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LIONEL PENROSE, F.R.S. (1898–1972) AND EUGENICS. PART TWO

by

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POSITIVE AND NEGATIVE EUGENICS

The method of improving the human genetic constitution divides into positive and negative eugenics. Positive eugenics is the policy of encouraging and promoting the procreation of those with socially desirable faculties and abilities. Negative eugenics on the other hand is designed to limit the procreation of those with a poor, disadvantageous genetic constitution which may be transmitted to their offspring. Policy proposals to achieve the aims of positive eugenics included family allowances, grants towards the education of children of able families, counselling, physical and psychological testing, medical examination to facilitate assortative marriage of desirable parents and banking sperm of outstanding men for insemination of comparable women. These were all vigorously advocated.[70–73] Fisher stated in a review of an article by Leonard Darwin that

> Galton's work in fact left no room for doubt that if the methods of the stockyard were applicable to mankind the human race could be improved in any desired direction, within a short historical period, to an extent exceeding existing differences between widely different races.[74]

Despite continued vigorous approbation the practical outcome of positive eugenics proposals seems very little in terms, for instance, of government enquiries, formal scientific trials or earnest attempts at practical application.[75]

PENROSE'S CRITICISM OF POSITIVE EUGENICS

To predict how any programme of eugenic selection could work, the effects of natural selection on the human population have to be fully understood.[76] Penrose pointed out the limited knowledge available concerning the selective elimination of genes and the total ignorance prevailing on which are eugenically desirable, a subject on which he expands in *The biology of mental defect,* where he says

> The position is quite different when we try to identify 'good' genes. The human types which are accepted by eugenists as desirable can be specified to some extent. Good general health, handsome physique and high fertility, coupled with such qualities as great intellectual ability, courage, honesty, compassion and steadfastness are all desired in the same individual.

> Nothing is known, however, about the actual genes which might form the basis of such qualities. All that is certain is that some of these qualities are to some extent inherited. Assuming that excellence in each quality is not incompatible with excellence in any other, it should be theoretically possible, as Galton (1869) believed, 'to produce a highly gifted race of men by judicious marriages during several consecutive generations'.[77]

The model for improvement by selective breeding of elite groups, however, may lead to eventual homozygosity and loss of variability. Moreover, the homozygous fixing of genetical lines by inbreeding is irreversible whereas, at least in plants and animals, outbreeding to produce heterozygotes produces a more robust and fertile strain[78]. Further, a single subject cannot possess only good traits. A racehorse, for instance, has qualities incompatible with those of a cart-horse suitable for heavy hauling. In the selective breeding of animals, single qualities such as strength, speed, or food production are sought, but such single factors to the exclusion of others are not desired in humans nor is it possible to predict them from characteristics of potential parents. Penrose also observed that limitations to the improvement of highly bred animals which had become known, indicated that the maintenance of a highly selected breed of men was impractical because of the long generation period in human beings, making the observation of stockbreeding results over several generations an impossibility for a single observer.[79]

Views of eugenists on negative eugenics

A comprehensive view of eugenics was in a statement of the Eugenic Society's policy in the *Eugenic Review*, 1926. Here an outline is approved by the the Council of the Society 'though every item is not endorsed by all its members'. It is preceded by a commentary from Leonard Darwin, then in the fifteenth year of his presidency, in which he directs attention to 'the paragraph headed "Family Limitation of the Less Fit" this being the item in our programme which raises the most difficult issues', and of this he says:

> The proposal to which I wish to draw especial attention, however, is that when the amount of public assistance given to a couple indicates the probability that further parenthood would be immediately injurious to the nation and ultimately injurious to the race, the State should be regarded as having the right to exercise a limited amount of pressure in order to promote family limitation. Even if critics are correct in assuming natural inheritance can be neglected in discussing these problems we can still ask our opponents whether they consider that a married couple, who have already thrown a considerable burden for the maintenance of their family on the State, or in other words on their neighbours, really have the abstract right to increase that burden to an indefinite extent by the production of more children ... it is my firm conviction that it will only be by proceeding on the lines here broadly laid down that the nation can be saved from racial deterioration.

