The Scottish Society Of the History of Medicine

(Founded April, 1948)

REPORT OF PROCEEDINGS

SESSION 2000-2001 and 2001-2002

The Scottish Society of the History of Medicine

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SESSION 2000-2001

THE FIFTY SECOND ANNUAL GENERAL MEETING

The Fifty Second Annual General of the Society was held at the Verdant Works, Dundee on the 4th November 2000. The President, Dr John Forrester was in the Chair. The death of Dr Nick Gordon, a former Secretary of the Society, was noted with sorrow. The minutes of the 51st AGM were approved and the Secretary's and Treasurer's reports were accepted. Dr Tony Butler was elected as Secretary in succession to Dr Macgregor and Dr Macgregor was warmly thanked by the President for his efforts on behalf of the Society, particularly in computerising the Society's records. Four members of Council (Dr Rufus Ross, Miss Joan Ferguson, Dr Elizabeth Lazenby and Mr Roy Miller) retired after serving for three years and they were thanked for their efforts. They were succeeded by Dr John Chalmers, Dr Bryan Ashworth and Mrs Mary Haggart.

THE ONE HUNDRED AND FIFTY EIGHTH ORDINARY MEETING

This meeting followed the Fifty Second Annual General Meeting in the Verdant Works, Dundee. 51 members were present. The President introduced two speakers. Anne Hargreaves talked on the health of Jute workers in Dundee and Dr Morrice McCrae talked on the National Health Service - The plan for Scotland.

THE HEALTH OF DUNDEE JUTE WORKERS

Introduction

On the corner of Horsewater Wynd in 1828, a four-storey, 28-bay, iron-framed building was commenced, which was to become known as the 'Coffin Mill'. This was actually the south range of the Logie Works, and the nickname related to the shape of the site, but the designation was crystallized by a fatal accident which occurred during the construction of its chimney; the mill lass who was scalped when her hair became caught in the machinery merely added to the imagery.[1]

Later commentators began to wonder whether all such buildings should have been called 'coffin mills' in view of the health and life-expectancy of their workers. Was this cynicism justified? And if so, could it be laid at the door of jute, a fibre so pervasive in this textile town as to generate the soubriquet of 'juteopolis'?

Dundee had been involved in textiles since the fifteenth century, with a long tradition of weaving. Wool yielded to flax, both home-grown and imported from the Baltic, until by 1826 Dundee had overtaken Hull as Britain's premier flax port. Jute had first been imported into Britain in 1791 by the East India Company, but it was even more difficult to spin than flax and hemp, mainly because of its brittleness. The breakthrough came towards the middle of the nineteenth century with the discovery that 'batching' or soaking jute fibres with generous quantities of water and whale-oil made them very much easier to handle. This was much to the relief of the whalers, since the introduction of gas-lighting in the late 1820s had meant that they desperately needed a new market for their oil. A seven-fold increase in jute imports occurred between 1841 and 1851, doubling by 1857 at the close of the Crimean War. 'Juteopolis' had been born. With the growing demand for sacking for bulk commodities and canvas for sailing-ships (as world trade increased), tents, tarpaulins, and carpet backing, as well as wartime demands in Europe, Asia and America, there were fortunes to be made.[2]

As in most nineteenth-century industrial centres, Dundee's population rose steadily, absorbing many from the surrounding countryside but also attracting quite large numbers of Irish immigrants. By 1881, the burgh had around 140,000 inhabitants, with an excess of females (56%) against 44% males. Industrial towns were well known for being unhealthy places, even without any further disease related to their own particular manufactures or activities; Lancashire's cotton mills had long been associated with respiratory ailments, and flax could be similarly injurious.

There are two main sources for pertinent data concerning the health of Dundonians in the last third of the nineteenth century, but both have their limitations. The annual reports by the Medical Officer of Health (and

anything else he published) dealt with the burgh as a whole, and although there was some breakdown of disease, there was little distinction between workers and unemployed, or male and female; furthermore, the figures sometimes differed from those of the Registrar General, especially where non-communicable illnesses were concerned. However, the occurrence or recurrence of epidemics was noted, with their causes (where ascertainable) and occasional comparisons with other years and/ or other Scottish towns.

The other source for relevant material is the admissions registers for the town's infirmary. These records appear more promising since each patient's occupation is either entered or can be deduced from the referring person or establishment. However, these patients were not necessarily a true reflection of the town as a whole, since admissions were subject to the facilities available in the infirmary, the prevailing criteria for admission, and the availability or otherwise of parallel services elsewhere in the town. Dundee Royal Infirmary had, since 1855, functioned in a purpose-built institution high up on Barrack Road, theoretically having 250 beds, though the average number occupied was in fact closer to 200; until 1890, when the new Epidemic Hospital at King's Cross undertook to receive typhoid, typhus and scarlet fever cases, forty-five beds were allocated for infectious diseases[3]. Because of the system of admission by Governors' recommendation (apart from accidents or emergencies), the cross-section of patients cannot be fully representative, even after the introduction of 'free lines' in 1882, which gave poorer people access to medical care they might otherwise have had to forego. Much sick-nursing would have been carried out at home and hence is unrecorded.

Dundee Royal Infirmary registers

The hospital year started in mid-May rather than January. Of the 1720 indoor patients admitted between 17 May 1879 to 16 May 1880, just under 1000 were involved in the textile industry in its widest sense:[4] small numbers of rope-workers, bleachers and dyers have thus been included with weavers, spinners, calenderers and general mill-workers; those in auxiliary industries such as textile machinery- and shuttle-makers, or bobbin-turners, have been excluded. There are three types of cases which attract attention: trauma, fevers and respiratory disease.

Table I Admissions for trauma (textile workers) 1879-1880

Bruising	19	
Burns / scalds	6	(2 burn; 4 scald)
Crushes / smashes	20	(14 requiring amputation)
Dislocations	2	
Fractures	26	(24 simple; 2 compound)
Gunshot wound	1	
Lacerations	8	
Scalp wounds	4	
Sprains/strains	5	
Total	91	

Trauma, unfortunately, is never absent in an environment where heavy machinery is present. This accounted for 10% of the textile workers' sample, and over a third of these injuries were certainly works-related. Dislocations, lacerations, burns, scalds and sprains were few compared to bruises (from accidents with the huge jute bales), fractures, and crushes or smashes. These last frequently necessitated amputation, usually of fingers or hand, but sometimes more of the upper limb, or occasionally of toes. The nineteen-year-old whose scalp was torn by her hair being drawn in would have had fewer long-term problems than the nine-, twelve- and fifteen-year-olds whose hands and forearms were unsavable. Two cases of tetanus were recorded, only one of them surviving.[5] The Tay bridge disaster, which occurred on the stormy night of 28 December, with the loss of seventy-four lives, is not reflected in these particular records.

Table II Admissions for fever 1879-1880

	Textile Workers	Other workers/children
Ague	-	1
Enteric f.	9	6
Febricula	11	4
Intermittent f.	1	1
Measles	2	8
Remittent f.	-	1
Scarlatina	3	14
Smallpox	5	1
Typhus	48	44

The fever cases must be observed with awareness that bacteriology then was in its infancy, so diagnosis and categorization of infectious diseases were still somewhat imprecise. A further tenth (almost) of the textile workers group were classed as 'fever', with 60% having typhus, or typhus being noted as a possibility. It was of some concern to the hospital's Directors that fever cases had been increasing over the last four years, 159 in total for that particular year (1879/80), with the excess of thirty-five over the previous year all typhus. The smallpox outbreak seems to have been localized, since four out of the five cases belonged to one family, and the fifth could well have been a boyfriend. There was a small wooden building available at Strathmartine Road for the seclusion of infected cases but, strangely, these smallpox patients were transferred there only after two or three weeks in the Infirmary.

Table III Admissions for respiratory disease 1879-1880

	Textile workers (n = 968)	Other workers/ children (n = 752)
Asthma	1	1
Bronchitis: acute	17	10
sub-acute	14	6
chronic	87	31
Bronchial catarrh	2	-
Emphysema	7	5
Pleurisy	21	12
Pleuropneumonia	1	-
Pneumonia	29	17
Phthisis	106	63
Pulmonary apoplexy	1	-
Pulmonary gangrene	-	1
Totals	286	146

Almost one third of the textile workers had respiratory symptoms. Pleurisy and pneumonia were not unknown, but the outstanding problems were bronchitis and phthisis, predominantly pulmonary. Tubercle can be deduced for a further handful of cases, and perhaps implied for the two patients for whom a Sayre's jacket was provided.

Medical Officer for Health reports

There were two Medical Officers of Health around this period. The earlier, George Pirie, found the death rate for 1878 to compare favourably with other principal Scottish towns, and was thankful that the very genial weather which had prevailed for the greater part of that year had reduced deaths from respiratory disease, even though these were still a fifth of the total. However, there had been fewer births, which he put down to possible depopulation and commercial depression. Measles, scarlet fever and whooping cough had been prevalent - almost a fifth of general mortality, and over 60% higher than the previous year. Diarrhoea and dysentery, particularly in children, were also up. Encouragingly, there were but three deaths from intemperance, 'a satisfactory number, if it could be relied on'.[6] Pirie still desired a register for fever cases, and hoped that the community would follow the Police Commissioners' ruling that the occupants of every place where contagious or infectious disease occurred were to inform the Sanitary Inspector's office within twenty-four hours. He also asked, again, for a Reception House, to improve resources when fever occurred; other Scottish towns had them, apparently successfully, and he still felt the need for one in Dundee.[7]

The accompanying report by the Sanitary Inspector, Thomas Kinnear, included a note that of the 569 persons found suffering from infectious disorders, 472 were treated in their own homes and only 97 (16.7%) in the Royal Infirmary. This serves to underline some of the limitations of the Infirmary records. Kinnear also emphasized the lack of female lavatories and conveniences, a not uncommon problem in Victorian Britain and pleaded for these as an urgent necessity. Pirie's successor as Medical Officer of Health was Alexander MacGlashan Anderson. He was an avowed sanitarian and, in 1883, published in addition to his annual report a lecture in which he gave rein to his enthusiasms. The annual report put Dundee's death-rate as only fifth best out of the larger Scottish towns, (Glasgow, Paisley and Renfrew were far worse), but noted that twenty-two large towns in England had lower rates. So, all was not well, even if the severe winter weather had contributed to the increase in fatal chest diseases.[8]

Table IV Reported infectious disease 1883

	Reported	Removed to DRI
Typhus	70	63
Typhoid	279	85
Scarlet fever	392	36
Diphtheria	117	2
Puerperal fever	10	
Smallpox	2	
Whooping cough	3	

Infectious diseases were well below the previous year when there had been a serious measles epidemic. Of the two cases of smallpox, the first had been imported from Glasgow, and the second contracted from the first. Alleged concealment of disease now seemed rare, and additional powers obtained through the Dundee Police & Improvement Act (1882) had enabled rapid control of an outbreak of scarlet fever in September 1883 and one of typhoid the following month. It was clear that those with infectious diseases who had been nursed at home rather than in hospital were more likely to succumb, though perhaps this was related to the fact that nearly all the diphtheria cases had been treated at home; certainly, almost half of the home deaths were in conditions highly un-favourable for recovery, such as one-roomed houses. On the brighter side, deaths from typhus were down by a third. Still there were no lavatories or conveniences for females.

Anderson's lecture, given and published also in 1883, reflected his concern for the mortality figures for the previous year, when he had been sufficiently troubled to seek comparisons with the few other studies then available.[9] His concern over infant mortality in particular pervades the dry statistics. The death rate for 1882 had been 21 per thousand population overall; 42.5% of these deaths were children below five years of age, and 23.5% children below one. Indeed, over the previous eight years, infant death rates had continued at such high levels that it suggested to him that the Public Health (Scotland) Act of 1867 and its amendment of 1871 had had little real impact on water supply and other sanitary measures; the above average mortality from germ-based diseases further supported this. Even for those surviving infancy, life expectancy was well short of the Psalmists assumption of three score years and ten: just over 53 years for men, just under 52 for women. These were overall figures, however, so Anderson then attempted to separate out various classes.

Table V Summary of deaths for 1882

Class	Male	Female	Mean age at death of those >20 years	% of children under 5 years
I Gentry, Professionals, merchants, employers	53	61	65.36	14.91
II Tradesmen, shop-keepers, salaried persons	173	119	51.3	41.09
III Mill, factory, foundry, dock, shipyard workers	640	779	50.08	44.32
IV Other classes	590	639	53.45	43.37
Totals	1456	1598		

Life expectancy for the gentry and professional men was found to be more than fifteen years greater than for workers in mills, factories, foundries, shipyards and docks over the age of twenty; the mortality of their children was only a third of all the other classes he had devised. Unlike English life tables, where the female was the longer liver, the mean age at death of Dundee females was generally less, which he felt was due to the local industry employing so many females. From the few other contemporary studies then available, it seemed that in industrial Newcastle, the mean age at death of all who died was nearly three years greater than in Dundee, and in rural Northumbria, the mean age of adults was about eight years more. Whilst towns might offer the attraction of more regular employment at fair wages, their impact on health was deleterious, and told more fatally on children than adults.

The high incidence of chest problems in working Dundonians has already been reflected in the Infirmary's admissions registers. For the burgh as a whole, for 1882, 1125 out of a total of 3054 deaths could be attributed to respiratory disease (just under two-fifths); of these, 35% were assuredly consumptive. The scale of other infectious diseases can also be seen. During the year August 1882 to August 1883, every case of typhoid fever and diphtheria which occurred within the burgh had had to be reported to the Sanitary Department; the houses of infected persons were examined by experienced Sanitary Officers, and detailed notes recorded daily. Despite the fact that there was no infected milk or water at the time, within that year there were 147 cases of typhoid and 93 of diphtheria. In 100 out of the 166 houses involved, there were no water-closets, and in a further 41 houses, the WCs were 'bad'.[10] Anderson's conclusions were bleak: the waste of human life from the prevalence of infectious disease was 127 lives annually, with a further 1500 cases of sickness; the mortality amongst working-class children was enormous, and life expectation in the adult working class was nearly eleven years less than it might be. He also felt that the insanitary state of dwelling-houses contributed to more than a quarter of the total deaths per annum.

If Her Majesty's Prisons, whether in Newcastle, Perth or Dundee, were infinitely healthier places in which to reside, these disturbing figures demand some explanation. The textile industry cannot be held responsible for every dire feature of working-class life, but two aspects deserve some attention: occupational disease, and the impact of commercial competition upon wages and hence on living conditions.

Industrially-related disease.

Thackrah can be excused for not considering jute in 1832, since the industry had still to take off, but he was well aware of respiratory problems in flax workers.[11] Arlidge, sixty years later, knew of the need for water and oil in the handling of jute fibres, which would have reduced levels of flying dust, but he still anticipated that statistics of jute manufacture would exhibit even more insanitary results than did those of the linen trade.[12] 'Expert' medical opinion in 1893 Dundee over correlation between flax dust and chest disease, however, was divided.[13]

Oliver in Dangerous Trades (1902), noticed that jute under the microscope showed fibres which were often torn and ragged, which would be detachable from the bronchial mucous membrane only with difficulty.[14] One of his contributors, HJ Wilson, referred to much gritty dust being present in the dry jute fibres, which might well contain the tetanus spores so widespread in India; in the spinning rooms, fluffy particles continually rose from the excessive speed of the frame flyers, so that clothing, hair and all horizontal surfaces soon became coated. He had also observed a peculiarly local practice amongst the women: they habitually took snuff, presumably to rid their nostrils of dust.[15] Although a number of the mills and factories were built when the industry was at its peak of prosperity, so were substantial and well-designed premises run by enlightened owners, yet the spinning rooms could get very hot from crowded frames, crowded workers, and friction of the bearings and temper bands on the bobbins. Exhaust fans could reduce both dust and temperature, but were rarely present in the older premises. Weaving, by contrast, was a much cleaner occupation. 'Mill fever' tends to attack newcomers to any sort of factory work, so was not a peculiarly local problem, and slight deafness and huskiness of voice can be noted in most textile workers because of the noise in the sheds.

