries have experienced sustained positive net-migration. Although forecasts of migration are particularly uncertain both because of problems of data quality and erratic trends, a recent summary of the evidence concludes that the probability of sustained negative net-migration is small. Therefore, it is expected that migration will slow down ageing in Europe more than has been previously thought. The effect of migration can be more marked in populations where ageing is well under way due to low fertility in the previous generation and where migration now is an important component of population change (Germany, Spain, Italy). In some cases negative growth could be reversed by achievable migration levels. Considering that immigration in Western Europe shows a rising trend since 1985, this scenario is a possibility in some countries.

Juha drew the following conclusions: Population ageing and population decline need to be slowed down. Existing migration levels in Europe have a positive effect in preventing population decline and low migration countries could adjust to accept higher levels of migration. However, the ultimate outcomes for European countries are subject to changes in life expectancy, and economically and politically will depend on the qualification levels and the speed of assimilation of the migrants received. Overall this analysis suggested that in the long term that intelligent migration policy would be beneficial in Europe.

The second plenary was by **Professor William (Bill) Clark** of the University of California, Los Angeles, who delivered a lively session on *Human mobility in a globalising world: International flows and local outcomes*.

He began with a look at theories of migration old and new. The first theory was that migration is driven by economic opportunities and jobs. Later theories by Massey and others also stressed the links to families, refugees and inequality. More recently still, the influence of increasing globalisation on migration has been recognised. Moving on to describing demographic change and population flows, Bill started with a

description that he thought would be familiar to most of his audience of a world whose population is primarily from developing nations. These nations have large and still growing populations that are increasingly urban (within the last year the world became predominantly urban), youthful and unemployed. During the 20th century the world's population increased from 1.6 billion to 6.1 billion. Less well known might be the fact that the graphs of total population and total number of migrants over the twentieth century show broadly the same shape as one another. Population flows are closely linked to economic flows: another interesting set of parallel graphs being for foreign direct investment and remittances. An illustration of the importance of remittances is shown by the fact that remittances to Mexico from Mexican nationals in the USA now amount to ten per cent of the Mexican economy.

Bill next described the rise of the 'undocumented', who are estimated to be 11 million in the USA, one third of the foreign-born population. An estimate for Europe, though more uncertain, would be 8 million. By means such as the comparison of labour force surveys with employer surveys the main occupations of these workers can be identified in the sectors of restaurants, construction, cutting and sewing clothing and private households. The facts that these occupations are very low paid and that the benefits in terms of low cost commodities and services accrue mainly to the middle class, give rise to the question of whether large numbers of the undocumented are producing a 'semi-slave society'. (In this respect, Europe is less likely to be affected as it has greater employment protection.) However, it is not just an exploitative relationship as, for example, undocumented migrants in the USA still have the right to go to school.

Some interesting illustrations were used to show the way in which migration is transforming communities and the local labour market. As well as the frequently discussed cultural change and ethnic tensions that sometimes arise from migration, another often overlooked effect is the creation of jobs that did not previously exist. One example of this is the profusion of nail salons in California run by Vietnamese migrants, and in a piece of dedicated research for his presentation, the speaker had recently had his nails done! Ethnic communities also often produce a demand for distinctive services and products such as shops

catering for their own tastes in food and clothing. Finally, there is no set pattern across different ethnic groupings. The vast majority of Hispanic migrants settle in California and are of Mexican origin, whereas Asian migrants are widespread over the country and are from a wide diversity of different nations.

The last section of the talk discussed the questions *Migration as crisis? Are we losing Britain/America?* The case for these propositions is set out in the US context in Brimelow's book *Alien Nation* and in the UK by Anthony Browne in his London Times article *Britain is Losing Britain*. Bill argued that the measures that would be necessary to counter immigration, as Brimelow would wish, would be vastly expensive and strongly doubts that the political will exists to implement them. For instance, they would have to include militarising the US border and employing 15,000 new border patrol guards.

Bill argued that immigration flows are generated by huge inequalities that will only slow when these underlying causes are addressed. He considers the part that Western aid can play in this to be limited – its effects are marginal, there are problems with corrupt elites and, in any case, it currently amounts to only a third of total remittances. Family planning, health care and education remain fundamentally important.