Eugenists attempting improvement of the human race in this way were confronted in the practical application of negative eugenics by the question of mental deficiency, which was believed to be making a large contribution to the number of individuals and families who constituted social problems. In limiting the procreation of mental

defectives maximum effort was directed to two methods: (i) compulsory supervision and segregation in institutions; and (ii) the use of contraceptive appliances—the use of compulsion (i.e. commitment to an institution) here was advocated only when persistent advice on family limitation was not acted on. To appreciate Penrose's criticism of the policy of eugenists regarding mental deficiency we must examine the views of eugenists on this matter and then look at sources in the light of which Penrose criticized them.

Francis Galton's views on the segregation of mental defectives were published in his comments (1909) on the report (1908) of the British Royal Commission on the Care and Control of the Feeble-minded appointed in 1904 'to consider the existing methods of dealing with imbeciles, feeble-minded or defective persons not certified under the Lunacy Laws'[80]. He approved its recommendation that mental defectives should be segregated to prevent their procreation and of these he described the feeble-minded as 'bearers of degeneracy' to be the most dangerous from the eugenics point of view. They were not in a position to contract a marriage or rear a family. Stringent conditions should govern their discharge and the onus of showing fitness for it should lie on the individual or his relatives. Galton sums up his response to this question as follows:

> almost all the evidence printed in the report points unmistakeably to segregation for life as the only means of preventing feeble-minded girls from doing great harm to the community. They propagate children freely ... who, whether they be as little, less, or more mentally endowed than themselves are in all cases subject to the most undesirable conditions of nurture.

He quotes the USA and Germany as places where mental defectives feel at home and live happily in institutions, and continues, 'the action it (the Royal Commission Report) advocates will ultimately gain a eugenic victory over evils that have long been unnoticed but are now shown to be a very serious and growing danger to our national efficiency'.[81] In argument against the view that the effectiveness of selection by sterilization or segregation would be impractically slow, Fisher affirmed that these procedures would lead to substantial immediate progress in eliminating mental defect; that limitation of the number of strains where there was a concentration of mental defectives would be accelerated and that there was no reason to anticipate that the rate of progress would fall off in future generations.[82] The Eugenics Society agreed with these influential proponents. For instance, the Cambridge Professor of Divinity, Dean Inge, a Eugenics Society member, commenting on the religious aspect of the problem wrote:

> If the recommendations of this report are opposed on religious grounds the opinion will be strengthened that the churches are hostile to all schemes for improving the race, or preventing its deterioration by means of legislation.[83]

After a deputation to the Prime Minister and the lobbying of MPs by the Eugenics Society, the Mental Deficiency Bill, providing for the segregation of mental defectives, came into force in 1913.[84] In his review of Leonard Darwin's[85] (1926) article on eugenic reform Fisher (1927) says:

> To the practical man therefore the field for eugenic action is limited to the encouragement of the well endowed and the discouragement or prevention of the defective in handing on their qualities to future generations ... The most important inherited character is feebleness of mind in which there is considerable, but by no means conclusive, evidence that a large proportion is caused by a single Mendelian recessive ... The majority of important characteristics which distinguish the valuable or desirable character from the undesirable, and in particular the gifted from the mediocre, are certainly due to a number of separate heritable factors ... Even with recessive conditions where the taint is carried by a much larger number of normal than of defective individuals the decrease of incidence which can be achieved is more rapid than is usually imagined ... for eugenic effect therefore we should concentrate on the large body on either side of I.Q. 100.

Finally, Fisher urges that sole voluntary use of contraceptives[86] can never be effectively eugenic but might become so reinforced by some measure of pressure or compulsion applied only to a minority of cases (e.g. where an exceptional amount of relief was provided through the Poor Law) with a warning against having more children where it seems probable that a family of more than two would be produced without the means of maintaining tolerable conditions to support it. If warnings were disregarded, this should be followed by segregation of the defaulters. Fisher's summary statement is that Galton's work in fact left no room to doubt that if the much abused 'methods of the stockyard' were applied to mankind,

> the human race could be improved in any desired direction within a short historical period to an extent exceeding existing differences between widely different races.[87]

However, a British Medical Association committee set up in 1930 stated firmly that sterilization would make no difference to the number of mental defectives and asked for more data on environmental causes.[88, 89]

Penrose's Colchester survey of mental defectives

The scientific criticism which Penrose made of these negative eugenic proposals stemmed largely from the results of his seven years' research at Colchester. In his preliminary observations he says:

> The scientific investigation of the causation of the various grades and types of (mental) defect, to which my survey is intended to contribute, can be carried out in a number of different ways. A standard method, used by Shuttelworth (1892), is to record any events which may be causally operative in each case, without expecting these to be exclusive, and then to investigate, clinically or genetically, any set of circumstances which are more frequently found antecedent to one type of case than to another.