Most of these early observations were subjective, and it was not until the end of the 1950s that an objective study was attempted into dust diseases in jute and flax workers in Dundee. Schilling, in interviews with twenty workers in a Dundee jute mill, had already found little evidence of the 'Monday cough' characteristic of byssinosis, and he noted Smith's examination of a further twenty-six workers, with similar results.[16] Perhaps prompted by Schilling's Milroy lecture to the Royal College of Physicians (London), the Medical Officer of Health for Dundee, with three co-workers, then undertook a survey of respiratory symptoms and function among 123 men and women in the jute industry and 242 in the flax industry, with an admitted bias towards those working in the dustier departments and those in older age groups (because they had had longer periods of exposure); seventy-two men in a heavy engineering firm were used as controls.[17]

Interviews and ventilatory function tests were supplemented by comparative tests on Mondays and Thursdays (to screen for 'Monday cough') and radiological examination. Their most pertinent finding was that 'byssinosis was observed in 30% of all the flax workers, though milder than in cotton workers, but was absent in jute workers: no jute workers exhibited a "Monday cough"' It can be argued that working conditions in 1960 were so different from those in 1880, that this finding is irrelevant; on the other hand, the reduction of environmental variables does help to clarify what might have arisen from the jute itself. Even allowing for some previous occupational movement between the three groups, the jute workers showed nothing to suggest even the earliest phases of pneumoconiosis, even when they were of relatively poor physique.

A few years earlier, Mair had been involved in an investigation into dermatoses in jute workers; skin changes in textile workers, especially those handling cotton, were well recorded, but jute had somehow been overlooked.[18] Even in 1952/3, a tenth of the city's population was still currently employed in jute, so a field study involving seven mills/factories was planned. A preceding clinical survey in the Infirmary's skin out-

patients clinic (with controls) encouraged the team to leave aside dermatitis, whether contact or infective, and concentrate on oil acne and degenerative (pre-malignant) changes in the field study. Since these were generally confined to face, neck, forearms and hands, investigation was easy and non-disruptive, and over 3000 employees were examined. It was found that dermatitis was not a serious hazard, and there was no evidence of sensitization to jute; oil acne affected men more than women, and generally in the younger age groups; degenerative changes in exposed skin were common, especially in elderly female operators, and particularly in spinners; and, only in a few cases was there progression to squamous cell carcinoma, or carcinoma of the scrotum. The change from the use of whale-oil to that of mineral oil was not regarded as being particularly contributory, but the high incidence of oil acne did suggest heavy exposure with inadequate removal after work. A brief comparison with 667 workers in a flax firm (probably Baxters), where little if any oil was involved, confirmed far lower figures for both oil acne and pre-malignant change. The degenerative changes in the jute workers were seldom dangerous, and any carcinomata were generally of low malignancy, radio-sensitive, and easily accessible for incision. Tumours amongst the jute workers from 1880, already encountered, rarely seem to have necessitated treatment at the infirmary, so Kinnear's view that the type of oil used was not heavily relevant has some support. There were two auditory studies in the 1960s which utilized Dundonian populations. The Industrial Health Research Board had already explored the psychological effects of noise earlier in 1932, and followed this up by looking at its effects on weavers' performances;[19] however, sample sizes were rather small, and cotton rather than jute was under consideration, but both studies concluded that industrial efficiency could be affected.

Taylor, Pearson and Mair then carried out a retrospective study of hearing loss in female jute workers from fourteen Dundee mills whose periods of exposure ranged from one to fifty-two years- a noticeably stable population with remarkably long service.[20] Allowing for presbycusis (effects of age) the most conspicuous feature was found to be an initial deterioration during the first ten to fifteen years of exposure, followed by a plateau for the next decade, before further deterioration. The presbycusis data used, however, had been derived from a rural rather than urban population, so female school-teachers (a similarly stable population in the 1960s) were then surveyed for their hearing thresholds.[21] Perhaps to the investigators' relief, there was close agreement between urban and rural groups, even though the hearing of 18-24-year-olds did not conform to the British Standard. However, there was no attempt to compare these jute weavers with other textile workers or with non-textile industrial workers.

Socio-economic factors.

If Schilling's observations of 1956 and Mair's findings in 1960 imply that jute *per se* was not the arch-villain in disease promotion, and it has already been noted that many of the newly-built mills and factories were well-designed, with exhaust fans, then broader aspects of the industry, competition, wages, employment should be examined for their possible bearing on the town's health record. Dundee's intense concentration on one industry in a one-industry region meant that in less prosperous times, when workers might be laid off or mills closed, there was no other real source of employment. Furthermore, it was not very sensible to over-produce and continue to flood an already saturated market, so that prices plummeted and profits disappeared; increasing competition from the by then more organized jute industry in Bengal compounded the problem.

The year 1876 had been marked by depression in all branches of the textile trade, and recovery did not really commence until 1879. Thus, many of the health problems outlined earlier had developed during slump rather than prosperity, and Dr Pirie had attributed a fall in the birth-rate for 1878 to commercial depression.

One response to low profits and competition is to keep wages down. With barely-concealed sarcasm, Walker commented in 1979 that "It was the achievement of Dundee textile employers that so much of the business of producing jute could be undertaken by youngsters. Of the female labour, about one-third was under 20 years of age and the proportion was almost half, if the age-range is extended to 25 years." Employing women, of whom there was an abundance, meant a considerable saving, since their average wage (as adults) was half that of men.[22]

The general average wage for jute in 1886 was £26 per worker per year, and £25 for linen, both well below the £36 for cotton. Sack-sewers were paid at the rate of tuppence-ha'penny per sack, so had to sew all their waking hours to gain 5s.or so a week and half-timers (ie children aged 10-14 working half-time in the mill, half time in the mill school) earned between 2s.and 3s. 7d.a week.[23]

Adult wage rates were held down as much as possible: if the wife worked also, a family could just keep out of poverty, and a half-timer bringing in a further 3s. could mean the difference between rent-paying and sustenance, or debt and starvation. Not infrequently were there admissions to the Infirmary because of 'cold and starvation', 'want of food', or 'debility'. Unsurprisingly, trafficking in birth certificates was common, to enable a child to leave school and be fully employed.

Deterioration of diet had been commented upon since mid-century. Slaughterhouse figures suggested that the average Dundonian ate no meat at all. Tea, bread and sugar were not additions to the diet, but tended to replace oatmeal, bone broth and potatoes because they were more rapidly and easily prepared. Quick meals

became important as the number of women at work increased, and the constant sub-division of houses resulted in many families living in rooms without any kind of cooking facilities, or even knowledge about cookery. Small wonder that the workforce was characterized by low stature and lack of robustness, even excluding the effects of tubercle. The Factory Report for 1899 remarked upon the stunted and emaciated condition of the Dundee half-timers, as well as many of the adult workers; Dundee boys aged 11 to 12 were on average 4 ½ inches shorter than country boys of the same age and a stone lighter.[24] With poor muscular strength, many could do only light work, and even this could prove too exhausting. Some of the bruising from huge jute bales recorded in the Infirmary registers was probably a consequence of this. There was considerable recourse to spirits, usually whisky, as a social escape. Even though the strength of Dundee women sought to hold the town's social fabric together, much drunkenness was observed in men, women and young girls, and subsequent physical abuse; illegitimacy rates were considerable, and the Medical Officer of Health's notes on destitute burials nearly always included references to neonates or infants dumped on stairs, in ashpits, at the police-station, or in the harbour.

Weavers generally did far better than spinners, being skilled and hence well-remunerated, so they could afford reasonably good dwellings. Low wages meant difficulty in affording rent, so the town was full of unoccupied houses, despite the severe overcrowding in some areas; in 1880, there were nearly four thousand un-let houses in Dundee. Building new houses was, in any case, generally unprofitable for the speculator unless they were middle-class villas, and those employers who attempted it for their workers soon gave it up as hopeless. If they did build, it was upwards i.e. a three- or four-storey tenement but with the proprietor's profits in mind rather than the sanitary health of the tenants. Piped water was available only as far as the stair heads, not inside the homes, so there were no facilities for washing water nor flush water-closets; a pail behind the door had to suffice, emptied into the euphemistically termed ashpit, which stank appallingly.

Lax habits resulted in dirty floors, stairs and beds, and children with filthy clothes. If a tenant could afford a two- rather than one-roomed dwelling, he would most likely sub-let the second room for its rental; this would only add to the overcrowding. Small wonder that infant mortality and the incidence of gastro-intestinal and contagious disease was so high.

Later nineteenth-century developments.

Hospital facilities in Dundee since 1880 had been changing as well as expanding. As an experiment, the Infirmary's Board of Governors introduced, in March 1882, a hundred free admission lines "for suitable patients who experience difficulty in obtaining admission to the benefits of the Hospital in the ordinary way", with a pious hope that this would not prove too serious a pecuniary burden.[25] The experiment seems to have been successful, since the number of free lines steadily increased to 225 by September 1886. A separate Children's Ward opened at the end of 1883, a new operating theatre was in daily use in 1896, new eye wards opened the following year; nursing facilities were increased after the construction of a Nurses Home in the grounds, and electric light was installed in 1898/99. Elsewhere in the town, a new Hospital for Women was opened in March 1889, the new Epidemic Hospital in 1890, and a new hospital for the sick poor (just north of the East Poorhouse) in December 1893. There was a Home for Incurables and the Dundee Eye Institution as well as the Infirmary's Convalescent Home out at Barnhill (established in 1877), and a Maternity Hospital was in prospect.

Any comparisons of the Infirmary's admissions registers, therefore, can only be very loose, and are almost impossible for fever cases. Scarlet fever was so prevalent in 1886 that convalescents were transferred to Kings Cross Hospital; the following year, a severe typhus outbreak meant that the Sanitary Authorities took entire charge of scarlet fever. In 1888, these two diseases were treated, by arrangement with Sanitary Authorities, alternately in the Infirmary and Kings Cross, with the former taking all the typhus and typhoid in 1888-89. A smallpox outbreak at the end of 1888 meant that the Infirmary then relieved the Sanitary Authorities of scarlet fever as well.

Once the new Epidemic Hospital was functioning, though, fever cases other than diphtheria dropped dramatically at the Infirmary. A few comparisons between the 1879 and 1889[26] admissions have been made nevertheless, but examining only the first 800 recorded for each year. Injuries and trauma in textile workers necessitating admission rather than out-patient attention were comparable, with perhaps more fractures but fewer crushes/smashes. Fevers have been disregarded because of administrative factors but the respiratory cases deserve attention.

Table VI Admissions for respiratory disease (textile workers)

	1879 (n=469)	1889 (n=326)
Bronchitis: acute	4	3
sub-acute	5	8
chronic	34	11
Emphysema	4	2
Pleurisy/pleural effusion/ pleurodynia	9	10
Pneumonia	18	9
Pulmonary phthisis	62	34
Totals	136	77

The fall in pulmonary tuberculosis seems mildly encouraging, but there was still a long way to go, as the Medical Officer of Health's report for 1896 revealed. Respiratory disease had contributed to nearly a quarter of all deaths for that year, more than half of which had been ascribed to phthisis.[27] This so concerned him that two years later, there was a special report on tuberculosis, which included meningeal and other forms as well as pulmonary.[28] Over the preceding decade, tuberculosis had accounted for one in seven of all deaths, and a fifth of such cases involved children under five years. There was also a table of occupations for these individuals. Mill and factory operatives accounted for 36% of fatalities, and because of the Registrar General's classification system, Templeman felt that many of the "domestic" group (a further 30%) might also be mill/factory operatives, especially if most were female rather than the unemployed males known locally as "kettle bilers".

His figures, though, did not take into account the proportions of the population involved in these various occupations. In the town itself, lavatory towers were slowly added to tenement buildings, and typhoid gradually lessened, though did not vanish. Socio-economic problems continued to persist, reflected in the continued high levels of typhoid and typhus even after English industrial centres had brought them under relative control, and the still appallingly high figures for infant and child mortality, which was about ten times the rate of suburban districts.

The number of cases admitted to the Infirmary for debility or starvation, despite two poorhouses and a host of charitable organisations and facilities, in fact seemed to be increasing. It was later claimed that the death rate in Dundee had halved between the Improvement Act of 1871 and 1917, yet there were still 231 deaths from tuberculosis in the city in 1917.[29] The Dundee Social Union's reports of 1905, one into the housing and industrial conditions of the city, and the other into the physical condition of Dundee's elementary school-children, did not pull any punches, but it was not until after the 1923 strikes that employers could begin to modernise and rationalize the jute industry.

Acknowledgements

Access to Dundee Royal Infirmary admissions register by the Department of Archive and Manuscripts, University of Dundee, is gratefully acknowledged.

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5. Twenty-seven cases of tetanus were admitted during the period 1875-1900, though ten of these years saw no cases, and there were never more than three cases a year. Tetanus spores were present in the dust within the jute bales, and workers with lacerations or crushes were vulnerable. Of the eleven fatal cases of traumatic tetanus between 1890 and 1899, only five were workers in jute-mills, but three young children may have been infected from dust brought home in their parents' clothing.

6. *Pirie GC "Report of health of Dundee for the year 1878".* Dundee, Wellgate Library, Local Studies Dept. D 8974C
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THE NATIONAL HEALTH SERVICE – THE PLAN FOR SCOTLAND

In the reconstruction of Britain after the Second World War, two separate Acts of Parliament established two distinctive National Health Services. For over fifty years they have operated in parallel but have kept their individuality. I became a medical student some months after the NHS was launched. Almost my entire career has been in Scotland but over the years there have been many occasions when I have seen the NHS as it is in England. I was never at all clear about how the obvious differences came about. Since I retired I have been trying to find out.

The published histories have not been helpful. In one of the first and often quoted, *The Making of the National Health Service,* John Pater, wrote in his Introduction 'in Scotland the National Health Service has a history peculiar to itself that is not described in the following pages.'[1] Pater's book was based only on his personal experience as senior member of the Ministry in the 1940s and 50s and that experience had not included access to circumstances and events on Scotland.

In the official two-volume history of the National Health Service, Charles Webster, could not avoid Scotland altogether. But in his version, the Bill to establish the NHS in England was the essential Bill, briefly

modified in March 1946 to permit 'adaptation to the characteristic administrative and geographical conditions of Scotland.' He suggests that the Scottish Bill was no more than an 'echo of its English counterpart'.[2]

That of course is nonsense. The separate legislation for Scotland was much more than a last minute administrative expedient. The idea of a state health service was conceived in Britain in the first years of the twentieth century but as the idea evolved different ideologies and different social forces set different objectives in Scotland and in England and Wales. The history of that evolution throughout the twenties and thirties was a history of separation.

I won't attempt to trace the history of the evolution of state medical services in Britain step by step from the Boer War to the end of the Second World War. I intend only to draw attention to the ideologies and the social forces that determined the creation of the NHS in Scotland - the influence of Nationalism, the different medical traditions in Scotland and the different reaction in Scotland to the Great Depression of the 1930s.

To look at the influence of nationalism we must go back to the first years of the twentieth century. The Boer War had been a disaster. In Parliament politicians of all parties blamed the quality of the army – not the generals but the men.[3] Over a third of the men who had presented themselves for recruitment in the army – many of them volunteering to escape the deprivations of the great industrial cities- had been found to be underfed, undersized, unhealthy and generally unfit for service. The influential sections of British society became convinced that Britain's industrial urban population was in a process of physical degeneration and that because of the imminent failure in the strength of its workforce and its armed forces, the country was about to lose its empire and its place in the world. For centuries the state had attempted to protect the population from disease. Now, for the first time, it began to be accepted that the state perhaps had a duty to promote the health and strength of the people.

There was some powerful support for the new Eugenics movement in the hope that the state could breed better people.[4] More realistically, the New Liberal Government introduced new social measures. Old Age Pensions were introduced to support the elderly. The School Medical Service was set up to improve the health and development of the nation's children. In 1911 Lloyd George introduced his National Insurance Bill, with its Health Insurance Scheme, to improve the well-being of the working population.

But while social reform was important to Lloyd George, Winston Churchill and a few other members of the Government, for the Government as a whole the preoccupation in 1911 was Home Rule.

There had recently been no fewer that seven motions in Parliament for Home Rule for Scotland and the pressure had increased again in 1910. But the immediate problem was Ireland. During the 1910 election Asquith, the Prime Minister, had given an explicit pledge to introduce Home Rule for Ireland.

For Lloyd George, this was a late and unwelcome complication at the end of his three-year struggle over his National Insurance Bill. His Bill had been framed to apply to all parts of Great Britain and Ireland. But now, with Home Rule in the offing, there were demands in Ireland and from Irish MPs in the Commons for a separate Insurance Commission for Ireland. Lloyd George resisted but six months after he had first presented his Bill in Parliament he finally gave in. Rather than delay any further he decided to present an amended Bill on Monday 13 November 1911.