In his closing remarks, Bill emphasised that immigration has very strong drivers and is therefore not going to stop. He made some suggestions that developed countries might consider: importing from low income countries; learning to manage migration; and revisiting what is a citizen. He concluded with an upbeat forecast for the long-term future: assimilation will work out and concentrations of immigrants in small parts of cities will disperse over a much wider area, as they have done throughout the long history of migration to the USA.

Professor John Salt (Migration Statistics Unit, University College London) began the third day of the conference with a very thought provoking plenary session titled '*International migration in interesting times*'.

The subject of international migration, has until recently, been very much a minority field and John began by examining recent trends in international migration in Europe, and discussed some of the main implications for receiving countries. Particular attention was given to recent movements into the UK and an

attempt was made to predict the likely future implications by considering what happened during the guest-worker phase during post-war Western Europe. Globally, the number of international migrants (defined as those living outside their country of birth) has risen from 78 million in 1970 to over 191 million today. This may at first seem a large increase, yet as a proportion of the world's total population the situation is relatively stable. In 2004 the UK saw the largest ever net gain of migrants, in part due to the opening of the UK labour market in May 2004 to citizens of new EU member states.

Migration flows are complex, not least because they involve difficult definitions and concepts. John commented how this complexity is often not fully understood by officials, politicians and, in particular, the media, who have a tendency to reduce all types of inflow to 'immigration' and 'asylum-seekers'. Migration flows are also extremely varied; individuals and groups migrate for different reasons, stay for different periods of time and fulfil different roles. Simultaneously, many people return to their country of origin each year or migrate elsewhere. Large-scale immigration often leads to implications for the provision of services such as housing, health and education for receiving countries, and John demonstrated this clearly using housing as an example. In the early stages of immigration most migrants tend to rent accommodation, which may later lead to home ownership, but is dependent on access to routes of finance. Single labour migrants often share accommodation and in doing so price families out of the rental market. Asylum seekers are often housed through government dispersal schemes and/or reception and detention centres.

John then went on to examine the recent rise in labour immigration into the UK from the A8 countries, which has been unprecedented, has exceeded most people's expectations. However, at present, little is known about their turnover. Using data from the Work Permit System (WP) and the Worker Registration Scheme (WRS) John demonstrated there is a marked difference in the skills profile between the non-EEA citizens and A8 citizens. Most A8 workers coming to the UK occupy lower skilled jobs whereas the majority entering through the WP system were for managerial, professional and associate professional positions.

John then sought to answer the question "what are the implications of the migration flow from A8 states?" This is proving to be a very difficult question to answer due to the lack of robust statistical data and the short period of time elapsed since May 2004. Some information may be gleaned from WRS data and other small-scale survey such as the CRONEM study carried out by the Universities of Surrey and Roehampton that interviewed 500 Polish immigrants. However, in the absence of suitable data, John suggests we turn to precedent to try to predict what may happen in the future. The guest-worker phase experience for western European countries during the mid-1950s to the mid-1970s provides one example. There appear to be a number of similarities between this and the influx of A8 citizens. Both saw large annual inflows into a labour market with hard to fill, low-paid and low-skilled, positions. Most migrants initially were young and accompanied and immigration was assumed to be temporary.

From analysing the guest-worker migration patterns, John described four

stages through which the flows developed. The first stage consisted of young single workers occupying low-skilled jobs, with more married migrants coming over in the second stage. The third stage sees an ageing effect on these migrants while many married workers send for their spouses and children. The fourth and final stage leads to the embedding and enlargement of the minority population and the establishment of a settled community. At present the A8-migrants are largely in the first stage of development. It is too early to tell if they will follow the same settlement pattern as the guest workers but it is very likely there will be some permanent settlement of the A8 migrants.

In conclusion John strongly put forward the need for a sensible policy debate about international migration, one that takes into account the real complexities of migration flows and their implications. There is also a need to work with the media to ensure debates on the issue educate and do not sensationalise. Ultimately we need a population policy first, from which policies on migration would follow, and not vice versa.

In addition to the plenary sessions, there was a full and comprehensive programme of simultaneous strand sessions, covering ethnic and cultural demography; family and household demography; fertility; forecasting methods and estimation; GIS and its uses and abuses in demography; health and mortality; historical demography; local authority, census and planning; migration; reproductive health; and a poster session. The full Conference report can be accessed at <http://www.lse.ac.uk/collections/BSPS/annualConference/2006.htm>, where those interested will also find abstracts for all presentations.