He then takes up some of the environmental 'events which may be causally operative' and refers to the results of investigations on prenatal conditions, prematurity, birth injury, postnatal disease and to studies comparing the mental capacities of monozygotic twins for identifying 'the minimum effect of environment'.[90] More space is given, however, to 'the question of causation from the hereditary point of view', where he points out the merit of separating 'those conditions which segregate clearly from those

which are graded characters. A landmark in this aspect of the question is Sjögren's study of juvenile amaurotic idiocy [91]: in this condition the distinction between normal and abnormal members of the family is absolute and the disease is clearly a Mendelian recessive character'. He comments on the high incidence of parental consanguinity in recessive disease and cites Laurence–Moon–Biedl syndrome and phenylketonuria as forms of mental defect showing characteristics of recessive inheritance and on incomplete penetrance in autosomal dominant disorders (apparent in neurofibromatosis, epiloia [now named tuberous sclerosis] and craniofacial dysostosis). He points out that with imperfect penetrance it is difficult to distinguish multifactorial inheritance from a single partially penetrant gene (as in subcultural defect[92]), also that in sporadic disease an environmental cause cannot be safely assumed as it may be recessive or a new gene mutation. He also refers to errors in estimates of fecundity that can occur from reliance on 'data compiled from families selected by the presence of abnormal offspring'.[93]

The extent to which his aims were accomplished in this study may be judged from his conclusions. He prints a table in which the clinical and genetic details of his 1280 cases, their parents and their siblings are given and cites 29 publications (including two books) issuing from his Research Department. He discusses the contribution of his research to the identification and understanding of special factors in the causation of mental deficiency under the following headings:

1. Specific familial incidence;
2. Parental consanguinity;
3. Mental ability of parents and offspring;
4. Maternal age, birth order and size of sibship;
5. Twins;
6. Sex differences and sex linkage.

Penrose's criticism of negative eugenics

A fact demonstrated in the results of Penrose's research on the causes of mental deficiency,[94] which he emphasized was that it is not a single condition but a heterogenous group of well over a hundred illnesses and disabilities with various types and degrees of social incompetence as a common factor. Unlike syphilis, for instance, it does not have a single cause for a widely differing group of manifestations. This multiplicity of conditions from which mental deficiency arises is evident from a perusal of the clinical analysis,[95] specific factors,[96] and summary of the data[97] from his report on 'The Colchester Survey'. A single remedy for mental deficiency would be as futile as a panacea in general medicine.

A further more doubtful matter which Penrose introduced was the phenomenon of the extra vigour and fecundity of heterozygous matings, called heterosis, in comparison with unions of inbred homozygotes[98]. Heterosis is widely found in plants and animals [99] and Penrose[100–102] offered it for example as a possible explanation of increased genetic

fitness shown in the greater fecundity of the lower classes. Professor Cedric Smith confirmed Penrose's enthusiasm for this view, but said that the existence of general human heterosis has not been confirmed. The only instance he was aware of in man is the superior resistance to malaria conferred on heterozygote carriers of the sickle cell trait which allows the greater survival and breeding capacity of at risk subjects in malarial areas.[103] Maynard Smith claims, however, that heterosis is so universally present and easily observed in animals and plants that he is confident that it is present in man and the reason for its inconspicuousness is that it has not been sought.[104] The large inter-generational gap, together with the need for observation over several generations which would be required to perceive it, might account for its unobtrusiveness in man.[105] Perhaps, in this case, Penrose has anticipated the evidence for his hypothesis.