Over that weekend a dozen strongly nationalist Scottish Liberal members ambushed him. They secretly persuaded the Lord Advocate to extend the Government amendment to include a separate Insurance Commission for Scotland. The majority of the Scottish members knew nothing of the amendment until it was suddenly produced on the Monday. They asked time to consider but Lloyd George refused to allow any more time. That same evening the Scottish amendment was passed. The nationalist group had secured a separate administration for the Health Insurance Scheme in Edinburgh in what was later described as 'the hastiest piece of legislation in the history of Britain.'[5]

This was the first embryo stage in the development of a separate health bureaucracy in Scotland. Within two years the embryo began to grow. A group of Highland MPs – members of the strongly Nationalist Crofters Party - had been quick to point out that the National Health Insurance Scheme could not work in the Highlands and Islands. Almost by definition crofters were poor. For most, even the few pennies of the weekly contribution was either difficult or completely impossible. But the crucial problem was that, even for those who could afford it, the Health Insurance Scheme could not possibly work. The necessary medical services did not exist in the Highlands and Islands.

After an investigation, the government recognised the problem and in 1913 set up the Highlands and Islands Medical Service to provided health services in the Western Highlands, the Hebrides and the Northern Islands. This service was to be administered from Edinburgh by a Highlands and Islands (Medical Service) Board made up, not of civil servants or politicians, but by eight members of the public including six doctors. This was step two in the creation of a separate health bureaucracy in Scotland.

A third step came five years later, in 1918. As a member of the War Cabinet, Christopher Addison, who

was a doctor and a former Professor of Anatomy, had advocated the creation of a Ministry of Health to take on the overall supervision of all the 14 government bodies that had some responsibility for health. As the Minister for Reconstruction after the War, he had his opportunity. When his proposal was first made public it made almost no reference to Scotland. It said only that the necessary Bill would take account of 'necessary matters in relation to Scotland and Ireland.'[6]

In Scotland his proposal immediately provoked a call for a separate Ministry for Scotland. The campaign was led by the Royal College of Physicians of Edinburgh in December 1917. Within a few months the Royal College of Surgeons, the Royal Faculty of Physicians and Surgeons of Glasgow, the Deans of the Faculties of Medicine of Glasgow, Edinburgh and Aberdeen and the Court of St Andrews had all declared their support.

The medical profession's case was supported by all the other interested bodies in Scotland, including all the local authorities and all the insurance companies. It may have been a deputation from the local authorities to the House of Commons on 17 July 1918 that finally convinced the Government for it was that evening that the Government announced that the case for a separate administration for Scotland had been accepted.

But rather than appoint a separate Minister it was decided that the Secretary of State should accept responsibility for Health in Scotland. Since he already had many heavy responsibilities, a Parliamentary Under-Secretary for Scotland was to be appointed specifically to take immediate charge of Health matters. He was to be supported, not by a civil service department, but by a Board of Health.

In 1919 the Scottish Board of Health formally assumed the health responsibilities of the Local Government Board for Scotland, the Scottish Insurance Commissioners, and the Scotch Education Department and the Highlands and Islands Board. The plan had been drawn up by general agreement and the necessary Act was passed without opposition.

This was in sharp contrast with the 'extraordinary opposition'[7] to the creation of the Ministry of Health in London. When the Ministry of Health in England and Wales was eventually formed it was established on the usual Whitehall model. The Minister was supported by a structure of civil servants headed by a powerful and influential Permanent Secretary. Professional medical advice was to come from outside this structure.

For centuries the Privy Council had been the government body responsible for Health and it had taken its medical advice from the Royal College of Physicians of London. Now a Consultative Council on Medical Services was appointed as a source of medical advice for the Minister. But the Royal Colleges in London continued to be influential and the Minister and his civil servants could take what advice they pleased.

In Scotland the new management structure was quite different. It was closer to that of a commercial company than a civil service Department. The Secretary for Scotland was President of the Board and the specially appointed Under-Secretary of State was in effect its chief executive. Policy was determined by a board of six non-executive directors - the Scottish Health Board. The Board members were not politicians or civil servants. Each Board member was a private citizen who had extensive experience of one of the health organisations taken over by the Board. Professional medical advice came specifically from an appointed Consultative Council.

Both the Scottish Board and the Consultative Council had interesting and important characteristics. It was laid down in the Act that both must include women members. (Those appointed were considerable figures in their own right but in the practice of the time it was their husbands who were listed in Who's Who.) Of the six board members two were doctors. Even more significantly – and characteristic of the Scottish advisory system - of the sixteen members of the Consultative Council no fewer than eight held senior appointments in Scotland's universities.

To summarise, by 1919 Scotland had its own health service bureaucracy. It was not only separate from that in England, it was different in character. The Scottish Board of Health was independent of the Ministry of Health and answerable only to the Secretary for Scotland. It was not a civil service department and its members were not civil servants. To borrow Lindsay Paterson's description of another Scottish Board, 'its members remained more closely embedded in society than a professional civil service department in Whitehall. It was made up of members brought to positions of influence through networks within the Scottish professional associations and the Scottish universities.'

The Scottish Board took its medical advice from within its own structure from the Consultative Council and therefore largely from the Scottish universities. The Board did not inherit a traditional channel of communication with the Royal Colleges and none was created. When years later the Board was absorbed into the Department of Health for Scotland its distinctive style and its habit of management by consensus were well established. So too was the influential role of the Scottish universities.

To introduce my second theme, medical traditions and attitudes, I will move on to 1936. At the celebration of the bi-centenary of the Royal Medical Society in Edinburgh, Lord Horder was invited to give the opening oration.[8] Lord Horder was physician to the King, physician to St Bartholomew's Hospital and a

pillar of the English medical establishment. He began by making it clear to his Scottish audience that he was not of 'the tradition in your country.' He professed respect for the Scottish tradition of Cullen, Syme, and Simpson, but he stressed that he was proud to belong to a quite different, English, tradition. He claimed that this was the tradition of Hippocrates, established in England by Harvey, Jenner and Samuel Gee. Samuel Gee had been Horder's teacher and mentor at Bart's, and Horder endorsed Gee's invariable instruction to new students - 'When you enter my wards your first duty is to forget all your physiology. Physiology is an experimental science and very good thing in its proper place. But medicine is not a science but an empirical art.' In the English tradition the ideal physician was the gentleman scholar, for whom the study of medicine was natural history, and who treated his patients without deference to scientific theory. According to Horder the essentials in the management of patients were the personality, the personal experience and the 'horse sense' of the doctor. He insisted that the study of medicine should not be regarded as an experimental science and that clinicians should always be cautious of 'laboratory methods and the exploitation of instruments of precision.' In the English tradition, the physician's work did not require the sanction of science.

In the 1930s this traditional English attitude was institutionalised in the London teaching hospitals, in Harley Street, in the Royal College of Physicians and the other London Colleges. From 1860 the Royal College of Physicians had extended its area of jurisdiction and influence well beyond London, granting licences to practice and setting standards and attitudes across England and Wales. In England in the nineteenth century the only universities that granted degrees in medicine were Oxford, Cambridge and Durham and together they licensed very few of the country's practitioners. In the twentieth century the provincial universities began to grant degrees in their own right but large numbers of their students continued to take the qualifying examination of the London Colleges rather than rely only on a local diploma. The provincial medical schools were, to an extent, satellites of the London Colleges and a senior clinical teacher who was not a Fellow of a London College was a rare bird indeed.

In the 1930s London was still the head and heart of the English system and the clinicians of the London teaching hospitals, who were also the controlling Fellows of the London Colleges, were still in charge, setting the style and values of the medical profession in England. Practising and living in the society of the most influential people in the country and dominating the Colleges, the London clinical elite made up the most powerful medical interest in Britain in the 1930s.

In Scotland there was no counterpart of this influential London medical elite. For centuries Scotland had not had the wealthy society that could have supported such an elite. The transfer of Scotland's Crown and later its Parliament to London had drawn generations of the aristocracy, the wealthy and the politically powerful to London. Medicine had survived the Union and the medical profession had flourished. But it did not develop a structure like that in England. In England medicine was an entrepreneurial business and the medical profession reflected the priorities of hierarchical society which patronised it.

In Scotland the medical profession had been obliged to develop different objectives and that development had been dictated by the Scottish Universities. In contrast to the free-for-all of the London teaching hospitals where training was by conducted by individual clinicians producing doctors in their own personal image, in the Scottish university medical schools, teaching followed a set curriculum. The curriculum was based on the study of natural philosophy, botany, anatomy, experimental chemistry and physiology, pathology and materia medica.[9] This systematic teaching was introduced by William Cullen and was followed and developed in the Scottish university medical schools. It was science based and didactic but always open to change in the light of new scientific evidence. In Cullen's words 'No man can go much further than the state of science at his particular period allows him.'

The wide curriculum in Scotland became recognised as the best way into branches of medicine other than private practice - like military medicine, public health and tropical medicine. In the 1930s Scottish graduates dominated the medical services of the army. Almost half the Roll of the Indian Medical Service – which recruited from every part of the Empire – was made up of Scottish graduates. In 1935 more than half of the staff even of London's Public Health Departments were Scottish graduates. For Scottish graduates public service was a commendable if not particularly lucrative career.

Many Scottish graduates were eminently successful in private practice. But even here they continued in the science based Scottish tradition. Leading Scottish physicians had generally reinforced their roots in medical science by postgraduate experience in the leading medical science institutes in Europe. For example most physicians at Edinburgh Royal Infirmary in 1935 had had postgraduate training in Vienna, Freiburg, Berlin, or Heidelberg; in Glasgow, with only two exceptions, the physicians of the Western Infirmary had had postgraduate experience in Paris, Vienna, Berlin or Strasbourg. This contrasted with the relative neglect of scientific interest among English physicians. In 1935 none of the physicians of the London Hospital, St George's or St Mary's had any training or experience outside Oxbridge and the London teaching hospitals. Bart's, Thomas's, Guy's, the Middlesex, and the Westminster each had only one physician with any

postgraduate scientific training (in, respectively, Munich, Berlin, Frankfurt, Munich, and Vienna). King's College Hospital had only two (Gothenburg and Freiburg). The only physician on the staff of University College Hospital with postgraduate training (Freiburg) was a Glasgow graduate. Charing Cross Hospital had only two, one an Edinburgh graduate (Munich) and the other a Dublin graduate (Berlin and Frankfurt).

In London the leaders of the medical profession exercised considerable influence with government through personal contact with influential patients and through the London Royal Colleges that they dominated.

In Scotland there was no equivalent medical elite. The medical profession in Scotland had no private voice 'at court' to compare with that of the medical elite in London. And unlike the Royal Colleges in London, the Scottish Royal Corporations were not traditionally consulted by government.

To summarise my second theme. The medical profession in Scotland had features that distinguished it from the profession south of the border. It was more orientated by science and towards public service and looked to the universities for leadership rather than to those who had been particularly successful in private practice. In Scotland public service carried greater prestige within the profession than south of the border. And one additional feature must be mentioned. Entry to Scottish medical schools had never been elitist. In the eighteenth century any boy with some Latin and three pounds in his pocket was accepted. And in the twentieth century, entry had become even more open. Andrew Carnegie's bursaries were available to the products of every school in Scotland. In the 1930s the medical profession in Scotland was drawn from almost every section of the population.

I have tried first to show that in the first half of the twentieth century Scotland acquired a separate health bureaucracy that was outside the jurisdiction of the Ministry of Health and second that the Scottish bureaucracy was guided by a medical profession with different attitudes and priorities from that in the south.

Did this matter? It certainly mattered in the Great Depression between the Wars. Historians have disagreed about the extent of the distress in Britain in those years.[10] In retrospect we can see that at the time judgement depended on where you were standing. If you were south and east of Birmingham you were surrounded by new industry and the evidence of full employment and prosperity– a housing boom, small family cars and luxurious and busy new cinemas. If you were elsewhere you were confronted by the ruins of the old heavy industries, unemployment, poverty and deprivation.

But everyone in the country knew that the Government was facing a financial crisis. The post-war boom had come to an end in the early 1920s and the downturn in world trade had upset the country's balance of payments. In 1929 the Wall Street Crash caused an international slump and a deepened financial crisis in Britain. A third of government spending was still taken up in repaying debts accumulated during the First World War and now the problem was made worse by the cost of supporting a vast number of unemployed. The Labour Government failed to find an answer and in 1931 it was replaced by a National Government.

Neville Chamberlain became Chancellor of the Exchequer and he immediately looked for reductions in public expenditure. He wrote to the local authorities both in England and Wales and in Scotland, requiring them to form committees to review their expenditure and to make recommendations for reductions.

Committees were formed for England and Wales and for Scotland. In November 1932 two very different reports were produced. The English Committee accepted that some savings could be made across the board but made no firm recommendations. The response of the Scottish Committee, the Lovat Committee, was quite different.[11] It detailed specific savings that could be made in local authority spending but it stated very firmly that 'no real savings can be achieved in relation to health services.' It went further. It recommended that there should be a comprehensive enquiry into the country's health services that 'would take into account modern medical knowledge.' The Lovat Committee went on

> 'The health policy of the nation has never been completely reviewed since the latter half of the last century- over 50 years ago - and since then statutory health services have branched out in many different directions. No attempt has been made to relate these diverse activities to a clear purpose. And it is the absence of the clear purpose and the failure to correlate all health activities to serve it that is at the root of the tragic lag between established knowledge and its application in promoting fitness.'

This was a crucial statement and I would even claim that it was this statement, made in 1932, that initiated the definitive planning of the National Health Services in Britain.

No Government committee in London could have made such a proposal in the 1930s. Westminster was opposed to increased spending on social services and was keen to suggest that the tale of the so-called

'Hungry Thirties' was 'a myth sedulously propagated.'[12] Ministers insisted that the economic crisis was no more than a passing phenomenon during which the health and strength of the people were being well protected by the state. In the House of Commons the Minister of Health, Sir Kingsley Wood, reviewing the achievements of his ministry, claimed that 'never has medicine made such strides as in the last twenty five years' and that in the 1930s 'the nation itself has learned the supreme art of Living.'[13] The Prime Minister, Stanley Baldwin, claimed that far from needing reform the state services were 'wonderfully well maintained'[14] and fully effective.

In Scotland it was quite evident that this was not true. Scotland had been industrialised very quickly in the nineteenth century. Towns had been thrown up across the central belt without adequate infrastructure. In the twentieth century the working population in Scotland was still among the worst housed in Europe. In the good times, employment for the people had depended on the prosperity of the steel industry, shipbuilding, engineering and mining. Now in the 1930s these industries seemed to be in terminal decline. There was massive unemployment and poverty. The National Health Insurance authorities in Scotland had good evidence that illness was increasing. Infant Mortality was unacceptably high and the Maternity Mortality Rate was a national scandal. The number of suicides was rising. Overall death rates were increasing in the cities and even faster in the small industrial towns like Hawick, Denny, Alloa and Johnstone.

In the 1930s, unlike the Ministry of Health, the health bureaucracy in Scotland made no attempt to disguise the facts and the new Secretary of State for Scotland was well aware of the severity of the distress. Sir Godfrey Collins was a Liberal in the National, but largely Conservative, Government. As a junior Minister in earlier Liberal Governments he had been an advocate of social reform. Now, after years on the backbenches, he had suddenly been appointed to fill the vacancy left by the resignation of Sir Archibald Sinclair. He had been MP for Greenock for over twenty years and he knew all about bad housing and social deprivation. As his first action in 1932, he wrote to the Chancellor of the Exchequer, to draw his attention to a growing agitation for Home Rule and to point out that this was related to a belief, which he shared, that Scotland was 'not obtaining a fair return for her contribution to the national revenues.'

Collins was one of the unsung heroes in the history of the NHS. He died suddenly after only four years in office but by then he had begun to organise the devolved administration of Scotland. It was his idea that eventually brought all the Scottish departments together in Edinburgh in St Andrews House. In 1932, and crucially for the creation of the NHS, he immediately accepted the recommendation of the Lovat Committee and appointed a committee to review Health Services and to plan for the future – this at a time when the Ministry of Health had no intention of doing anything of the kind.

The Committee appointed by Collins – the Cathcart Committee - was not drawn from the great and the good or made up of delegates from the interested organisations. It was made up of individuals appointed personally for their acknowledged expertise in health and medical matters. The Chairman, Edward Cathcart was Professor of Physiology at Glasgow. The economist member was the Professor of Economics at Aberdeen. Seven of its eighteen members were doctors, all with records of outstanding public service. That those advising on the future of medical practice should be drawn from the universities and from among medical scientists as well as those who had distinguished themselves in public service was seen as natural and appropriate in Scotland and was never questioned. In England, to give so little attention to the interests of private practice and the views of London's Royal Colleges would have been unthinkable.

When the Cathcart Committee began its planning for the future penicillin had not been invented. Cathcart was not distracted by any notion that in time a cure could be found for every disease. The Committee's emphasis was on prevention. Cathcart rejected eugenic measures although at that time they were being put in practice in America, Sweden, Switzerland and Germany. Cathcart stressed the importance of the relief of poverty, better housing, better education and better environment. He gave special emphasis to nutrition which was then at the forefront of medical science. Vitamins were being discovered. Cathcart and his colleagues had recently explained the cause of rickets. John Boyd Orr had changed the concept of malnutrition. He had shown that malnutrition could not be diagnosed by physical examination. He had recently caused the Ministry of Health great annoyance by proving that many of the country's children were undernourished by showing that their growth and school performance could be improved by a daily bottle of milk.