Sweeney on Galton: Another View

By David Burbridge

Books and articles about Francis Galton have proliferated in recent years.¹ This must be welcome to anyone interested in Galton's work, provided the studies in question are factually reliable. As Charles Darwin once remarked, it matters little if an author draws false conclusions from the facts, because everyone takes a salutary pleasure in disproving them.² Errors of fact are more pernicious. In historical studies it is especially important that primary

sources should be correctly identified and described. Many readers will lack the facilities, and few will have the time, to check references to manuscripts or rare publications. Errors may therefore long go unnoticed.

In 2001 a monograph by Gerald Sweeney appeared in a prestigious scholarly series.³ Sweeney makes bold claims about Galton's work. His strategy is to show that Galton's studies of heredity were not only wrong in their conclusions, but grossly incompetent, and probably dishonest, in their execution. He then speculates on the political and personal motives for Galton's errors, and on why he was influential despite

the blatant defects of his work. With the exception of an online critique by Gavan Tredoux, reviewers have not challenged Sweeney's account.⁴

Nobody who is familiar with Galton's work will suppose that he was a paragon of accuracy and rigour. He worked quickly and often carelessly. It is easy to find inconsistencies and invalid arguments, as well as errors of fact or arithmetic, in his writings. Karl Pearson candidly identified many of these in his monumental biography of Galton.⁵ I have mentioned others in articles of my own.⁶ But Sweeney's indictment goes much further. In Sweeney's view, 'almost all of [Galton's] evidence for



Francis Galton, aged 42, from a photograph of 1864

eugenics was to be marked by a combination of deeply purposeful planning regarding issues to be addressed and astonishing carelessness in execution. So jarring a mixture of qualities makes it difficult to distinguish tendentiousness from near-pathological inconsistency'. Sweeney describes Galton's errors in such terms as 'carelessly inconsistent, at best... doubly inconsistent and possibly dishonest... seems entirely deceitful... improperly - if not spuriously - claimed... especially egregious... a most reckless deceptiveness... so heedless a straining after victory'.⁷ The reader is left in little doubt that the defects of Galton's work cross the line from mere carelessness to dishonesty.

On first reading Sweeney's monograph, I assumed that his account was factually correct, but I wondered whether some innocent explanation could be found for Galton's apparent misdemeanours. The next step was to look at the relevant sources. This led me to some surprising discoveries.

Sweeney bases his claims on three works by Galton: two articles in *Macmillan's Magazine*, and the book *Hereditary Genius*.⁸ He also briefly discusses Galton's work on African exploration. To analyse Sweeney's treatment of these matters in full would be intolerably tedious. Fortunately Sweeney himself presents one item in particular as a test of Galton's methods. It is therefore fair to take it as a test of Sweeney's own reliability. This will require discussion in some detail, but in compensation the reader may find a little incidental amusement.

In 1865 Galton published his first study of human heredity: an article on 'Hereditary Talent and Character' in the quarterly *Macmillan's Magazine*. In it he

used data from biographical reference works to show that men of ability are commonly related to other men of ability, even in fields owing little to social advantage and influence. Having boldly concluded from this that ability is hereditary, he speculated on the prospects for what he later dubbed eugenics.

Sweeney takes Galton's use of evidence in this article explicitly as a test case. It features prominently as the first item to be examined, and he uses it to create a presumption of incompetence or dishonesty on Galton's part. No other item of Galton's work is analysed in similar detail. Sweeney simply declares that such cases can be found throughout Galton's work: 'Examples of so heedless a straining after victory could be presented at length'. Perhaps they could be, but they are not, and if Sweeney's test case is flawed, the edifice built upon it must collapse.

Sweeney's critique of 'Hereditary Talent and Character' centres on Galton's use of biographical sources, and especially of two reference works: *Men of the Time*, and *A Million of Facts*. The most damaging allegations concern *Men of the Time*. First, while Galton claims that out of eighty-five biographical entries under the letter A in that work, twenty-five have relatives 'also in the list', Sweeney disputes this, saying that 'ten of these twenty-five may have had eminent relatives but none "also in the list", either under the A's or elsewhere... Accordingly these ten should not have qualified by the terms of Galton's own specifications. Here he seems carelessly inconsistent, at best'.