The inadequacy of the simplistic view of the heredity of mental deficiency, aphorized in the phrase 'Like breeds like', on which many in the Eugenics Society relied, was pointed out by Penrose[106] and he cited as contrary examples genetic conditions where in addition effective contraceptive measures provide no solution. For instance, the manifestations of dominant genes (frequently severe conditions) are naturally eliminated by the infertility of early affected subjects; epiloia is a condition now known to be caused by either of two dominant genes in which disorder with a very wide variation in severity persists because frequent mutation occurs, maintaining an incidence of about 1 in 10 000.[107] No way of predicting cases caused by fresh mutation is likely to be devised, and selection of individuals suitable for contraception or sterilization where inherited disadvantage might be prevented is thereby rendered impossible. Segregation of recessive genes is more frequently a cause of conditions causing mental deficiency comprising, for example, amaurotic idiocy (Tay Sachs), some forms of (a minority in practice) microcephaly, deaf mutism, retinitis pigmentosa and phenylketonuria. Sterilization is rendered inapplicable, however, because in these diseases the most numerous of those who beget defective offspring are heterozygotes who are unaffected and mostly undetectable before conception of their offspring.

Problem families

A spectre arose from eugenic consideration of mental deficiency that haunted society and confirmed the Eugenic Society's belief in the necessity for effective negative eugenic measures. Vivid evidence of problem families is found in three publications reporting on rural localities in the USA.[108–110] These are anecdotal accounts of families with dull or feeble-minded members who provided enough examples of criminal, alcoholic and other problem behaviours to cause alarm.[111] The Eugenic Society's Mental Deficiency Committee was set up with Dr E.O. Lewis (1884–1965), who had researched and reported the prevalence of mental deficiency to the Wood Committee[112] in 1931, appointed as the investigator to enumerate and describe problem individuals from mentally defective families in England and Wales.[113]

Dr Blacker wrote to Penrose, who was then conducting his survey of mental

defective patients in the Royal Eastern Counties Institution, Colchester, to ask if he could assist the Society's investigation by identifying problem individuals from the population he was investigating. Penrose pointed out that the population at the Royal Eastern Counties Institution was not a suitable source of problem families who derived from the feeble-minded group which, although the largest in the general population, was in an institution a minority. He offered a few cases from the Royal Eastern Counties Institution, but warned that they would be less amenable to study because they had previously been investigated by social workers and because of their fear of being coerced into sterilization[114]. Penrose recommended examining a school population comparing families of problem children with those of normal children, as this would constitute a more complete epidemiological population.

Lewis estimated that there were 300 000 mental defectives in England and Wales,[115] of whom 75% were feeble-minded, the majority not confined in institutions. The committee reported slums, pauperism, crime, inebriety, prostitution, epilepsy and mental disorder as identified problems. The feeble-minded had been shown to have larger than average families, women more often married and more fecund than men. Part 3 of the report [116] gave results of an investigation into the standard of homes among mental defectives according to their mental grade. Substandard homes were estimated to be for idiots (IQ below 50) 27%, for imbeciles (IQ 50–69) 34% and for feeble-minded (IQ 70–90) 62%. In this respect, therefore, and in view of their predominant numbers among mental defectives, feeble-minded subjects were the most prolific source of problem families.

Penrose was in agreement that the main source of mentally defective problem individuals and families were feeble-minded subjects who were, however, a minority in the institution where he was working full-time, which probably explains the comparative scarcity of his writing on the subject. However, a section on home conditions is included, in the course of a study he made of the inheritance of intelligence.[117] He chose 100 families (595 persons), each with at least one mentally defective member who was resident in the Eastern Counties Institution. He excluded individuals in whom secondary causes of mental deficiency might have been operative and those with specific types of deficiency (such as mongols, microcephalics, epileptics, psychotics, cretins, syphilitics and neurological cases). He described residual cases as

> a collection of persons who are healthy, apparently sound neurologically and not suffering from any definite psychosis but who lack intelligence

making them the most probably genetically caused defectives deriving from the feeble-minded and subcultural group, and forming the lower part of the normal frequency distribution curve of intelligence. The parents were each classified as of normal, dull or defective intelligence. The quality of the home was judged according to five grades by the standards of (i) the number of rooms per person living in the home and (ii) its general management based on estimates of cleanliness, order and comfort, thus contributing to a measure of the extent to which the family constituted a problem. This measure was correlated with the mental level of the parents, each categorized in

the grades normal, dull or mentally defective. The number of rooms per person available was found to be closely related to the mentality of the father, but the quality of the home even more positively correlated with that of the mother. Penrose concluded that 'Bad conditions are associated with low intelligence of parents' and could therefore be a source of problem families, 'but there is little evidence that bad conditions themselves cause low mentality in the children'. Low intelligence could have operated as a contributory environmental cause of problem families, however.[118] He added that 'age and parity of the mother seems to be of importance' (as a cause of mental deficiency) anticipating those environmental conditions that were confirmed as causative by his later research.[119–122]