Although Cathcart placed great emphasis on the promotion of positive health, this was to be the background to a radical reform of the health services. He took it as fundamental that there should be a comprehensive service providing all forms of medical care for every member of society. He did not suggest the complete abandonment of the insurance principle but insisted that the services should be funded by the Treasury and that lack of means should not debar people from the treatment they needed. General practice was to be central to the state service. All hospitals - voluntary, local authority and poor law – were to be brought into a single service organised on a regional basis and centred on the university medical schools. Local authority services were to be reorganised to eliminate overlapping and brought under central control to ensure standards of efficiency.

In these proposals we can already see the core elements of the National Health Service. In 1936 the plan was welcomed in Scotland and also by many in England. Successive Secretaries of State for Scotland - Walter Elliot, John Colville and Tom Johnston – all pressed ahead as far as they could with those parts of Cathcart's scheme that did not require new national legislation. After 1939, wartime regulations increased the Secretary of State's powers to organise health services. Civil servants who were in St Andrews House at that time have assured me that by the middle of the war so much of Cathcart's plan was already in place in Scotland that they could see that there was no going back.

In England the Ministry of Health had made no such plans. When in 1942 Beveridge published his revolutionary scheme promising social security for all, he made it clear that his scheme could not work unless there was a national medical service in place. The reaction of the general public to his proposals was enthusiastic and overwhelming. The Government, which could hardly refuse, suddenly found itself committed to producing a National Health Service as soon as the war was over.

The Ministry of Health had no plan of its own. But in Scotland the Cathcart plan was already partly in operation. A White Paper on the National Health Service was drawn up by the Secretary of State for Scotland, Tom Johnston, and the Minister of Health, Henry Willink.[15] As was later made clear in the House of Commons the White Paper was based on the Cathcart Report.[16]

As it stood, the White Paper was essentially a product of the health bureaucracy in Scotland, shaped by Scottish experience and attitudes. It was resisted by the medical profession in England. The BMA objected on details of finance. Less publicly but much more effectively the London Colleges and the elite of Harley Street objected to its principles. Resistance continued, often bitterly, until 1946 and it is this struggle that has often been represented as the essential history of the NHS. Then, in 1946, as his only major contribution to the creation of the National Health Service, Aneurin Bevan negotiated a compromise.

The nature of that compromise can be seen by reading the two National Health Services Acts that followed. The Scottish Act kept close to the recommendations of the Cathcart Report and the White Paper. The English Act was identical except for two important additional paragraphs specially written in to accommodate the pressure in London. Paragraph 46 delegated the supervision of general practice to the local authorities rather than to central government as in Scotland. Even more important, paragraph 15 excluded from the general scheme the London teaching hospitals (and by extension the provincial teaching hospitals), the advocates and upholders of the English medical tradition and the leading exponents of entrepreneurial private practice.

The definitive history of Scotland's National Health Service has not yet been written. When it is I would suggest that it will have certain key features. That in the first decades of the twentieth century, a separate health bureaucracy with its own style and ethos was established in Scotland. That over the years that bureaucracy was influenced by the traditional attitudes to the practice of medicine in Scotland. That the bureaucracy responded to the particular severity of the Depression and destitution of the 1930s by producing a plan for the reformation of the health service and the formation of a national service.

I believe that the official historian of the National Health Services is wrong. The National Health Service in Scotland was not an adjustment of a British plan to allow for the geographic and administrative peculiarities of Scotland. The original plan for the National Health Service in Britain was a Scottish plan modified for England and Wales to accommodate different, less service orientated, attitudes to the practice of medicine.

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THE ONE HUNDRED AND FIFTY NINTH ORDINARY MEETING

The One Hundred and Fifty Ninth Ordinary Meeting of the Society was held in the Scottish Health Service Centre at the Western General Hospital, Edinburgh on the 24th of March 2001.The President, Dr John Forrester was in the chair and there were two papers, one on the Aberdeen Typhoid Outbreak in 1964, by Lesley Diack and David Smith and one on Thomas Winterbottom and the Welfare of Mariners, by Stuart Menzies.

DR IAN MACQUEEN AND THE ABERDEEN TYPHOID OUTBREAK OF 1964: A VARIETY OF PERSPECTIVES

Introduction: 'Watchdog or Lapdog?'

With the 1974 reorganisation of the National Health Service, local authority Medical Officers of Health (MOsH) ceased to exist and some of their work was taken over by the newly created specialists in community medicine. The role and standing of the new speciality has been a matter for continuous debate, and that debate has often included analysis of, or assumptions about, the former role of MOsH.[1] Jane Lewis, in *What Price Community Medicine?*, her book on public health since 1919, raised a number of questions on the status and impact of the Medical Officer of Health (MOH). She showed that the MOH was sometimes seen as a 'community watchdog' and sometimes as a 'third grade doctor'.[2] John Welshman continued and developed Lewis's theme when he posed the question 'Watchdog or Lapdog?' in a paper on the role of the MOH 1900–1974, published in the *Journal of Public Health Medicine* in 1997.[3] Lewis noted that some authors have suggested that twentieth-century public health 'lost its way'.[4] During the inter-war period MOsH became diverted into building up local empires centred on institutional care. Then, after the loss of the municipal hospitals on the establishment of the NHS, they went into terminal decline, culminating in the abolition of their posts in 1974. Lewis and Welshman both point out, however, that the history of public health and the performance of MOsH during the twentieth century are not so simply characterised. Although some MOsH were 'complacent', 'many were remarkably innovative and imaginative'.[5] Similarly, Sir George Godber, Chief Medical Officer for England and Wales in the 1960s, has claimed that many MOsH, especially those employed by ambitious local authorities in the larger cities, played key roles in the development of some community health services.[6]

Welshman argued that more detailed local studies were needed before a fair assessment of the role of the MOH during the twentieth century can be made, and this paper, focusing upon Ian MacQueen, Aberdeen's last MOH, can be seen as a contribution towards this enterprise.

Dr Ian MacQueen: early life and career[7]

Ian Alexis Gordon MacQueen was born in Kirknewton near Edinburgh in 1909, the son of a schoolmaster. He attended George Watson's College and planned a career in journalism, completing an MA at Edinburgh University in 1932. He became senior president of the Students' Representative Council and edited the student newspaper, but finding the job prospects in journalism poor, decided to enter medicine. He completed an MB ChB in Edinburgh in 1937, winning the Wellcome Gold Medal and several class medals. Supported by a prestigious Vans Dunlop postgraduate scholarship, he gained a diploma in public health in 1939. MacQueen's early posts included house physician at the Eastern General Hospital and City Hospital and clinical assistant at the Royal Infirmary in Edinburgh, and in the early 1940s he became assistant MOH and supervisor of the municipal laboratory at Barnsley in North Yorkshire. He then became one of the youngest MOsH in Britain in August 1943 when appointed MOH for Mansfield near Nottingham. Personal tragedy soon followed when MacQueen's wife of two years died in childbirth, but he re-married in 1945. His second wife was Elizabeth Ursula Bryant (known as Pat), who devoted her time to voluntary and charitable work. With Pat, he compiled a book on the history of the health services in Mansfield, published by the local branch of the trade union NALGO, of which he was president.[8]

MacQueen returned to Edinburgh in 1947, when the establishment of the NHS and changes in the responsibilities of MOsH were imminent. He spent five years in central government, as a medical officer at the Department of Health for Scotland, responsible for liasing with local authority health departments. During this period he obtained his MD from Edinburgh University. He also continued his trade union activities, but according to one informant the latter did not endear him to his colleagues at the Scottish Office.

This career path so far described presents MacQueen as a high-performing student who advanced rapidly

through the early stages of a career in public health. His trade union involvement suggests a commitment to 'make a difference' that we will see expressed in his subsequent career as an MOH in Aberdeen.

MacQueen in Aberdeen 1952–64

The development of health visiting was the area that held greatest promise for the innovative MOH in the NHS. Health visitors' roles had been substantially enhanced by the NHS (Scotland) Act, and the Department of Health for Scotland was prepared to support a substantial expansion in their number. In Aberdeen, the establishment for health visitors was increased from 46 to 65 before MacQueen's arrival and reached 85 in 1954, a higher density than for any other Scottish City, and close to MacQueen's target of 89.[9] But there were frequently more than twenty vacancies and MacQueen publicly blamed the poor salaries and career structure.[10] Both MacQueen and his wife were active in health visitor organisations, she as president of the Scottish association and he as vice president of the corresponding body in England.[11]

In some areas, for example maternal and infant welfare, and immunisation, local authority health departments were in competition with general practitioners. In Aberdeen, however, MacQueen's health visitors helped to ensure that the municipal services remained well utilised. Between 1952 and 1962 there was a significant increase in the number of clients attending ante-natal clinics, while in the case of post-natal clinics there was only a slight decline. As for the proportion of primary injections for diphtheria carried out by local authority doctors (taken as an index of the use made of the immunisation services) this increased from 64 to 67%.[12]

But the full potential of health visitors could not be realised until their roles were appreciated by hospital staff and general practitioners. The benefits of health visiting in aftercare were soon realised in hospital circles, but GPs were sceptical. MacQueen urged health visitors to communicate directly with GPs, but when they did so, GPs demanded a memorandum on health visitors' qualifications and functions, in which MacQueen remarked that it would be 'useful if the doctor and health visitor each realised that the other was a highly trained professional person'.[13]

In 1959 there were some signs of change, with an experimental attachment of a health visitor to a group practice, and a second such scheme began in 1961. Nevertheless, the relationship between the health department and GPs remained uneasy, partly because, as one doctor recalled, MacQueen was inclined to claim that 'health visitors could do a lot of the work that doctors did'. Understandably, that 'didn't go down too well'.[14]

Another promising area for the development of the health department's activities was research. In 1955, Aberdeen became involved in a Department of Health for Scotland project on the combined diphtheria, whooping cough and tetanus vaccine, which proved efficacious and came into routine use in 1957.[15] MacQueen also received a Nuffield Provincial Hospitals Trust grant for an investigation into home accidents.[16] Health visitors played a key role both in the research and in an associated home safety campaign. MacQueen claimed that a reduction in home accidents by more than a third was achieved.[17]

MacQueen described health education as 'the most important portion of the local health authority's work' in his 1953 Report. At this time education was delivered largely through the day-to-day activities of the health department's staff but in 1956 a new campaign was launched, dubbed the 'thousand salvo blitz on disease' by the press. A thousand health education talks were to be given per year, but this figure was soon easily exceeded. In 1960, 1,320 talks were delivered. MacQueen proudly boasted about the recognition that Aberdeen's health education work had achieved. He had addressed a seminar of the Central Council for Health Education and spoken at the summer school of the Scottish equivalent. And he had been invited to prepare a report on home accidents for the World Health Organisation.[18]

By the time of the typhoid outbreak, despite some unfavourable conditions for local authority public health, MacQueen had made a success of his job. He enjoyed the devotion of his health visitors, but there was some tension with other professionals in the health services.

The Aberdeen Typhoid Outbreak

There had been three outbreaks of typhoid in 1963, at Harlow, Bedford and South Shields, associated with corned beef from Argentina and involving sixty victims. It was discovered that a canning factory had been using un-chlorinated river water for cooling purposes. In addition, the Ministry of Agriculture Fisheries and Food's chief technical adviser on meat inspection, veterinarian Dr Leo Grace, was sent to South America to check conditions at meat plants. Grace discovered another factory using untreated water, but while an immediate stop was put on exports to Britain from this establishment, it was decided to leave other suspect stocks in circulation.[19] Soon after Grace's return to Britain, the Aberdeen outbreak began. By the end of May

it seemed that the source was corned beef sold at the recently opened William Low's supermarket in Union Street. There was eventually a total of over 500 cases, but it became possible to sound the 'all clear' after about a month.

The rapid control of the outbreak was a great achievement, and a great deal of the credit must fall to MacQueen and his department. Nevertheless, he also made a number of mistakes, and his growing reputation became tarnished in some quarters. His biggest mistake was to repeat to the press an erroneous report he had heard that the corned beef at the centre of the outbreak had come from a stockpile kept by the government for defence purposes. This caused a furore and was quickly followed by the announcement of the establishment of an official enquiry. The committee consisted of James W. Howie of the Public Health Laboratory Service, Andrew B. Semple, the Medical Officer of Health for Liverpool, A. M. Borthwick, a representative of the meat trade, and Gabrielle Pike, of the National Federation of Women's Institutes, under the chairmanship of a retired civil servant, Sir David Milne. As will be seen, the Milne Report was highly critical of MacQueen's use of the media during the outbreak.[20]

As a consequence of the typhoid outbreak, MacQueen achieved a certain notoriety, and it is to the variety of perspectives on MacQueen and his handling of the outbreak that we will now turn, concentrating on the views of other health professionals.

The Health Visitors' view

MacQueen's health visitors were deployed fully and effectively during the typhoid outbreak and judging from the interviews conducted during the course of this research, they remained entirely loyal to their chief and champion. Some health visitors had previously been employed in tracing contacts of TB patients, and the skills developed through this work were clearly useful in the typhoid outbreak. They were engaged in finding out what the typhoid victims had eaten and with whom they had eaten. Others had the difficult task of collecting specimens from contacts at a time when the usual mode of transport was the bus and the specimens were collected in glass jars. Some also administered TAB injections.

During the outbreak a tremendous amount of overtime was worked by MacQueen's staff, all of it unpaid. In October 1964 he presented a report to the Health and Welfare Committee of the Council in which he praised seventy-six 'heroines and heroes of the outbreak' sixty-nine of whom were health visitors and male health visiting officers.[21] Car mileages, hours worked and financial losses were enumerated. At first he suggested that, as a reward, £2000 should be set aside to equip a library for Health Visitors, but instead, the committee awarded a token payment of twenty guineas to ninety-seven people.[22] The health visitors felt strongly that they had MacQueen to thank for these honoraria and any recognition these received. None of the health visitors interviewed had any criticisms to make about him. One who was involved in the typhoid outbreak from the first weekend remarked:

He was a very good administrator and very much into public health, prevention and health education. He was a leader and he was ahead of his time in health education.[23]

Miss Nairn, who was the Superintendent Health Visitor in 1964, regarded MacQueen as an accessible man who 'was a very clever man and sometimes too clever for the people he was dealing with'.[24] Such views contrast strikingly with some of the opinions voiced by local doctors.

The local doctors' views

A general practitioner was involved in the recognition of some of the earliest typhoid cases, but GPs as a group formed the impression that their willingness to collaborate in the control of the outbreak was not fully appreciated by MacQueen. In January 1965 the GPs' Executive Council recorded their

> ... regret that the arrangements for full co-operation between the bodies concerned came into operation later than an outbreak of this character appeared to demand.[25]

But Joan Burrell, a GP who later wrote about the typhoid outbreak,[26] felt MacQueen was generally 'not often available', 'unapproachable' and 'not helpful towards GPs' and that this was exacerbated during the typhoid outbreak.[27] This suggests that as far as GPs are concerned, their impressions of MacQueen's performance during the outbreak reinforced previous tensions.

Lack of communication concerned not only GPs but also some hospital and university staff. The late Dr Sandy Logie recalled that Alastair MacGregor, the professor of materia medica and therapeutics, phoned MacQueen to inform him that two cases of typhoid had been admitted to the Royal Infirmary. MacGregor was

> ... more than somewhat surprised to be told by Dr MacQueen that he knew there was typhoid in the City. The professor was not a little upset by this and having a fairly short fuse, I think he told

Dr MacQueen what he thought of him for not informing the medical profession that there was this risk.[28]

Logie, MacGregor's house officer, who was seconded that day to the City Hospital, also felt that MacQueen mishandled the outbreak and gave out of date information to the press. He recalled 'we were at the coal face and we knew that he was talking rubbish'.[29]

Other hospital doctors had reservations about MacQueen. Also at the City Hospital was Elizabeth Russell, now professor of social medicine at Aberdeen University. Like Logie, she remarked about MacQueen's comments to the press:

I think there was a point when his daily media conferences were escalating the 'beleaguered city effect', and I think that was what concerned us.[30]

This was a reference to MacQueen's statements about the possibility of a series of massive secondary waves of typhoid, and the anxieties caused by his suggestion of voluntary travel restrictions. Professor M. G. McEntegart commented similarly that MacQueen put people off Aberdeen to such an extent that 'a bunch of navvies refused to handle Aberdeen granite because it had come from Aberdeen'.[31] This is one example of many similar stories.