Then there are stronger complaints: 'One other of Galton's entries of the same sort he treated differently, by counting a (dead) brother as appearing in the book's list although he had not. Here he seems doubly inconsistent and possibly dishonest'. Worse still, 'Four more names he slipped onto his own list despite the fact that they appeared nowhere in the book, which seems entirely deceitful on his part'. As a final inconsistency: 'he [Galton] claimed Queen Victoria's son Prince Albert (Albert Edward, the Prince of Wales, later to reign as Edward VII) for having an eminent brother, Prince Alfred, yet he did not enter Alfred despite the fact that he too had appeared in the book, under the A's. Seemingly, his apparent reason for not entering Alfred should have disqualified Albert: both, being in their early twenties, had not as yet distinguished themselves as eminent except as royalty'. In a footnote Sweeney

archly remarks, 'as an interesting sidelight', that 'effectively Edward VII would repay Galton for having identified him as eminent so many years before when the monarch knighted him in 1909'.

From these alleged discrepancies Sweeney concludes that as many as sixteen out of Galton's twenty-five names were 'improperly - if not spuriously - claimed', before reflecting: 'Were these errors the product of mere carelessness or deceptiveness? If the latter, Galton's could only have been a most reckless deceptiveness, inasmuch as his source had been readily available to anyone who cared to evaluate his performance.'

These are strong words. It will be evident however that Sweeney's claims depend crucially on the correct identification of the work used by Galton. *Men of the Time*, a precursor of *Who's Who*, appeared in many editions from 1852 onwards. In each edition, new names were added, while the names of those who had died since publication of the previous edition were removed. It is therefore essential to consult the correct edition.

Galton's article 'Hereditary Talent and Character' was published in 1865. The catalogue of the British Library lists six British editions of *Men of the Time* up to this date, of which the most recent were those of 1862 and 1865 itself. These editions are also listed in the *National Union Catalog* of books in American collections. Sweeney asserts without qualification that Galton must have used the edition of 1865. At first sight this may seem plausible, but on closer examination there is a serious difficulty. The preface of the 1865 edition is dated 'London, September 1865', implying publication between September and December 1865, whereas the part of Galton's article in which *Men of the Time* is used appeared in the June issue of *Macmillan's Magazine*, published several months earlier. Unless one or both of these printed dates is wrong, or Galton had pre-publication access to the 1865 edition of the reference book, he cannot have used it when writing his article.⁹

What then are Sweeney's reasons for his identification of the 1865 edition? These are given as follows: 'Galton's reference to the author of the work as "Walford" may have been an error: no author is listed for any of the work's various editions. Examination and comparison of these editions establishes that Galton had to have been consulting the series' sixth edition, which is *Men of*

the Time: A Biographical Dictionary of Eminent Living Characters of Both Sexes (London, George Routledge and Sons, 1865).

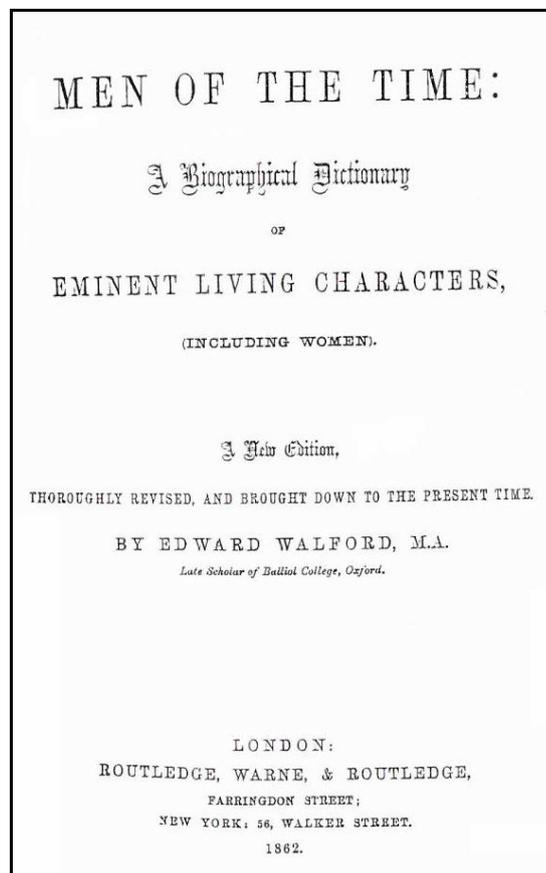
We might reasonably infer from this that Sweeney has made a first-hand examination and comparison of all six editions published up to 1865. At the very least, it implies examination of more than one edition of the work. Sweeney gives no explicit reasons for identifying the edition of 1865 as the one used by Galton, but he may imply a reason when he states that 'Galton claimed there to be eighty-five entries under the letter A; in reality there were ninety-seven, although there were indeed eighty-five from the geographical areas mentioned by him' (England, the Continent, and America). If these figures were correct, the coincidence of the number eighty-five would give some support to Sweeney's identification. But they are not correct. Under the letter A the 1865 edition contains ninety-two entries. One of these is a single entry covering two brothers, so the total might reasonably be increased to ninety-three. A supplement at the end of the volume includes one further entry under the letter A, giving ninety-four, but this is the maximum, and it is still short of ninety-seven. Nor can twelve cases be excluded on geographical grounds, as Sweeney's account requires.¹⁰