Genetic and environmental influences

In the Woodhull lecture entitled 'Limitations of eugenics', given at the Royal Institution, Penrose pointed out the familial distribution of environmental non-genetic factors transmitted within families (e.g. name of father, titles, privileges, modes of behaviour, aesthetic preferences, infections such as syphilis) by which they become confused with true biological heredity. However, though language, custom or infectious disease are not themselves inherited, the facility to acquire each can be. These distinctions are important to the eugenist because techniques of breeding can directly influence only genuinely hereditary characters, whereas most traits held to be eugenically desirable are heavily loaded with environmental causation[123]. Early eugenists, however, frequently attributed poverty, poor health, tuberculosis or insanity to hereditary factors on the basis of pedigree records. Lidbetter, for instance, compared pedigrees of families researched in east London and concludes 'What is therefore necessary today is attention to the problems of reproduction and its control'[124]. Penrose pointed out further that environmental treatments of genetically inherited disease sometimes show considerable advantage over attempts to control breeding eugenically; for example, the use of spectacles for myopia, eyedrops for glaucoma, the dietetic treatment of phenylketonuria and exchange transfusion for rhesus incompatibility between mother and foetus are, at the present time, the most effective treatments for the hereditary conditions in which they are used.[125]

Restraint on the reproduction of the feeble-minded

Sterilization of mental defectives was keenly advocated by such influential figures as Lord Dawson of Penn, Leonard Darwin and E.W. Macbride (all Eugenic Society members) and by pronouncements from representative British and American medical experts, e.g. Gifford,[126] Landman[127] and others.[128] Penrose pointed out, however, that defective patients who are severely affected are almost invariably sterile, and that these are the majority in institutions.[129] For instance, in his report to the MRC on the Royal Eastern Counties Institution, 653 out of 1280 (51%) subjects there are stated to have

an IQ below 50.[130] Sterilization of institutionalized patients was therefore futile and he recommended that attention should be directed to feeble-minded and dull subjects. Researches including his own on this group of patients, however, did not bear out the expectations of the Eugenics Society. The contraceptive devices of the period were popularized and became generally better known, notably from the sustained efforts of Dr Stopes (1880–1958), also a Eugenics Society member, and her husband. The fact that qualifications made by Blacker[131] and Fisher[132] recommending the need for institutionalization as a last resort where adoption of contraception on a voluntary basis did not prove successful, suggests that experience of the most practical method then available, the condom, was not satisfactory to a proportion of subjects, just as now it is not, in spite, for instance, of protection from the risk of contracting AIDS as an inducement to use it. The continuous gradation of intelligence from genius to imbecile[133] makes the differentation of dull from feeble-minded arbitrary in some subjects when sterilization is being considered.

Decline in national intelligence

A further spectre arose from the feared decline in national intelligence predicted from the greater fertility of lower than of middle and upper classes of the general population.[134] The eugenic argument testifying to the presumed continuing decline in national intelligence can be summarized as follows: feeble-minded and dull persons are more fecund than the more intelligent, better educated and more skilful. Intelligence is inherited. The proportion of the less intelligent and less skilled workers in the national population is therefore increasing and will continue to do so, and thus average intelligence is declining. Penrose's criticism of the Eugenic Society's adoption of this view takes up several points. Intelligence in the total population is distributed continuously in a Gaussian curve with no clear natural boundaries between average, dull and feeble-minded subjects, and for many purposes selection by these criteria will be arbitrary. This is particularly true in judging between subjects in the low normal to the feeble-minded range. Penrose thought that the fecundity of feeble-minded subjects had been overestimated, which therefore exaggerated the presumed decline in national intelligence. He confirmed that some feeble-minded parents had larger families than those of more intelligent parents,[135] but calculating from these larger families left out of account numerous feeble-minded and the majority of more severely defective parents who had no children. Fertility in fact decreases steadily from those with IQ 70 down to almost total infertility at IQ below 50.[136] Further, in a survey carried out by the Departmental Committee on Sterilization (1934) among the offspring of people notified as mentally defective, the proportion who died under the age of one year was almost double that of the general population.[137]