As for MacQueen's own medical staff, some indirect evidence of their opinion of his performance comes from an interview with Bob Hughes (now Lord Hughes of Woodside), who was the convenor of the council's health and welfare committee. Hughes recalled being taken aside by David Barclay, the senior deputy MOH. According to Hughes, Barclay told him early in the outbreak that MacQueen had not fully grasped the problem of the source of the infection. MacQueen at this time apparently thought a typhoid carrier was involved, while Barclay believed a food source most likely, and that more work was needed to isolate the source. MacQueen was not listening and therefore Barclay's only recourse was discuss the problem with Hughes. Hughes apparently spoke to MacQueen, without mentioning Barclay, and although he still firmly believed a carrier was involved, MacQueen began to consider the food source theory more seriously. Barclay's belief was borne out when it was soon concluded the most probably source of infection was a can of corned beef.[32]

Other interviewees have corroborated this story, and so it would appear that not only GPs and some hospital and university staff were critical of aspects of MacQueen's handling of the outbreak, but the criticism even extended to medical staff of his own department.

The Medical Staff of the Scottish Home and Health Department

How did MacQueen's former colleagues at the Scottish Home and Health Department (earlier the Department of Health for Scotland) react to MacQueen's handling of the outbreak? Ian Sutherland, the principal medical officer responsible for local health authority matters, had been MacQueen's immediate superior at the Scottish Office, and had greatly depended upon him. In view of their good relationship, Sutherland was reluctant to get too closely involved in MacQueen's handling of the outbreak. According to John Smith, the deputy Chief Medical Officer (CMO), he and Sutherland met with John Brotherston, the CMO, and R. M. Gordon, the medical officer who had replaced MacQueen, at Smith's house on 31 May, to discuss a visit by Gordon to Aberdeen the following day. This was at the time when MacQueen had announced that the corned beef involved in the outbreak had come from the government stockpile. Smith commented that holding a meeting on a Sunday showed that they were 'very concerned because we could see this was heading to get out of local control'.[33]

Gordon's visit was very short and he returned to Edinburgh feeling MacQueen had kept him at a distance. At a further meeting at Smith's house on the evening of 5 June, another medical officer, Elspeth Warwick, was briefed on the situation. She was to 'go up to Aberdeen, stay there and be alongside MacQueen to try and keep him from getting too excited'.[34] On a visit to Aberdeen on the 9 June Brotherston told Warwick her main work was 'to give moral support'. Brotherston met MacQueen and wrote in his report the following day that MacQueen 'is obviously tired. The sooner he can be persuaded to take some rest the better'.[34]

It appears then that public health doctors at the government department responsible for monitoring and guiding the local health departments in Scotland had considerable misgivings about MacQueen's handling of the outbreak.

The findings of the Milne Committee

The initial task of the Milne Committee was to report on the source of the typhoid outbreak, but it was allowed to extend its remit far beyond this, and it heard evidence and reported on the performance of the local

and central participants, and the media aspects of the outbreak. As a result, many participants, especially the government departments and MacQueen, began to treat the preparation of their evidence as a damage-limitation exercise. The committee visited Aberdeen several times but found that MacQueen was 'not co-operative'. This was unwise, for it reinforced the impressions they were forming about his character and his unpleasant attitude towards some Home and Health Department staff.[36]

On the question of his communication difficulties with GPs, MacQueen stated in his written evidence that he had been preparing a letter for them when the news of typhoid in Aberdeen appeared in the press and television on the 22 May. Because of more immediate demands he then did not complete the letter until two days later. Nevertheless, the Milne Report suggested it would have been better if the intimation of the existence of typhoid in the City had 'reached general practitioners as a result of the Medical Officer of Health's action rather than from a Press announcement'.[37] And while the report commented that 'the work undertaken by the individual parts of the Health Service was extremely well carried out', it also found that in the 'early days of the outbreak, each part of the Health Service was working in comparative isolation'.[38]

MacQueen also criticised the Home and Health Department in his evidence, writing that their policy of sending different officers made his job more difficult as the need to brief them 'took up considerable time which could have better been devoted to fighting the epidemic'.[39] The report, however, concluded that the department had justifiably kept a close eye on the situation in case their help was needed.[40]

The chapter of the report entitled 'The Medical Officer of Health and the Press', was the most critical and was devoted to MacQueen and his daily flirtation with the media:

> An important feature of the Aberdeen outbreak was the attention which it received from the Press, television and radio. That such attention should be focused on the epidemic was the deliberate intention of the Medical Officer of Health so that he could convey to the citizens of Aberdeen the absolute need for the measures which he was advocating.[41]

But the Milne committee censured MacQueen for his over-dramatic approach and for exaggerating the numbers potentially involved in the outbreak, and suggested that a daily press release would have been adequate – rather than the press conferences and the nightly TV reports.[42]

In comparison with the criticisms of MacQueen, the report took a much softer line with the government departments that had been involved in the decision making surrounding the failings in the hygiene of Argentinian canning factories. The Government officials, who were able to further soften such criticisms of themselves as were included, were pleased. Peter Humphreys-Davies, a deputy secretary at MAFF, commented on a draft of the report to Mrs Hauff, assistant secretary at the Ministry of Health that

> ... there is some severe criticism of the ridiculous antics of Dr MacQueen, springing partly from professional ignorance and partly (though it does not say so in so many words) from a desire for personal aggrandisement. And some pretty strong words are said about the serious social, economic and financial consequences at home and abroad which flowed from his inept handling of the epidemic and its attendant publicity.[43]

The Milne Report included some additional criticisms of MacQueen, for example for not closing the shop involved sooner, but his department was also praised for their speed in tracing the source of the infection. Hence the *Aberdeen Press and Journal*'s headline that greeted the publication: 'It's bouquets and brickbats for Dr MacQueen'.[44] However, it was the negative comments that received most publicity in the national press, giving the impression that most of what went wrong with the handling of the outbreak was the fault of MacQueen. MacQueen had been made a scapegoat.

In response, MacQueen defended himself, and MOsH closed ranks behind him.

A Closure of Ranks

At the height of the outbreak MacQueen's media strategy met the full approval of the public health doctors' journal *The Medical Officer*, which alluded to his previous achievements in the field of health education:

> Dr MacQueen has been holding daily press conferences during most of the course of the epidemic with the result that this has probably been the best 'covered' outbreak of its kind. With an infection so difficult to bring under control, it is fortunate that Aberdeen's population has been so accustomed to accepting guidance on health matters, and there must be a firm hope that strict personal hygiene will bring the outbreak to an end.[45]

In January 1965 MacQueen used the journal to counter-attack the Milne Committee. With reference to the Croydon typhoid outbreak of 1937, which had been caused by contaminated water, MacQueen remarked

that although the Committee of Inquiry on that occasion had criticised the MOH for insufficient publicity, it was 'manifest that the Milne Committee hated the use of the publicity media in Aberdeen'. He argued that the Committee's views could be ruled out on the grounds that 'publicity aspects were completely outside its remit' and 'the Committee took no evidence from any health education officer, public relations officer, journalist, television producer or publicity expert of any type'. Finally, he asserted that a committee consisting of

> ... a retired Civil Servant, a representative of the meat trade, an administrative bacteriologist, a housewife and an MOH of a city with notoriously poor health statistics – was obviously incompetent to consider health education and publicity.[46]

The Scottish branch of the Society for the Medical Officers of Health, of which MacQueen was a former president, set up a sub-committee to investigate the findings of the Milne Committee. They felt that the report had treated MacQueen unfairly and commented that 'the Medical Officer of Health did his work well. It should be noted that there were very few secondary cases. Publicity played a part in this and helped to have the cases detected earlier'.[47]

The unity of purpose illustrated by this closure of ranks of MOsH in defence of one of their number was not to last in the late 1960s, as debate about their abolition advanced. Some effectively began to dismantle their departments and to develop research in anticipation of a move into academia.[48] Others, such as MacQueen, continued to defend traditional services and to develop new ones.

Conclusion: an almost inevitable variety of perspectives

Despite their criticisms of MacQueen, he maintained a working relationship with GPs. However, there are some continuing signs of coolness. His report for 1964 alluded to the many articles that appeared in medical journals on health visitor attachment schemes. It seems that many of Aberdeen's GPs were keen to keep up with national trends, but MacQueen observed that many health visitors were 'not convinced that complete attachment is the best method of achieving good co-operation and co-ordination'.[49] By 1965, however, there were eight health visitors attached to six practices. His last report, for 1972, mentioned thirty-six practice-linked health visitors, involving twenty-two practices and sixty GPs.[50] But the linkages were only partial, in the sense that 'linked' health visitors still devoted time to school health visiting and to the health department's health education work.[50] Partly because of the devolution of so many health visitors, the proportion of primary courses against diphtheria and other immunisations administered by the health department's medical staff declined to about 35% by 1972. However, the corporation ante- and post-natal clinics remained viable.[52]

MacQueen's performance in the Aberdeen typhoid outbreak also appears to have caused no permanent damage in terms of MacQueen's standing in the wider world of health education. In 1970 he was elected chair of the Scottish Health Education Council, and in 1972 became a member of the Chief Medical Officers' Advisory Committee on Health Education.[53]

During the final phase of his career, MacQueen introduced some radical policies in the field of birth control and family planning. Encouraged by the professor of obstetrics and gynaecology, all contraception, including the pill, was made free at the family planning clinics in 1967, and unmarried women were included in the client base.[54] Some citizens were outraged, and one letter appeared in a local paper under the heading 'Christ gave no license to sin'.[55] Nevertheless, the numbers of new attendees at the clinics rose by over 50% and the number of unwanted pregnancies declined. Hughes remarked that MacQueen would not let the controversial nature of his policies stand in the way of progress in public health (as he saw it).[56] And MacQueen's obituary in the *Evening Express* remembers him as a 'visionary pioneer. A revolutionary who seemed to thrive on the furore he caused in order to get his ideas put into practice'.[57]

MacQueen continued as MOH until reorganisation of the health services in 1974 after which he served for a brief period as a community medicine specialist until his retirement in September 1975. He then moved to Painswick in Gloucestershire where he died in 1992 with an estate valued at over £300,000, the bulk of which was left to the Health Visitors Association to create a fund to be used for the provision of prizes and/or travelling fellowships.[58] This is now administered by the Community Practitioner's and Health Visitors Association in London, under the aegis of the Manufacturing, Science and Finance Union.

Finally, to return to the theme of the introduction. It is clear by now that if we ask the question 'Watchdog or Lapdog?' of Ian MacQueen, we must say that he was certainly no 'Lapdog'. And as a 'Watchdog' he was not content simply to warn others when he perceived threats to the health of the community. He was determined to lead the attack. He was also very much an innovator, and, as with other examples of innovative MOsH in the post war period, his major innovations involved health education and the creative use of health

visitors. And taking this research as an example of the kind of 'local study' that Welshman called for, it now seems clear that there is unlikely to be consensus among those who interacted with MOsH like MacQueen. In conclusion, it may be suggested that the position of the MOH within the post-NHS health services, illustrated by the tense relationship with GPs and surveillance by the central authorities, makes it almost inevitable that we should find a 'variety of perspectives' on the active MOH. This is especially likely to be true of any MOH thrown into a crisis of the proportions of the Aberdeen typhoid outbreak.

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THOMAS WINTERBOTTOM AND THE WELFARE OF MARINERS

Introduction

Thomas Masterman Winterbottom was born in South Shields on 26th March 1766. He had two brothers and four sisters. His father James Winterbottom, a surgeon in South Shields, was from Whitby, where he had served his apprenticeship with William Ingram. Thomas's mother, Lydia was the daughter of a ship-owner Thomas Masterton, who had originated in Great Ayton and had moved via Whitby to South Shields and married a South Shields woman.

Thomas's early education was in the hands of a local clergyman, from whom he received a classical education, becoming acquainted with the Bible and authors such as Aristotle, Herodotus, Homer, Horace, Pliny and Virgil.

In 1787 he went to Edinburgh University Medical School. The University Class lists for 1787-88, show that he studied Anatomy and Surgery with Alexander Munro secundus, Chemistry with Joseph Black, Practice of Medicine with William Cullen and attended lectures by James Gregory. He probably also received instruction from Francis Home (Medicine and Materia Medica), Alexander Hamilton (Obstetrics) and Daniel Rutherford (Medicine and Botany).[1]

After a year in Edinburgh, Winterbottom went to London spending some time with Dr Robert Whillan at the Public Dispensary in Carey Street. Dispensaries were basically large out patient facilities, with some home visiting. At several there were opportunities for medical students to gain clinical experience, as well as formal teaching. Willan's dispensary was described by Zachary Cope as "*one of the best examples of regular clinical teaching*" [2] of the time.

Although there is no evidence that he ever studied in Glasgow, Winterbottom presented his thesis, *De morbo puerperali* to the examiners and received his MD in April 1792.

Four months later he was appointed as physician to the Sierra Leone Company.

This had been set up to establish a colony in West Africa which would become commercially and economically self sufficient. Black slaves, who had fought for the British in the American War of Independence, had initially been settled, rather unhappily, in Nova Scotia. When the Sierra Leone Company offered them a new life in Africa, about 1400 accepted and sailed to Freetown. The physician initially appointed to look after them was Dr John Bell. He had successfully hidden his alcoholism at his interview, but began drinking heavily on the voyage to West Africa and died during an alcohol related fit three days after arriving in Freetown.

Thomas Winterbottom was appointed to succeed Bell and as the senior Physician, with the assistance of two surgeons, he was to provide care for the infant colony. The Court of Directors of the Sierra Leone

Company required Winterbottom to provide reports on the health of the colonists, but also asked him to prepare some simple medical advice-

"For the use of such vessels in the service of the Sierra Leone Company as were un-provided with surgeons"[3]

Medical Directions etc.

Winterbottom later enlarged these notes, and published them in 1803, under the title *Medical Directions for Navigators and Settlers in Hot Climates.*[4] It is an interesting little book and may fairly be considered to represent a summary of Winterbottom's medical practice at the end of the eighteenth century.

Although *Medical Directions etc* is not divided into chapters, it falls into two parts. The first part comprises notes on health at sea and in the tropics and covers several common medical problems. The second part is a mini-pharmacopoeia and also contains suggestions for a suitable medical chest and sufficient medical supplies for twenty men for one year.

Winterbottom wrote in a way that was easily understood by non-professionals.

> *"Technical terms have been carefully avoided and no expressions are used but such as, it is presumed, must be well understood by the generality of readers."*[5]

In this he was successful, even the modern reader will have no difficulty in understanding what is said. The problem for us today is to understand why certain lines of treatment are advocated, Winterbottom did not explain this. Doubtless, when the circumstances and the intended readership are taken into account, this omission is reasonable as it makes for more easily understood instructions. *Medical Directions etc* is essentially a practical and commonsense book.

It is difficult to determine exactly how much of what Winterbottom wrote was the result of his own personal observation, although he claimed that:

> *"The methods of cure recommended are for the most part such as the author found successful during his residence at Sierra Leone.."*[6]

Much of the text must of course be recognised as common knowledge, or current medical thinking, but from time to time, his own opinions or prejudices are apparent. Measures then current to prevent illness in the tropics get scant sympathy from Winterbottom. He did not believe in bleeding, purging, procuring vomiting, nor of the routine "taking of the bark". He deprecated

> *"Smoaking tobacco...[so] ... much recommended as a preventive of fever..[it] is.. a hurtful practice, tending to produce a constant thirst and sickness at stomach, which is only to be overcome by long practice, in the same way a man may learn to eat hemlock without being affected by it. It likewise occasions a great waste of spittle, whence the stomach is deprived of a fluid necessary to digest the food; and very commonly a loss of appetite. It has... no more effect in guarding against fever than the smoke of gunpowder, tar, oakum, etc...the supposed advantage of it being merely alleged as an excuse for taking what custom has rendered agreeable. [T]hose who settle in warm climates should not be induced from mistaken notions, to begin a practice so detrimental to their constitutions."*

On diet, his advice was reasonable, with no hard and fast rules. It was recommended that a large proportion of the meal should comprise vegetables, but not to the exclusion of meat. However

> *"Spirits in every form and however reduced by water, are bad."*

The section on diet close with the words

> *"In short, moderation in eating and drinking, though of the utmost importance to the preservation of health, can only be recommended in general terms, which must be adapted by each individual in his own case and circumstances."*[8]

Moderate exercise was advisable; it should not be pronged or violent. Europeans should not try to compete with the natives of the country.