Turning to the edition of 1862, there is immediately a strong point in its favour. Galton had referred to the work as 'Walford's Men of the Time', and the edition of 1862, unlike that of 1865, states clearly on its title page that it is 'A new edition, thoroughly revised, and brought down to the present time by Edward Walford, M.A.'. But wait - have we not been assured that 'no author is listed for any of the work's various editions'? Indeed we have, but by now we have learned to take such assurances with caution. A reference to Walford as compiler of the 1862 edition can also be found in the catalogue of the British Library and in the *National Union Catalog*. For confirmation of Walford's role, the *Dictionary of National Biography* entry for Edward Walford (1823-1897) states that 'he edited 'Men of the Time' in 1862'. There is no mystery about Walford's involvement which could not be cleared up by a few minutes in a good reference library.

There is accordingly a strong presumption that the edition of 1862 was the one used by Galton. This is also consistent with the number of entries as reported by

Galton.¹¹ The clinching evidence for Galton's use of this edition is to be found in the list itself. All of the names that Galton claims to have found in *Men of the Time* are included in the 1862 edition, and this is true of no other edition of the work. Some of the names listed by Galton had been added since the previous edition (that of 1857), while some were removed (following the death of the subjects) in the edition of 1865. Moreover, if Galton had used the edition of 1865, as claimed by Sweeney, he would probably have included on his list two pairs of relatives who appear for the first time in that edition. From both internal and external evidence there can be no doubt that the 1862 edition is the one used by Galton.

With the correct edition in hand, much of Sweeney's criticism of Galton immediately collapses. The strongest of his allegations is that 'Four more names he [Galton] slipped onto his own list despite the fact that they appeared nowhere in the book, which seems entirely deceitful on his part'. In a footnote Sweeney identifies these four as Sir Charles Aldis, Charles J. B. Aldis, André Marie Ampère, and Lord Ashburton, and finds these 'smugglings in... especially egregious' in view of Galton's assurance that he would stick to the confines of the reference book. These names are indeed absent from the 1865 edition, but they are all included in that of 1862. There was no 'smuggling in'. Similarly, the 'dead brother' (J. W. Alexander) whose appearance on Galton's list Sweeney finds 'doubly inconsistent and possibly dishonest' was alive in 1862, and duly appeared in the edition of that year. Finally, the inclusion of the undistinguished Prince of Wales is no longer an issue, for the Prince Albert of Galton's list is clearly the Prince Consort, who appears in the edition of 1862 for the last time.¹² Sweeney's strongest accusations are therefore simply unfounded. One may wonder how Sweeney can have 'examined' the edition of 1862 without noticing these entries, or the clear reference to Walford on the title page. It is interesting to note that Galton's 1869 book *Hereditary Genius* does specifically use the 1865 edition of *Men of the Time*,¹³ and someone looking for a short-cut might excusably assume that this was



Title page of 1862 edition of "Men of the Time"

also the edition used by Galton in his 1865 article, without taking the trouble to check. But this cannot explain Sweeney's error, since he bases his identification on 'examination and comparison of these editions'.