Commenting on Sir Godfrey Thomson's Galton Lecture[138] Penrose observed that his affirmation of the decline in mean national intelligence requires the assumption that intelligence is inherited and that its decline must not be considered transient. If this is so, 'these assumptions set an awkward problem.' Differential fertility is likely

to have been significant during the last 50–100 years, could have been present in history still further back, and is possibly a normal biological process. There must be a genetic or environmental mechanism tending to keep intelligence constant, otherwise we would all be mental defectives. However, intelligence had in fact shown no decline,[139] as was later found to be the case by Thomson[140] in his comparison of the intelligence of Scottish schoolchildren at two periods ten years apart in which the mean IQ was higher at the second period and contradicted his 1966 conclusions. Penrose discounted studies by Cattell[141] and Emmet[142] with contrary findings because they assumed that a person from a large sibship will have more children than a person from a small one. Evidence, however, is lacking for this assumption.[143] However, intelligence is correlated with stature, and mean stature had shown a steady increase over approximately a century, suggesting that intelligence might do the same.[144,145] Fisher had suggested that the inheritance of intelligence, like height, was consistent with the additive effects of a large number of genes[146]. Both are distributed in the general population continuously in a Gaussian curve, in which case, Penrose argued, there was evidence that there may be recessive genes which make high intelligence possible[147]. If this were true, people of average (and dull) intelligence would carry these genes and this would be a reservoir for the replacement of subjects of high intelligence who were less fecund. This led Penrose to deny that the differential fertility of dull and superior groups would inevitably lead to a decline in average intelligence. On the contrary, he believed that through the fertility of these people their offspring probably contributed to the maintenance of a stable average intelligence level in the general population.[148,149] The greater fertility of a group with a lower average IQ was therefore consistent with the maintenance of a stable average IQ and the lack of demonstration of a decline in intelligence makes it appear that this is so. Concluding *The biology of mental defect* Penrose says:

> Subcultural mentality must inevitably result from normal genetical variation and the genes carried by the fertile scholastically retarded may be just as valuable to the human race, in the long run , as those carried by people of high intellectual capacity.[150]

This debate received attention from a wide audience. Educationists (e.g. Sir Godfrey Thomson, Professor of Education in Edinburgh University; Sir Cyril Burt (1883–1971), Professor of Psychology, University College, London University)[151] exerted considerable effort in comparing the average levels of schoolchildren at intervals of a decade or so and the consequences of their conclusions gave rise to public and political debate which was epitomized in three discussions broadcast on the BBC Third Programme in September 1948.

In the third of these programmes, during a discussion with Penrose entitled 'Intelligence',[152] Burt insisted that what psychologists meant by intelligence was general, as opposed to specialized ability; it was innate (i.e. genetically determined) and was what they believed they were measuring by means of intelligence tests. Burt maintained that if the proportion of the population who had a high rating of this quality were less fecund than their lower-rated compatriots, a decline in average intelligence must be inevitable, and the unspoken assumption was that without appropriately

directed measures and effort it would be continuous; in 50 years the number of scholars and geniuses would be halved.[153] Penrose, on the other hand, argued that the innate quality called intelligence was inaccurately measured by intelligence tests and in any case how this innate potentiality was used depended on environmental influences acting on the person from the time of birth. He said that this argument incorporated two questions: (i) whether abilities measured by intelligence tests were declining, and (ii) whether genetic potentiality was becoming feebler.

Penrose further contended that estimates of the number of mental defectives were unreliable because standards of ascertainment alter and because definition is arbitrary in many cases on account of the graded distribution of intelligence. We must, he said, therefore learn from parallel investigations such as stature, where there is also a correlation with family size. In fact, stature has risen over the past hundred years. The same can be said of the average duration of human life, which has similarly increased.

Burt, however, in checking his test results with the recollections of teachers who had been in direct contact with children over 30 or 40 years, found that they did not think the increase in defectives was as great as his calculations implied and he thought that 'some unknown biological factor may tend to keep the proportion stable'. Penrose said that he believed that this factor was the production by dull parents of some children more intelligent than themselves who increased the proportion of subjects of higher intelligence. Burt replied that this 'assumption is just a blind guess. What we need are facts' and with this Penrose agreed. This period of informed public debate probably represents the summit of the Eugenic Society's policy and influence. A rapid decline in their membership and resources set in as the horrifying facts of what was called eugenics in Germany became indisputably and widely known at the end of the Second World War.