> *"Violent exertions are one cause of the great mortality among white sailors in Africa; to support the labour which they are sometimes exposed to in rowing boats etc, they have recourse to spirits; and not infrequently, hard labour is followed by a fit of intoxication; in that state they often pass the night amid the chilling dews under the open sky, and soon after are affected with fevers, fluxes, rheumatic pains etc."*

It all sounds so familiar! Moderate exercise, no smoking, plenty of fibre, fresh fruit and vegetables, moderate alcohol intake and no spirits.

Winterbottom was a firm advocate of the use of flannel next to the skin

> *"To it many persons are indebted for the preservation of their health and lives, in very hot climates. Being defended with flannel, they have suffered no inconvenience, even when exposed to the tropical rains for whole days and nights in open boats...while others, neglecting to use the same precaution, were presently after seized with fevers."*

His recommendations about suitable styles of clothing were probably the result of his own observation.

> *"Short jackets with trowsers reaching to the ancles and fastened by strings or buttons, are most convenient."*[9]

Although Winterbottom advises this style of dress to guard against any sudden changes from hot to cold, such clothing would reduce the area of skin exposed to mosquito bites, and hence the likelihood of contracting malaria. Similarly, he warned of the necessity of additional clothing for those exposed to the night air. Those who;

> *"Expose themselves at night when the land breeze blows; and at other times...sit in a current of air...* are asking for trouble for *...however agreeable...it is always followed by a feverish dry skin owing to a stoppage of perspiration, and often proves a cause of violent diseases..."*

After several pages discussing the merits and demerits of certain environmental areas which may be said to be unhealthy, he concluded the topic:

> *"The signs of an unhealthy country are great swarms of flies, musquitoes etc, thick fogs lying upon the ground for some time after sun rise, heavy dews, and very cold nights succeeding very hot days, thick mangroves lining the banks of rivers on a flat shore not much higher than the surface of the water."*

Winterbottom's last comments related to the effects of the emotions on health. Wisely he told his readers that

> *"Violent gusts of passion, peevishness and fretfulness lay the foundation for a variety of disorders. A cheerful, easy temper is found to contribute much toward the preservation of health. Too great care and anxiety of mind, even when employed on the preservation of health, is the most certain means of losing it."*

The health of sailors was a controversial subject in eighteenth century medicine. Scurvy was the scourge of seamen on long voyages. Indeed, in the early half of the century, more than half of a ship's complement could be lost because of scurvy. Death due to all diseases could mount to 90%. This had consequences for both commerce and naval strategy. In *A Treatise of the Scurvy* (1753), James Lind (1716-1794) showed that fresh fruit, vegetables and citrus fruit juices were effective in preventing and treating scurvy. Not all physicians agreed, and most continued to prescribe empirical cures as well as fresh fruit and vegetables. Despite his position as Physician to Haslar Hospital at Portsmouth, Lind does not seem to have been a very forceful character and it was almost 40 years before citrus fruits and fruit juices were incorporated into Royal Navy ships' stores by Admiralty Orders (Blane 1795).

Comparing descriptions by Lind in *A Treatise of the Scurvy,* William Buchan in *Domestic Medicine* and Winterbottom in *Medical Directions etc.* there is very clear similarity. Indeed the similarity between Buchan and Winterbottom's accounts is remarkable, in that symptoms are described in almost the same order and sometimes in almost the same words.

Winterbottom is in generally more concise and dogmatic than Buchan. He declared that.

> *"The scurvy is universally occasioned by living long upon a diet of putrid or salted meats, with little or no vegetable food and a scanty allowance of.... bad water. These causes lay a foundation for scurvy, which however, frequently lurks a considerable time in the constitution before it shews itself. Other circumstances however may have a great effect in hastening its appearance, the chief of which are, 1st want of cleanliness, and sleeping in foul, damp and ill-aired places. 2d fatigue; hence the scurvy often appears... suddenly after long continued stormy weather, or after a violent gale of wind in which the sailors have been exposed to excessive labour at the pumps, and other necessary exertions. 3rd Indolence, with its usual attendants, dejection of spirits and despondency."*[10]

On the other hand, Buchan listed a dozen causes including those mentioned by Winterbottom. Both Buchan and Winterbottom stressed the importance of fresh fruit and vegetables, in the prevention of scurvy. In the treatment, as well as fresh fruit and vegetables, Buchan also recommended a large number of chemical empirics, such as tar water, Harrogate water, chalybeate water and Macbride's infusion of malt, known as "wort". In the absence of fresh fruit,

> *"All the patient's food should be sharpened with cream of tartar, elixir of vitriol, vinegar or spirit of sea water..."*[11]

Winterbottom eschewed chemicals altogether in the treatment of scurvy, although he advised the use of acid of vitriol (sulphuric acid) in the preservation of bottled green gooseberries.[12] He stated that

> *" Medicines are not of much service in this complaint, a teaspoonful of Peruvian bark, together with fifteen or twenty drops of acid of vitriol in water, may be tried two or three times a day"*[13]

In the end, Winterbottom found that the most valuable and effective treatment was fresh fruit and vegetables.

To procure fresh fruit in the middle of the ocean was of course impossible. Preservation of fruit and vegetables by bottling and chemical preservations was ineffective. It was generally thought in the eighteenth century that it was the bitter acidic taste of the citrus fruits that prevented scurvy, and practitioners tried to reproduce this by the use of cream of tartar and vitriolic acid. Lind showed that although a dilute preparation of vitriolic acid was helpful in oral hygiene, relieving some of the unpleasantness of bleeding spongy gums, it did not actually affect the scurvy.

With hindsight it is easy to see the importance of fresh fruit and vegetables. Vitamin C is notoriously thermolabile and is also destroyed by exposure to air. Some of the methods of preserving the citrus fruits, concentration of juice by evaporation for example, destroyed the active ingredient completely, which accounted for the disappointing results with such preserves.

The general nutritional state of sailors in the early eighteenth century was poor and various measures were suggested by Lind and others, to improve this and hence the fitness of crews. Scurvy was not the only deficiency disease that the seamen faced and the health of crews improved as dietary and other recommendations were implemented.

Comparison of measures recommended by Lind, Cook and Winterbottom reveals close correlation.

In 1796, because of his father's ill health, Winterbottom returned to England. He settled into the practice in South Shields, his father dying the following year. In 1805, Thomas Winterbottom married Barbara Wardle, the daughter and widow of South Shields ship-owners. Shortly after his marriage, he went to live in his mother-in-law's house in Westoe, a township now swallowed up by South Shields. Winterbottom retired from practice in about 1822, and thereafter became involved in many of the charitable affairs of the port of South Shields.

It would seem that his affluence in later life derived from his wife's family. Certainly, his own mother and sisters were described by the parish vestry tax collectors as being "poor". He gave generously to many local charities, but only those relating to seamen and their families will be mentioned here.

Charities for Mariners

The South Shields Seaman's Society (also known as the Loyal Standard Association) was established during a seamen's strike in 1824. It was an early form of Trade Union and aimed at giving relief to members and their families, in times of trouble, for example shipwreck, injury, cholera, etc, but played no political role. In 1849 it got into financial difficulties from calls on the funds because of a number of shipwrecks and the recent cholera outbreaks. Winterbottom made a donation of £200, in lieu of all future annual dues, but in fact he continued to pay his £5 pa. as well. His generosity was a great wonder in the town, being reported in the *South and North Shields Gazette* several times and alluded to at the Mariners' Homes in North and South Shields. His health was enthusiastically drunk many times over.[14] In 1853 the Association was reconstituted as a Benevolent Society and in 1896 it was wound up.

The Master Mariners' (Enrolled) Asylum and Annuity Society was established in January 1839 with the primary *object of providing amenities to aged and infirm master mariners.*[15] The Society was open to all master mariners under the age of 40 years, who each paid an annual subscription. A secondary objective, when finances permitted, was the provision of asylum or refuges or homes for old mariners and their wives or widows.

In 1843, Winterbottom provided some £2300 to purchase a plot of land in South Shields on which to build four single storey cottages for aged mariners or their widows. He also provided the capital to build a further 17 cottages over the next five years. The provision of such improvements as a sewer, a wash-house, two baths and washing machine were also gifts from him. He stocked a small library with books, portraits and a telescope for the use of the occupants. A later gift of £403 enabled the employment of a gardener.

In 1846, Robert Ingham MP gifted ground and capital for construction of a similar number of two story dwellings to the south of Winterbottom's cottages, thereby forming the other half of a square. Winterbottom's birthday was celebrated each year in the square with much enthusiasm. Winterbottom and Ingham regularly attended the tea-parties and balls and one or other or both would give a little speech.[16]

The Winterbottom South Shields Fund for the relief of Deserving Widows of Seamen was established in 1853, with an investment of £500 and 2 shares in the Newcastle and Carlisle Railway. The fund

aimed to provide 15 widows of seamen with £10 pa. It was to be managed by the incumbent of St Hild's the Parish Church, with the help of a committee of local gentry.

The Aged Scullermen's Fund was set up in 1857, with a gift of £600 invested to provide pensions to scullermen born, apprenticed and resident in South Shields. This charity provided sums of between £2-5 each year. The Charity was still functioning in 1953,[17] but scullermen have now become an extinct species.

Education of Mariners.

In the eighteenth century, the loss of shipping, even in the coastal trade, was considerable. Lloyd's list reported on average one collision at sea and six British registered ships lost every day.[18] The loss of vessels, commodities and earning capacity represented considerable financial loss both for ship-owners and merchants. The loss of a breadwinner was particularly hard for the wives and families, both financially and emotionally.

The causes of such losses include overloading, poor seamanship and poor navigation. Ship-owner's greed for profit resulted in the use of un-seaworthy boats and encouraged overloading. Many such vessels were lost. The ignorance of many of the ship's masters was surprising. Most were illiterate and unable to carry out simple calculations. Among those able to read, few cared to consult charts, as this was considered clear evidence of incompetence. Knowledge of the principles of Navigation was sparse and for many, consisted only of seeking local landmarks. Navigation lights were kept low or unlit to save money.

In the 1830s, many ship-owners were seeking ways of reducing their losses. Winterbottom was aware of the problems and in particular, believed improved navigation and seamanship was needed. In 1835, he made public his plans for a marine school. It was proposed to provide free instruction for young men over 17 years of age, who had spent at least one year at sea and were able to read and write. Scholars would have to bear the costs of books and instruments.

On August 28th 1835, Winterbottom conveyed the deeds of a plot of land to Robert Ingham MP and five other worthy residents of South Shields. The property was to be held in trust and a Marine School was to be erected there when sufficient funds became available.

It was intended that rent from the current tenants would be accumulated along with dividends etc from a number of shares in various insurance companies. (The total capital sum of these endowments, which were assigned to the trustees, amounted to some £20,770). Winterbottom and his sisters had a life interest in these funds but, although he was the oldest child, his siblings predeceased him, so that on his death in 1859, the funds were immediately available to the trustees, to establish the projected school.

The Statutes of the Marine School (1835) [19] show much fine detail planning and a large degree of flexibility in permitting changes. Six ship-owners or merchants and five local Anglican clergymen, all of whom had to be resident in South Shields, together with the Dean of Durham Cathedral, formed the board of governors. It was stipulated that

> *"every person chosen to be a master in the ...school shall be a Master of Arts, of the University of Oxford or Cambridge"* [20]

The necessary qualifications of prospective scholars, the nature and content of the instruction were outlined and included navigation, geography, astronomy, marine law and

> *"every part of mathematical or other learning, which can interest or be useful to a mariner and fit him for the higher duties of his profession"* [21] [22]

Members of the public were not to be excluded, although special permission had to be requested from the committee and a fee was charged. Holidays and examinations for the students were left to the discretion of the governors. It was also required that

> *"...a certificate engraved on parchment, signed by not less than three of the governors, shall be given to each scholar, who shall have acquired a competent knowledge of the theory of navigation, and which certificate shall also state his attainment, in any of the branches of instruction, which he has attended."* [23]

In the best interests of the school and at the discretion of the governors, variation of the statutes was permitted but only after the first seven years of the school's existence.

When Thomas Winterbottom died on 8th July 1859 aged 94, the trustees set in motion the scheme for appointing the master and Robert Eli Hooppell was appointed on 17th January 1861. He was aged 26 and the author of *On Navigation* and *Nautical Astronomy*.[24] He remained master of the Marine School until 1875, when he became Rector of Byers Green, a rural Durham parish.

The school opened on 26 March 1861, Winterbottom's birthday, in two rooms hired in the Literary, Mechanical and Scientific Institute. This was a temporary measure until decisions were made about the most

suitable size and layout for the permanent building.[25]

The Trustees decided, with the agreement of the charity commissioners, to sell the land that Winterbottom had bought, and purchase a more suitable central plot, more or less opposite the Literary, Mechanical and Scientific Institute.[26] By 1865 plans were being drawn up and two years later building started, Robert Ingham MP laying the foundation stone. The school was opened officially on 12 January 1869, by the Bishop of Durham.

The building itself was

> *"...in the Elizabethan style, of redbrick with heavily carved stone dressings and...two stories in height, with a tower at the south-east angle, surmounted by an observatory room and dome"* [27]

It was perhaps surprising that the first appointed master in the school was not a seafarer at all (but perhaps no sea-going Oxford or Cambridge MAs had responded to the advertisement). This appears to have been rectified later when assistant masters and other members of the teaching staff frequently were mariners, and could bring first hand knowledge to their teaching. Hooppell endeavoured to raise general educational standards. He complained that the Board of Trade Examinations did not take general education into account. Many men passed who

> *"were the most wretched spellers, exceedingly bad arithmeticians and were incapable of composing a readable letter"* [28]

In the 1950s, the college removed to a new site in Westoe village, only a stone's throw from Winterbottom's old house. Recent changes in the educational system have resulted in the college being renamed South Tyneside College. New departments have been opened, providing for many other subjects than those related to seafaring. Nonetheless, the marine courses continue to attract students from all over the world, men completing their engineer's, mate's or master's tickets.

Summary.

Thomas Winterbottom's contribution to the health of seaman as a result of his manual, *Medical Directions for the Use of Navigators and Settlers in Hot Climates*, was modest, although the Dutch government of the day did arrange for it to be translated and made available to Dutch seamen.

His **charities** have given aid and comfort to many. The old cottages are still in use and are well cared for by the occupants. They are not large, comprising two rooms and a kitchen, but many have been modified internally and brought up to modern standards.

His greatest achievement however was the **Marine School**, which became internationally known and respected. It seems strange then that one of his younger contemporaries, Thomas Salmon, the Town Clerk, should say that

> *"the interest of the town and of humanity itself would have been better advanced if the doctor's well meant but mistaken generosity had exhibited itself in the more natural direction (he having been himself a member of the medical profession) of a much wanted hospital or infirmary for sick or needy sufferers, rather than a school for the nautical education or improvement of those, who judging by their indifference, do not seem to be sensible of its intended advantages, or to appreciate the founder's affectionate liberality towards them"* [29]

One wonders if Salmon would approve of the old Marine School's new lease of life as an upmarket pub and restaurant.

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THE TENTH HALDANE TAIT LECTURE

The Tenth Haldane Tait was held on Wednesday 2nd May 2001 at the Pollock Halls, University of Edinburgh. Sir Alexander Macara talked on Our Unique Health Service: Past Present and Future?

OUR UNIQUE NHS: PAST, PRESENT- AND FUTURE?

Dr Haldane Tait was an outstanding community child health physician; a member of that noble breed recently so squeezed between the competing demands of general practice and acute hospital care as to be doomed to extinction. He must have found fulfilment in the unprecedented advances in maternal and child welfare during his stewardship in this great city. His service to this Society from its inception- contemporaneously with the NHS- until his death in 1990, gave it a flying start. Dr Tait was a prolific writer in the proud tradition of high literary talent in the medical profession and his historical sweep was both broad and deep, immortalising earlier pioneers, notably Sir Henry Littlejohn. An unassuming and kindly man, his deafness might have assisted him to take a charitable view of this admirer's attempt to review the history of the NHS.