Sweeney's remaining accusation is that ten of Galton's twenty-five names 'may have had eminent relatives' but that these were not 'also in the list'. If we take 'in the list' as meaning 'the subject of a separate entry in the dictionary' this is correct. On the other hand we are bound to ask, if the distinguished relatives are not 'in the list', where did Galton get them? Did he consult other reference works? Or did he invent them? Sweeney gives no clue. In fact, all of the information used by Galton is taken from *Men of the Time* itself. Entries in the dictionary often refer to notable relatives of the subject, and Galton has used these references to compile his own list. If the phrase 'in the list' can only mean those individuals with entries in their own right, then Galton's approach is improper. But this is not the only reasonable interpretation of the phrase. At worst, Galton's description is carelessly loose. In any event, as Sweeney himself points out, it was easy for Galton's contemporaries

(using the correct edition!) to 'evaluate his performance'. In Sweeney's own case more effort is required.

There was arguably a legitimate reason for Galton's approach. Since the parents and other relatives of distinguished men were often dead, to limit the coverage of relatives to living subjects would be inadequate. Some supplementary information was needed, and *Men of the Time* provided it. It might still be feared that the supplementary information would include some relatively undistinguished people, who would not have deserved an entry in their own right. One test of this is to check whether they have entries of their own in comparable reference works. In two cases the relatives were still alive when the first (1852) edition of *Men of the Time* appeared, and they did in fact have entries of their own. For other British cases, the obvious touchstone is the *Dictionary of National Biography*. We find that all the relatives on Galton's list have entries in the *DNB*. While the *DNB* was not available to Galton in 1865, his judgement (by the standards of his contemporaries who compiled the *DNB*) was evidently not unreasonable.

For foreign cases there is no such obvious touchstone. There will presumably be no dispute about the 'eminence' of the great physicist Ampère, or of American President John Quincy Adams. Some of the other cases are more obscure, and it is unlikely that Galton knew anything about them beyond the meagre information in *Men of the Time*. In two or three cases it might be thought over-generous of Galton to have counted them solely on this basis. But on the other side of the coin, in several cases *Men of the Time* mentions notable relatives who are not counted in Galton's list. At least six of the men not listed by Galton had close relatives who subsequently received entries in the *DNB*. Overall, there is nothing very remarkable about Galton's figures. Out of all the entries in the *DNB* for people who died between 1600 and 1900, about one in three have close relatives also in the dictionary. Whatever the reasons - and I make no judgement here about nature and nurture - it is undeniably common for distinguished people to have distinguished relatives.

The other reference work featuring in Sweeney's critique is the book *A Million of Facts*.¹⁴ He notes that Galton 'made the extraordinary claim that one in every 6½ literary or scientific figures of eminence over the last four centuries had

had at least one relative of comparable eminence laboring in the same vineyard'. He complains that Galton has 'consolidated his litterateurs and scientists, failing to specify what numbers have come from each field and omitting the names of the eminences he had discovered... Had Galton not combined his two occupations and had he specified the individuals selected, his argument might have been nicely strengthened'.

I do not see the point of separating the two occupations, since Galton's reason for combining them is that success in both is based on merit, and therefore less likely to be influenced by nepotism than, say, success in politics.¹⁵ Galton does not contend, in this article or elsewhere, that hereditary ability is strictly limited to specific fields.¹⁶ More seriously, from a factual point of view, it is quite untrue that Galton fails to name the individuals selected. Only a cursory check of Galton's article suffices to establish that Galton *does* name his cases. Page 159 of the article includes a table listing over 100 'notable persons' with relatives also on the list.¹⁷ A column headed 'Lit. & science' indicates those who fall under this broad category. Galton explains that his list is derived from the book *A Million of Facts*, which contains a biographical list of 605 'notabilities' who lived between 1453 and 1853. He remarks that the number of relationships is swelled by the inclusion of some large families, including the scholarly dynasties of Gronovius and Stephens (Etienne). He then compares the figures with those in other reference works before returning on page 161 to consider the 'literary and scientific' category, and giving the 'one in 6½' figure which Sweeney finds so extraordinary. Galton again specifies 605 as the total number of distinguished men, gives 'the last four centuries' as the relevant time period, and discusses the effect of the Gronovius and Stephens families on the figures. This leaves no doubt about the intended connection with the 'Lit. & science' column of the table on page 159, which includes these families. How could Sweeney have missed it? Is it so difficult to turn back a page or two?