The Kennedy–Galton Centre

On his retirement from the Galton Chair in 1965, Penrose set up, at Harperbury Hospital for Mental Defectives (in Hertfordshire, about 25 miles north of London), the Kennedy–Galton Centre for Research and Diagnosis with the active collaboration of its medical superintendent, Dr A. Shapiro. It was then the main mental deficiency hospital for the county of Middlesex. Research had been carried out at Harperbury Hospital for about 20 years before the Kennedy–Galton Centre was officially opened, in April, 1965. An award made to Penrose by the J.P. Kennedy Jr Foundation was used by him to open a laboratory, which enabled more intensive work to continue as is indicated in the second part of the name of the Centre which:

> implies that the scientific researches on the causes of mental deficiency, to which it is dedicated, should be of a high objective standard and imaginative conception as would be demanded by the association of the name Francis Galton.[154]

The work done here is reported by Penrose in an article he wrote a year before he died[155] and is commemorated by Berg.[156] In the first seven years of its life, about 80

papers and two books were published, and a fourth (and final) edition of *The biology of mental defect* appeared. Outstanding among the work carried out in the Centre is that on the pathophysiology of Down's syndrome, the dermatoglyphics of Down's syndrome and chromosomal errors[157] (as in Turner's syndrome). The Kennedy–Galton Research Centre is now transferred to the Clinical Research Centre at Northwick Park Hospital, which is a national centre for clinical research under the direction of the Medical Research Council.

Conclusion

Lionel Penrose's contributions on eugenics extended from 1933 to 1973. They probed accepted opinion, rejected prejudice and exposed unscientific procedures. Although memory of the perverse application of the name 'eugenics' to the mythical Nazi doctrine of pure race causes the questions it signifies to be avoided, they remain with us today. In this centenary year of Penrose's birth we are enabled to approach them more effectively in the light of the development of his illuminating criticism and discoveries.

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NOTES

70 Karl Pearson, *The problem of practical eugenics* (Dulau, 1912).
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85 Fisher, *op. cit.* (note 71).
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131 Blacker, *op. cit*. (note 72).
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152 *Ibid.*
153 Burt's father was physician to members of Francis Galton's family, with whom he became acquainted. In 1907 he participated in the anthropometric survey of the British people sponsored by the British Association for the Advancement of Science. His task was to check some of the ideas on the existence and nature of intelligence which had been recently propounded by Charles Spearman. From this time to his death in 1971 his interest was intelligence, its distribution in the population and its determination, as Galton had maintained, by hereditary influences. In 1932 Burt was appointed to the Chair of Psychology in University College in succession to Charles Spearman. He was a joint editor of the *British Journal of Statistical Psychology.* L.S. Hearnshaw in the *Dictionary of national biography 1971–80* (ed. Lord Blake and C.S. Nicholls), pp. 111–12 (Oxford; Oxford University Press, 1986). Stephen Jay Gould, in ch. 6 of *The mismeasure of man* (Penguin, 1981) places Burt's argument in a broad historical, political and personal context. He quotes the following from Hearnshaw *op. cit.*, p. 274:

> It [the innateness of intelligence] was for him almost an article of faith, which he was prepared

to defend against all opposition, rather than a tentative hypothesis to be refuted, if possible, by empirical tests. It is hard not to feel almost from the first Burt showed an excessive assurance in the finality and correctness of his conclusions'.

154 L.S. Penrose, 'Research Report: Kennedy–Galton Centre, Harperbury Hospital', *Psychol. Med.* **3**, 125 (1973).

155 *Ibid.*

156 J. M. Berg, 'L.S. Penrose: his contributions to mental deficiency' in *Proceedings of the Third Congress of the International Association for the Scientific Study of Mental Deficiency* (1973), ed. J.M. Berg, H. Lang-Brown, H. Primrose and B.W. Richards, vol. 2, Memorial session to Professor L.S. Penrose, (Polish Medical Publishers, 1975).

157 Penrose, *op.cit.* (note 154).