"Of course, the health service in this country did not begin in the year 1948. Many of us have associations with the between-the wars health service; a great patchwork, a good deal of good intentions, a great deal of inadequacies" How right Jennie Lee was, with these words, in reminding her audience in 1968 that health care in the UK did not start with her husband's National Health Service. Any historian will readily show that there has been some form of health care whenever societies have formed. It might not be so readily recognised that advances in society' s responsibilities for the health care of its most vulnerable members have been unfailingly stimulated by conflict; a classic instance of enlightened self interest. The Crimean War gave

Florence Nightingale the opportunity to make nursing a respectable profession. Reform of the Poor Law and of the provision of care for mothers and young children gained urgency as a result of the Boer War in which two thirds of potential recruits were found to be unfit for service. This finding would have been no surprise to Seebohm Rowntree with his contemporaneous Study of Town Life about poverty in York. So much for Disraeli who, in his novel Sybil, had declared with a grand rhetorical flourish, that the health of the people is the basis upon which all our prosperity and power of state depend. Lloyd George's National Health Insurance Act of 1911 owed a debt to Bismarck's pioneering social security provision in Germany, and it was the First World War- which owed a less happy debt to Bismarck- which we have to thank for the free treatment of chest diseases and venereal infections which together posed a more lethal threat to the survival of the nation than enemy action. That conflict led to the establishment of the Ministry of Health. And who does not know that it was in the Second World War, with the inspired vision of our much maligned politicians in our darkest hour of 1940, which gave William Beveridge his opportunity to produce a charter for the Welfare State of which a National Health Service was an essential criterion. All this two millennia after Cicero asserted that the health of the people is the highest law "salus populi est suprema lex"

I have a formative recollection of being sent out by my father at the age of twelve to the more affluent end of his parish to collect subscriptions for the Royal Hospital for Sick Children in Glasgow, whose annual collections he organised in Irvine. I recognised then the need for society to assume responsibility for the health care of its citizens.

It fell to the controversial fiery Welshman, Aneurin Bevan, to pilot through Parliament the NHS Act to ensure "freedom from fear" from Beveridge's five giants of disease, unemployment, ignorance, want and squalor. It must be acknowledged that, although it did produce its own proposals for a comprehensive health service before Beveridge, the British Medical Association opposed proposals which it regarded as threatening clinical freedom. It secured amendments to safeguard private practice and the independence of the fiercely individualistic general practitioners, not all of which may be seen in retrospect as prescient. Unarguably, however our NHS is unique. It is unique historically, being conceived as an act of faith during a bitter global conflict. It is unique economically in the assumption of collective responsibility, through progressive taxation, for the health of all the people. Not least, it is unique ethically in enshrining the Judaeo-Christian and utilitarian traditions, and politically in achieving and retaining, despite its manifest and manifold imperfections, a broad consensus among the people, their governments and the professions who care for them. It has been described as the nearest Britain has ever come to institutionalising altruism, and as the only service organised around an ethical imperative, it was tailored to a national need and a national creed. In retrospect, it was an historic mistake to divide the Service into three separate parts- the hospital service, general practice and the public health departments- all under different authorities, a decision which was designed to reconcile conflicting vested interests.

I shall now hazard a review of the first 50 years of the NHS within the context of other events and with acknowledgement of my debt to Dr Geoffrey Rivett who has kindly allowed me to draw on the summaries in his definitive history *"From Cradle to Grave"*. Dr Rivett is working on a draft of the sixth decade, to be found on the website **www.nhshistory.com** on which he welcomes comments.

The NHS Act 1946 came into effect on 5th July 1948, the year which saw the proclamation of the State of Israel, the Berlin airlift and the nationalisation of electricity and the railways. Within a year the pound had been devalued from $4.00 to $2.80 and, notwithstanding Bevan's sanguine expectation that the cost could be contained, the government had to seek powers to introduce prescription charges, doubtless in order to met the cost of introducing the newly available aureomycin, chloromycetin, streptomycin/PAS, antihistamines, cortisone and ACTH and Vitamin B12. 1950 saw the return of the Labour government with a greatly reduced majority, and the beginning of the Korean War. It also marked a watershed in the history of evidence-based medicine, with the publication of Richard Doll and Austin Bradford Hill's paper on the link between smoking and lung cancer. The government found it necessary to impose a ceiling on NHS expenditure and in the following year the introduction of charges for dental and optical appliances coincided with the election of a Conservative administration, following the Festival of Britain. A proper priority for the young was marked by John Bowlby's Maternal and Child health Care. Mortality was a sombre theme of 1952, with the death of King George VI, the Harrow rail disaster, and the great London fog to which over 4000 premature deaths wee attributed. But there were penetrating shafts of light in the establishment by Watson and Crick of the double helical structure of DNA, the introduction of chlorpromazine and the birth of the College (later to receive its Royal Charter) of General Practitioners.

1953 contrasted strongly with the darkness of the previous year, with the coronation of the young Elizabeth II, the conquest of Everest and the Korean Armistice. Heart lung machines appeared and the increasingly crucial issues of workforce (no longer "manpower") planning took centre stage in the Nuffield Report on the work of nurses on hospital wards, followed in 1954 by the Cohen Committee on general

practice. The focus on child health was continued with the encouragement for the first time of daily visiting of children in hospital, and the practical value of advances in surgical technique was marked by the first kidney transplant in an identical twin. The future of computer technology was heralded by IBM's first business computer. In a more mundane context, food rationing came to an end. 1955, which saw the return of a Conservative administration under Anthony Eden, was overshadowed by a credit squeeze and a financial crisis in the organisation of general practice was met by the introduction of Group Practice Loan funds. Ian Donald's brilliant original work led to the introduction of ultrasound in obstetrics. The increasing significance of the visual media was exemplified by the launch of independent television. The following year, 1956, was politically turbulent, with the long running Suez crisis and the brutal suppression of the Hungarians' bid for freedom. At home, the Clean Air Act cleared urban skies of visible pollution almost overnight, and there were further major advances in medical areas, with the introduction of immunisation against poliomyelitis and large scale trials of birth control pills. The ever present themes of finance and staffing in the NHS were illustrated by the Guillebaud Report on the cost of the NHS, and the Jameson Working Party on health visiting, topics which were carried into the following year with the Willink Report on the future number of doctors and the Royal Commission on doctors' pay. 1957 also saw the report of another Royal Commission, this time on mental illness, and the introduction of HIPDE (the Hospital Inpatient Enquiry). Nationally, Harold Macmillan succeeded the hapless Anthony Eden as Prime Minister. Internationally, the European Common Market was established as the Treaty of Rome, and the first satellites, Sputnik I and II, were successfully launched by the Soviet Union.

The same themes continually recur. 1958 saw the Platt Report on the welfare of children in hospital and the introduction of a 44 hour working week for nurses and 1959 was marked by the Cranbrook Report on maternity services, the establishment of a Nursing Studies Unit in Edinburgh and the Mental Health Act. It also saw the Hinchcliffe report on the cost of prescribing. By now effective treatment was available to control blood pressure and the distressing symptoms of heart failure were being alleviated by thiazide diuretics. Contemporaneously, transport was the dominant feature; the Boeing 707 came into service and the M1 opened, just in time to let the Morris Mini show its paces. Harold Macmillan was returned to power with a Conservative majority of 100 on the strength of the regrettable slogan "You've never had it so good". The pressure on the cost of drugs was increased in the following year by the introduction of tranquillizers and the availability of an adequate workforce combined to produce a Royal Commission on remuneration in the NHS. In a significant pointer to the future, the Royal College of Nursing admitted men for the first time. This year marked the last call up for National Service, to which heath professionals had made a major contribution, and a Noise Abatement Act, which ironically did not apply to health care premises. 1961 saw the addition to our pharmaceutical armamentarium of ampicillin, and oral contraceptives in family planning clinics; it also saw the thalidomide disaster. Personnel issues were marked by the Platt report on hospital medical staffing, and the Human Tissue Act was passed. Macmillan's "you've never had it so good" had led to a pay pause, but spirits were lifted by the first man in space, albeit a hero of the Soviet Union.

1962 was an epic year in many respects, with the last UK smallpox epidemic, the introduction of oral polio vaccination, the influential report of the Royal College of Physicians on smoking and health, the establishment of a committee on the safety of drugs *pace* Thalidomide and the medical profession's seminal report under Lord Porritt on *Medical Services in Great Britain*. Perhaps the least regarded but most significant event was the recognition by the Minister of Health, Enoch Powell, of the serious consequences of the neglect of any long term strategic planning in the NHS- notably the total absence of capital investment- notwithstanding piecemeal attention to urgent crises in finance and personnel. Powell required the Regional Health Authorities and Public Health Departments of Local Authorities to prepare ten year plans; a similar exercise in general practice was initiated under the chairmanship of Dame Annis Gillie. Whilst it was fortuitous that the Porritt Report and Powell's initiatives, prompted by the same concerns, should coincide, they combined to set an agenda which would lead to the first major re-organisation of the Service a decade later. Internationally there was the Cuban missile crisis, and in the following year the assassination of President Kennedy. Rachel Carson's book, *Silent Spring,* highlighted threats to the physical environment. Domestically, the Conservative administration had never had it so bad, with a series of scandals which were to contribute to the return of a Labour administration, with Harold Wilson promising a "white hot technological revolution". The Beatles provided light relief in their Liverpool Cavern and the onward march of medical technology was exemplified by the first liver transplant. There were calls by the Royal College of Nursing for the reform of nursing education and by the Cohen Report for a major expansion of health education.

1965 saw the first fruits of the Powell/ Porritt seeds in the new charter for family doctors, which boosted group practice in health centres and led to a new GP contract; the establishment of the Royal Commission on

Medical Education under Lord Todd, and the Seebohm Committee on Local Authority and Allied Personal Social Services whose reports three years later were to prove highly influential. Three years after *Smoking and Health*, the advertising of tobacco was banned on television. 1966 marked yet another sterling crisis and pay freeze. The NHS picture was brighter with the realisation of the Cranbrook Committee's target of 70% (of a falling number) of babies being delivered in hospital and the establishment of a cervical cytology service to reduce the death toll from cancer of the cervix. The country was rocked by the Aberfan disaster which killed 144 children and their teachers, and the health profession was rocked by Enoch Powell's New Look at Medicine and Politics.

1967 was marked by David Steel's private member's bill on termination of pregnancy, a euphemism which disappeared in the consequent Abortion Act and Christiaan Barnard's first heart transplantation, which was facilitated by advances in immunology. More significant for patients was the introduction of coronary by-pass grafting. Powell's influence prevailed in the publication of the "Cogwheel" Report on the organisation of medical work in hospitals. Internationally the WHO embarked on an ambitious 10 year plan to eradicate smallpox and environmental concerns were reinforced by the disastrous Torrey Canyon oil spill.

Todd and Seebohm reported in 1968 and Kenneth Robinson, the Minister of Health, published the first Green Paper on NHS reorganisation. The moon was orbited, to be visited by a man a year later, and Czechoslovakia's bid for freedom was brutally crushed. The following year saw further moves towards NHS reform with the Bonham Carter Report on the functions of the District General Hospital, the establishment of the Hospital Advisory Service and the Ely Hospital Report which highlighted the scandalous state of institutional mental health care. Meanwhile a Royal Commission addressed the reorganisation of local government which was to determine the future structure of the NHS. The sectarian divide in Northern Ireland exploded into the "Troubles". The unexpected return of a Conservative government under Edward Heath in 1970 was crucial to decisions about the future organisation of both local government and the NHS. The Seebohm Committee's recommendation of generic social work departments in local government was enacted- at the expense of the NHS's public health departments. Keith Joseph, the new Secretary of State for Health, lost no time in initiating consultations on NHS reorganisation. Meanwhile, following the Ely Hospital scandal, a report on better services for the mentally handicapped was published. The currency was decimalised.

By 1972, the year of the Watergate burglary, Keith Joseph's consultations had led to the Grey Book on management arrangements for the reorganised NHS and the Report of the Hunter *Working Party on Medical Administrators* (public health doctors). Stimulated by the Todd Report on medical education, the Faculty of Community Medicine (later to be named Public Health Medicine) was formed. Computer Tomography was introduced. The timing of the NHS Reorganisation Act of 1973 was dictated by the reorganisation of local government. By the time of its implementation the following year, the financial crisis following the Yom Kippur War and the quadrupling of oil prices brought the habitual 3-4 % rise in real term resources to a shuddering halt. Ancillary staff immediately struck in protest at controls on pay just as inflation took off. Contrary to popular belief, the NHS reorganisation did not integrate all three of its parts, as earlier intended, and primary care remained separate under its local executive councils. The integration of the hospital and public health services involved the abolition of the local authorities' role and the transmutation of the powerful Medical Officers of Health into administrative medical officers of sundry description who became members of consensus teams of officers. This integration has been described as what the cat offered the canary. Meanwhile, Heath led the country into the EEC just before the three-day working week and the miners' strike which were to bring him down the following spring. The reorganisation of the NHS therefore fell to a Labour administration to implement and the provocative policies of the new Secretary of State, Barbara Castle, led immediately to unprecedented industrial action by consultants over restrictions on private practice. More constructively, she boosted the role of Keith Joseph's Community Health Councils and their equivalents in the other countries of the United Kingdom in *Democracy in the NHS*.

Environmental issues were addressed in Acts on *Control of Pollution* and *Health and Safety at Work*. Inflation peaked at 27%, just when the NHS Planning System was introduced. Nevertheless, future prospects brightened with the first North Sea oil and technology again scored with the introduction of whole body CT scanning. The BMA rebelled against the oligarchic regulatory regime of the GMC and caused a committee to be set up under Sir Alec Merrison to review the regulation of the profession. That report was to lead to major reforms in the GMC, including a majority of directly elected representatives of the profession, extended powers to address fitness to practise on health grounds and power to give advice on medical ethics.

1976 was the most troubled year yet. Inflation was taking its toll, with recourse to an International

Monetary Fund loan; resources for the NHS became even more inadequate, leading to the admission that "prioritisation" ie rationing, was a fact of life. The Department of Health put on a brave face with the publication of *Priorities for Health and Personal Social Services* and *Prevention and Health- Everybody's Business*, designed to shift responsibility on to the patients' shoulders. The first serious effort to ensure a fair distribution of limited resources throughout the NHS was made through formulae designed to determine relative need. Cynics made much play of the articulation of the acronym RAWP for the Resource Allocation Working Group in England: Scotland devised a more felicitous SHARE. As traditional in times of turmoil, the government established a Royal Commission on the NHS, with a wide remit in structure and function. Meanwhile, the work went on, with the introduction of Cimetidine for ulcers; the Court Report *Fit for the Future* on child health, which was ahead of its time and the extension of the Hospital Advisory Service to cover the NHS as a whole. The Normansfield Hospital report was a reminder that all was not yet well with institutional mental health care. Incongruously, Concorde came into service. In contrast to national preoccupation with turmoil in health and social services, the European Collaborative Health Services Studies, co-ordinated by the London School of Hygiene and Tropical Medicine, set up in the following year, was to blaze a trail in international comparative studies; and concern about the importation of virulent pathogens led to the establishment of the Communicable Disease Surveillance Centre. The contrast between national and international events became even more stark in the "winter of discontent" (1978-1979) - the most serious political and social crisis since the Second World War, with rampant inflation and perverse strikes in which the streets were choked with rubbish and the dead could not be buried. At the same time the WHO and UNICEF heralded a new dawn of promise for the future in the Alma Ata Declaration on *Health for All by the Year 2000*; and hope was offered to infertile couples by the birth of the first test tube baby.

Alec Merrison's Commission on the NHS reported in 1979 to the newly elected Conservative administration under Margaret Thatcher, who was disposed to reject any project commissioned by her predecessors; hence the only recommendation to be implemented was the least sensible- the abolition of Area Heath Authorities which were forging vital links with the co-terminous Local Authorities. Likewise Thatcher sought to bury the report on Inequalities in Health (the Black Report) in 1980. The medical profession was stimulated to review its relationship with patients and the public by Ian Kennedy's critical Reith lectures. General practice received a major boost, through the introduction under a European Commission directive, of compulsory vocational training, and magnetic resonance imaging (MRI) was introduced. Cynics of the value of international collaboration were silenced by WHO's historic announcement of the eradication of smallpox. The Conservatives published their version of a priorities document, *Care in Action*, the following year, together with "cost improvement programmes". The Humber Bridge was opened and Charles and Diana were married.1982 saw the first reports of a disturbing new disease, to be known by the acronym AIDS, caused by the HIV virus; the Warnock enquiry on Human Fertilisation and Embryology was set up, and Edith Korner was addressing information in the NHS. The Falklands War was to ensure another Conservative election victory the following year. Roy Griffiths's NHS Management Enquiry realised the dream of the hospital administrator in the introduction of general management in the NHS in place of the consensus teams, which together with the aborted plans of the '70s, had been crippled by the economic crises. There was another Mental Health Act; seat belts became compulsory and compact discs appeared.

1984 saw the Warnock Report, and the introduction of a limited list of prescribed drugs, which was predictably opposed by the medical profession. The first Data Protection Act sought to regulate the developing information technology with its increasing use of word processors, and Thatcherism blossomed, with privatisation programmes and the defeat of the miners' strike. 1985 heralded the end of the Soviet Union with Gorbachev's accession to power, and the future management of the NHS was to be influenced by Enthoven's review. The WHO's Health for All strategy was promoted by European "targets" and the re-emergence of communicable diseases was evidenced by outbreaks of salmonellosis, to be followed in 1986 by the identification of BSE in cattle. That year also saw the introduction of the controversial "Project 2000", which was to change nursing in the UK, the Cumberlege report on neighbourhood nursing and yet another paper on primary health care. The Stock Market crashed in the "big bang". British gas was privatised and the explosion of the nuclear reactor in Chernobyl chilled the world. Despite, or perhaps because of, the Stock Market crisis, the Conservatives were re-elected the following year, producing a White Paper on promoting better health and a report on medical manpower designed to achieve a balance between senior and junior staff.