Whether or not Galton's claim is 'extraordinary', it is therefore based on a published reference work. The obvious way to check his claim is to consult that work. The book, originally compiled by Sir Richard Phillips,¹⁸ continued to be issued with revisions after his death in 1840, and Galton's use of 1853 as the

terminal date suggests that he used that year's edition. I can confirm that all of the names listed by Galton are in it. He follows Phillips closely, including his errors; for example, copying the misspelling of 'Vanloo' as 'Valnoo'. More seriously, Phillips and Galton both count the earls of Shaftesbury twice, under 'Shaftesbury' and under their family name of 'Cooper'. Galton's figures are however broadly correct. Of around 600 eminent people listed by Phillips who died between 1453 and 1853, about 100 have close relatives also on the list. Allowing for some vagueness of definition, between 300 and 350 of the 600 fall into the broad fields of science and literature, and of these about 50 also have relatives on the list.¹⁹

It may perhaps be suggested that Galton has deliberately chosen a reference work in which the proportion of related cases is unusually high, in order to support his argument. I cannot rule this out.²⁰ Phillips's selection does seem eccentric, or, as Galton says, 'crotchety'; there are some glaring omissions, like that of Kepler, and surprising inclusions, like 'Mrs. Manley, an ingenious female writer'.²¹ Phillips also seems to have had a penchant for Dutch painters (at the expense of Italians), and for politicians who shared his own Radical views. There is no reason to suppose that these 'crotchets' tend to increase the proportion of related cases. In his article Galton uses altogether seven different data sources, in which the proportion of cases with distinguished relatives ranges from one in three to one in eleven. Phillips is in the middle of the range. From inspection of Phillips's work, it has two purely organisational features that must have made it attractive to Galton. First, the biographical list is extremely concise, covering about 1000 names from all periods in 80 columns. Nobody who has eyeballed the serried ranks of the *Biographie Universelle* - the standard biographical reference work of the time - can doubt the attractions of such a condensed alternative! Second, where several individuals have the same surname, Phillips includes them in a single compound entry. This layout makes it easy to detect candidates for 'related' cases. There is however a risk that it favours the inclusion of relatively minor figures. One legitimate function of a biographical dictionary is to help the reader distinguish one Breughel, Bach or Bernoulli from another.

As will be clear, there are certainly errors in Galton's 1865 article. I have

mentioned some, and could mention others. For the most part these are very minor, and they have no systematic tendency to support Galton's hereditarian case. Those who wish to chastise such errors would be well advised to take greater care in their own work.

It is unnecessary to draw elaborate conclusions. In the test case proposed by Sweeney himself, he fails the test. Nor is this an isolated instance. His treatment of Galton's other works is similarly riddled with errors.²² As Gavan Tredoux remarked in his online review of the monograph, 'Almost everything that one can check turns up false'. And if the factual basis is flawed, then the remainder of Sweeney's study may have some merit, but it would not be wise to rely on it.

References:

1. Recent books include Nicholas Gillham, *A Life of Sir Francis Galton: from African Exploration to the Birth of Eugenics*, 2001; Michael Bulmer, *Francis Galton: Pioneer of Heredity and Biometry*, 2003; and a popular biography, Martin Brookes, *Extreme Measures: the Dark Visions and Bright Ideas of Francis Galton*, 2004. Articles include a cluster of studies by John C. Waller: 'Gentlemanly men of science: Sir Francis Galton and the professionalization of the British life sciences', *Journal of the History of Biology*, 2001; 'Method first: re-appraising the extreme determinism and hard hereditarianism of Sir Francis Galton', *History of Science*, 2002; and 'Becoming a Darwinian: the micro-politics of Sir Francis Galton's scientific career 1859-65', *Annals of Science*, 2004.
2. Charles Darwin, *The Descent of Man*, 1871, vol.2, p.385.
3. Gerald Sweeney, 'Fighting for the Good Cause': Reflections on Francis Galton's Legacy to American Hereditarian Psychology', *Transactions of the American Philosophical Society*, 91, Part 2, 2001.
4. Reviews include John C. Waller, *British Journal for the History of Science*, 2003, 26, 247-8; Michael J. Root, *Journal of the History of the Behavioral Sciences*, 2003, 39, 393-5; John Walker-Smith, *History and Philosophy of the Life Sciences*, 2003, 25, 134-5; Mary Mosher Flesher, *Isis*, 2004, 95, 316-7; and Pauline Mazumdar, *Annals of Science*, 2004, 61, 489-93. Waller endorses Sweeney's analysis, saying that 'as an exposé of the strength of Galton's preconceptions and the

lengths he was willing to go to in evincing them, Sweeney's is the best and most damning yet'. Root praises 'Sweeney's excellent analysis of Galton's original data'. None of the printed reviews notes any serious errors in Sweeney's work. Gavan Tredoux's online review is at www.galton.org, which also gives access to downloads of all the works by Galton mentioned here. Michael Bulmer's book (see note 1) mentions one of the findings of the present article, citing personal communication from myself (p.46). One purpose of the article is to provide documentation for this finding.

5. Karl Pearson, *The Life, Letters and Labours of Francis Galton*, 1914-1930.
6. David Burbridge, 'Galton's 100: an exploration of Francis Galton's imagery studies', *British Journal for the History of Science*, 27 (1994), 443-63, and 'Francis Galton on twins, heredity and social class', *British Journal for the History of Science*, 34 (2001), 323-340.
7. Unless otherwise stated, all quotations are taken from Sweeney, op. cit., pp. 5-6.
8. Francis Galton, 'Hereditary Talent and Character', *Macmillan's Magazine*, 12, 1865, pp. 157-166 and 318-327; 'Hereditary Genius: the Judges of England between 1660 and 1865', *Macmillan's Magazine*, 19, 1869, 424-31; and *Hereditary Genius*, Macmillan, London, 1869.
9. Moreover, according to Karl Pearson, Galton did most of his work on the article in 1864: see Karl Pearson, *Life, Letters and Labours of Francis Galton*, vol. II, p. 70.
10. In a strict sense, the description 'England, the Continent, and America' would exclude the Scots, the Irish, and the Welsh, but we can hardly suppose that this was Galton's intention. Victorian writers commonly used 'English' for 'British', or 'British and Irish', as in Galton's own book *English Men of Science*. In any event, omitting the Scots, Irish, and Welsh would exclude too many cases rather than too few.
11. Under the letter A there are eighty-two entries for men in the body of the work and three in the supplement, bringing the total to eighty-five. There are also five entries for women.
12. Albert had died in December 1861 while the 1862 edition was in preparation: see Walford's comments in the preface.
13. *Hereditary Genius*, p.7-8.
14. Sweeney (p.4) describes this as 'a

survey' but does not name it.

15. I owe this point to Gavan Tredoux.
16. See for example Galton's comments at pp.23-4 of *Hereditary Genius*.
17. Characteristically, there are minor errors and discrepancies in the table. I will not further try the reader's patience by analysing them, except to say that they go in the direction of understating the number of related cases.
18. Sir Richard Phillips (1767-1840; *DNB*). Galton gives the author's name incorrectly as Sir Thomas Phillips. This is another of Galton's minor errors.
19. Galton's text gives the number as 51, while his table gives the number as 52. A few of his 'literary' cases, like Horace Walpole, in fact have relatives in other fields but not in 'literature and science'.
20. I do find the proportion of related cases anomalously high for such a supposedly selective list.
21. Mary de la Rivière Manley (1663-1724; *DNB*), a satirical author.
22. I will mention only one point, which would otherwise be difficult for readers to check. In his discussion of Galton's African exploration, Sweeney (p.25) finds it intriguing that a paper by the Rev. F. N. Kolbe, a missionary in the area travelled by Galton, was not published for several years, and remarks that the reason for the delay, until after Galton's own report had been published, 'seems an interesting question in itself'. Sweeney appears to suspect that Galton had somehow pulled strings to delay publication by a rival. Before dealing with this, we must first clear away two subsidiary errors. The missionary's name was not F. N. but F. W. (Friedrich Wilhelm) Kolbe, and the journal in which his brief account of Damaraland eventually appeared was not, as stated by Sweeney, the *Journal of the Ethnographic Society of London* (which did not exist) but the *Journal of the Ethnological Society*. As for the 'delay', the explanation is simply that the journal was published at long and irregular intervals: vol. 1 in 1848, vol. 2 in 1850, vol. 3 in 1854, and vol. 4 in 1856. Kolbe's paper was read to the Society on 15 January 1851, and published in the volume of 1854, the first to appear after that date. The Society evidently waited until sufficient material had accumulated to justify publication. This would be clear at once to anyone who had examined the relevant volumes of the journal.