1988 saw several portentous events: Mrs. Thatcher's announcement on Panorama (not, note, in the Commons) of the introduction of an NHS Review: the introduction of a combined vaccine against measles, mumps and rubella (MMR): nurse re-grading; the slaughter of cattle with BSE, and the peak of the housing boom. The year ended on a sombre note with the terrorist bombing of the Pan-Am airliner which crashed in Lockerbie. More happily, the following year it was the Berlin Wall which crashed. Other events in that year

were far from happy: the massacre of protesters in Tiananmen Square: high interest rates at 15%: the discovery of the Hepatitis C virus; and the Thatcher NHS reforms to establish a competitive "internal market" — which I later described as an infernal bazaar'- under the beguiling title of *Working for Patients*. The NHS and Community Care Act followed in 1990 along with a new contract for general practitioners, which introduced GP fund-holding. The Poll Tax riots contributed to the fall of Margaret Thatcher and the succession of John Major to the premiership. The following year the NHS reforms were implemented, together with the aspirational Patients' Charter, and a commendable strategy for *The Health of the Nation* which was intended to implement the WHO European Regional targets in the UK. The Clinical Standards Advisory Group was established, and the need for professional accountability was demonstrated by the Beverley Allitt case. Saddam Hussein's invasion of Kuwait led to the Gulf War which failed to resolve the underlying issues involved. Surprisingly, the Conservative administration was re-elected the following year for an historic fourth term. Less surprisingly, sterling was forced out of the ERM and Charles and Diana separated. 42 polytechnics became 'universities", and a select committee reported (encouragingly) on maternity services. The Tomlinson report into London's health services typically underrated the importance of community care. The next two years saw the Calman Report on hospital staffing at the behest of European directives: the establishment of a National Blood Authority to meet concerns about quality; and the setting up of research and development directorates. The World Wide Web was expanding rapidly, the Channel Tunnel opened, the National Lottery (not the NHS one) was set up, and Mandela became President of South Africa.

1995, the 50th anniversary of the end of the Second World War, saw more anguished debates on prioritisation in health care, now more openly recognised as rationing; the reorganisation of cancer services, and the GP out-of-hours dispute. Unacknowledged second thoughts about the direction of the Thatcher reforms led in 1996 to three White Papers — *Choice and Opportunity*; *Primary Care - delivering the future*: and *The NHS -a service with ambition*, which led to the NHS Primary Care Act the following spring. Digital imaging and the NHS electronic network were introduced. British Rail was hastily privatised, with the establishment of the ill-fated Railtrack; and, following the BSE fiasco, the European Union banned British beef exports. An exhausted administration was swept out of office in 1997 by a Labour landslide. Hong Kong reverted to China, the Scots voted for greater devolution and Princess Diana died. Cloning appeared on the scene with Dolly the sheep, and communicable disease retained centre stage with outbreaks of E.coli.

The 50th anniversary of the NHS was celebrated a year after the election of the "New Labour" administration and amidst a flurry of reports and a ferment of activity designed to replace the competitive philosophy of the internal market with a system which would restore co-operation within the NHS and promote co-operation between the NHS and other sectors of government, nationally and locally. In practice, the purchaser-provider split has been retained: its functioning has been modified only semantically: "purchasing" has become "commissioning". The Conservatives' emphasis on primary care has been reinforced with a slew of initiatives such as health improvement programmes, health action zones and healthy living centres, together with direct access, or one-stop clinics. The controversy over the innovation of fund-holding in 1990, which had grown to cover a majority of general practices, has been neatly resolved by taking it to its logical conclusion in the establishment of Primary Care Groups and Trusts (PCOs, or Primary Care Organisations in the latest jargon) which incorporate every practice and which are already emasculating and are clearly designed to replace, health authorities. Secondary and tertiary care — the "acute" sector — was favoured with a review in Scotland: elsewhere rationalisation has been limited to mergers of Trusts and much talk of "intermediate care". The public health function was reviewed in 1999 in Scotland and, after a protracted second stage, in March 2001 in England. Simultaneously, *The Health of the Nation* (as distinct from health care) has become *Our Healthier Nation* (of course). Stimulated by a series of clinical disasters, 'clinical governance' is the contemporary leitmotiv. Driven by mechanisms to assess the effectiveness of products and procedures as a basis for evidence-based guidelines, and to monitor their implementation, it is designed to ensure best value for money in the delivery of high-quality care: evidence-based medicine as a criterion for evidence-based management. One notes wryly that it is three decades since the father of the randomised controlled trial, Archie Cochrane, averred in his Rock Carling lecture, "There is a whole rational health service to gain". Complementary to clinical governance is the assurance of professional accountability which is being enhanced by stricter self-regulation - which should be called professionally-led regulation -with ominous 'reforms' planned for the GMC and well advanced proposals for quinquennial 'revalidation'. In addition, in England an annual assessment of doctors is being introduced under the title *Assuring the Quality of Medical Practice* to implement Supporting Doctors, Protecting Patients. Where the doctors are led, others will surely follow.

Growing recognition of the contribution, and the political power, of voluntary organisations, and not only within the health field, has led to increased emphasis on their relationship to the NHS, including the *Compact on Relations between the Government and Voluntary and Community Sectors* in England, issued by the Home Office. 1998.

Increased devolution to the three Celtic countries of the United Kingdom, and notably to Scotland whose first parliament for almost 300 years was convened in July 1999, has rapidly led to significant variations in policy which are revealed by the individual National Plans for the future of the NHS issued at the turn of the millennium in all four countries. Take just England and Scotland. Even the most cursory consideration of the content of these two Plans shows significant similarities in objectives, and dissimilarities only in ways and means. In both countries the key words are "investment" and "change". Yet some things do not change, for example, the patient has been discovered -again. To quote the press release accompanying the Plan for England:. "The NHS Plan... will create an NHS in which the patient is the most important person. In the future, care and treatment will be redesigned around their needs, at their convenience". In Scotland, inclusiveness is emphasised. The "core aims" for "involving people" in the Scottish Plan are "to give patients a stronger voice" and "to involve people and communities in the design and delivery of health services". The provision of information for patients is intended to meet pleas such as Rosa Dartle's in David Copperfield: "I only ask for information". Only the language in Scotland and England differs: in England "NHS Direct" and in Scotland "NHS 24", to become "NHS Online" to harness the power of the internet.

Both Plans devote a chapter to "improving health"; England adds "and reducing inequality" in the title of its chapter: Scotland cites inequity as a "core aim". This Anglo-Scot, having been involved in the preparation of the English Plan, has to confess that the Scottish version is the more convincing in its commitment to the promotion of equity and the prevention of the preventable in improving health. Witness the relative priority given to the prevention of the preventable in the relevant chapters of each Plan- in Scotland unequivocally up-front, in England trailing at number 13.

All the National Plans cite evidence of the continuing allegiance of patients and the public as a whole to the ideals of the NHS which, notwithstanding its shortcomings and the harshness with which they are publicised and judged, has become arguably the best loved institution in the United Kingdom.

The question for the future, therefore, is not whether the NHS, as a vehicle for the delivery of health care, will survive. The question is rather what form or forms it will take, how it will be fuelled and driven and to what destination it will travel. St. Paul asserted: "Whether there be prophecies, they shall fail". The National Plans wisely confined themselves to aspiration and targets, for prophecy is, to paraphrase George Bernard Shaw, "a dangerous profession". Some predictions might, however, be hazarded against a reconnaissance of the terrain through which the NHS vehicle must travel.

Medicated survival and higher living standards combine to increase longevity: the number of people in the UK over the age of 90 is predicted to double in the next 25 years. Already we have the elderly caring for the very elderly. Add the factor of birth rates below the level of population replacement and, failing a major increase in immigration, the ratio of the productive to the dependent population will continue to plummet, with ominous effects on the economics of services, including health care and social welfare.

Greater mobility of the population and differential birth rates are increasing cultural and ethnic diversity and fraying the fabric of society, with an alarming percentage of single parent families and a majority of women gainfully employed outside the home. Looser family structures and altered patterns of child care follow, with an unmet demand for more affordable housing on green-field sites.

The rich become ever richer whilst the poor become scarcely less poor, with growing inequalities and inequities in health care.

Nature continues to strike back, with new lethal infections and old infections, mistakenly thought to be under control, re-emerging in ever more sinister form. Take tuberculosis, exalted by HIV/AIDS epidemics. Increasing antibiotic resistance is a particular cause for concern, notably in the methicillin resistant strain of staphylococcus which is closing hospital wards.

International inter-governmental bodies are becoming ever more influential as the world shrinks, with unforeseen developments such as the threats posed by European patent law to molecular biological research or by the World Trade Organisation to such collective systems as the NHS.

The onward march of medical science and technology presents glowing prospects and new ethical dilemmas. Molecular biology is the prime example; the unravelling of the human genome and germ cell research (nuclear transfer), in which Scotland has led the field, have incalculable potential in the prevention and treatment of crippling diseases. But how far should we go in eliminating harmful genes, and how do we

stop irresponsible scientists from cloning human beings? Micro-electronics are revolutionising communication; computers have moved from the basement to the desk top to the wrist watch. But what price confidentiality? Surgery is being transformed by imaging techniques, laser and keyhole surgery. Should keyhole surgery in the foetus, or heart and lung transplants for young children with cystic fibrosis, become routine procedures?

Such advances fuel ever greater demands for health care which constantly outstrip capacity, with unrealistic public expectations -of a perfect delivery, an uncomplicated operation, an instantly available ambulance staffed by eager paramedics. Idealistic patients' charters and tabloid tele-journalism raise premature or exaggerated hopes, and inevitable disillusionment results in burgeoning complaints and litigation leading to demoralisation of staff and defensive medicine.

So much for the terrain. Let us pursue the beguiling, if imperfect, metaphor of the NHS vehicle. What prospects may safely be predicted for its passengers and drivers? The NHS marque, remodelled and retooled, will survive, with interesting variations in national models. Will there be more fuel in the tank and where will it come from? The chronic under-resourcing which has been at the root of the Service's shortcomings is being addressed, although how adequately remains to be seen. Unfortunately, recourse to the Public Private Partnership (formerly the Private Finance Initiative) to remedy the remarkable neglect of capital development, which is relatively cheap, offers short term gain for long term pain. Closer cooperation is already taking place to maximise the use of all the available resources. But all the evidence from comparative studies confirms that funding from a progressive system of direct taxation -our Beveridge model - is more equitable and efficient than the competitive Bismarckian model. Refinements are certainly likely. Hypothecation, as in the application of revenue from tobacco taxes to health promotion in Scotland, has further potential, and there is no reason why individuals should not pay directly for recreational drugs for which there is no clinical indication, although their use may require medical supervision. Direct charges are notoriously capricious and regressive in their effects as has been amply demonstrated in prescription charges and dentistry. National Lottery funds would provide only peanuts to the NHS at the expense of other desirable causes for which they provide life blood.

It would be encouraging to think that, as they share the same vehicle, passengers and drivers, i.e. the public and patients on the one hand and health professionals and managers on the other, would recognise the imperative of agreeing upon its speed and direction of travel, albeit within the limits and route maps set by the politicians. I believe that in general the drivers have become much more sensitive to the feelings of the passengers, replacing paternalism with a commitment to partnership, although regrettably many have further to go. Can the same be said of patients and the public as a whole? I leave you to judge. Certainly the therapeutic relationship, whether individual or collective, depends upon reciprocal trust which the professional forfeits by negligence, incompetence or mistake, and the patient by lack of consideration or compliance. Reciprocal accountability and communication will be improved by more and better shared information, whether hard copy or electronic, whilst better knowledge and understanding of benefits and risks, of what can and cannot be done whether, when, and by whom, can only be a good thing. Performance indicators and league tables are damagingly misleading unless standardised, or at least heavily qualified. When disputes arise, improved complaints procedures should reduce recourse to litigation, and some form of no-fault compensation will be introduced to compensate victims of accidental mishaps without an unfair penalty to the reputations of the health care professional or manager. The disadvantages of adversarial procedures in litigation will be acknowledged, and arbitration procedures will be introduced before court proceedings.

Patient-held "smart cards" conveying all relevant information about the individual will eventually arrive when technical issues have been resolved, including safeguards for confidentiality.

Education of patients and the public as a whole about health, disease, services and outcomes will be tackled more vigorously, encouraged by evidence of best value, inter alia in the control of smoking, alcohol and drug abuse, and in the promotion of good nutrition and physical exercise. In the longer term dividends will be reaped in the reduction of the burden of preventable heart disease, cancer, mental illness and accidents.

The education of health care professionals will become much more interdisciplinary and multidisciplinary at every level and, together with "skill-mix" in team working and the elimination of gender stereotyping, will lead to new hybrid types of practitioner. Where alternative therapies are shown to be effective and safe, they will increasingly be provided within the NHS. The historical divisions between primary and secondary care, and between health and local authorities, will be bridged, with general

practitioners developing and maintaining expertise in chosen specialties and specialists assuming responsibility in their field throughout the NHS and other relevant statutory services.

The most interesting development will be at the policy and management levels, where patients and carers, individually and through special interest groups, will rightly insist upon genuine, not token, involvement, working actively with the health care professionals and the managers to determine priorities, to influence decisions about rationing, to promote equity, to ensure the relevance of care, to seek the resolution of dilemmas and, who knows, to form a natural coalition of interest between the drivers and the passengers of the NHS vehicle which will persuade governments to put more fuel in the tank.

As we look ahead, let us cast our minds back to the ideals which inspired the creation of the NHS. Health and health *care*, when health fails, are the most precious gifts we possess.

THE ONE HUNDRED AND SIXTIETH ORDINARY MEETING

The One Hundred and Sixtieth Ordinary Meeting of the Society was held at the Postgraduate Centre, Raigmore Hospital Inverness. Two papers were read, one from Dr David Boyd on some Caithness Doctors and Diseases and one from Mr Ken Mills on Medical Aspects of the Franklin Disaster.

SOME CAITHNESS DOCTORS AND DISEASES

The Highlands and Islands of Scotland have for many generations supplied large numbers of men and women to all the professions, including medicine and Caithness is no exception. I would like to talk about a few of these many doctors and to say something about some of the diseases that they tackled.

To those who know Caithness, it will come as no surprise that many bear the name of Sinclair or St Clare. The first record of an individual doctor with Caithness connections that I can find is William St Clare, who lived from 1654-1728 and was a descendant of the 1st Earl of Caithness. He was one of many Scots who studied medicine at Leyden and had the distinction of being one of the 21 original Fellows of the RCPE on its founding in 1681 and the additional distinction of being its President in 1698 and 1708. A burgess of Edinburgh, he was the father of the better known Dr Andrew St Clare, the first Professor of the Institutes of Medicine in the medical faculty of the University of Edinburgh in 1725 and first physician to the King in Scotland.

A more colourful and tragic St. Clair was born in Thurso in 1736 and although a distant relative of Sir John Sinclair of Ulbster, his father is described as a merchant. Arthur received a good education and was sent to Edinburgh to study medicine. He then became indentured to the famous William Hunter of London. But, as a biographer puts it "he had inherited the martial temper of his race" and he bought an ensign's commission in the 60th Royal Regiment of Foot. This was one year after the start of the Seven Year's War with France and St Clair sailed for North America and took part with distinction in the battle of Louisburgh in 1758. A year later, as Lieutenant St Clair, he was in General Wolfe's command at the Plains of Abraham, where he again distinguished himself on the field, seizing the British colours from the hands of a dying soldier and carrying them until the battle was won. Despite his military activities, he had managed to form what was then described as a "tender attachment" to a Miss Phoebe Bayard of Boston and on his marriage to her he became a wealthy man. He resigned his commission in the British Army in 1762 and acquired land in Pennsylvania and took an interest in local politics. He kept up throughout his life a voluminous correspondence with such as Benjamin Franklin, George Washington, Thomas Jefferson and the Marquis de La Fayette. These papers are now in the Ohio State Library. It is no surprise therefore that on the outbreak of the American War of Independence in 1775, St Clair enthusiastically supported the thirteen states. He was called to military duties, being commissioned in the American Army as a brigadier and eventually as a major-general. He fought valiantly at Trenton, Princeton, Brandywine (where he had a horse shot from under him) and Valley Forge. It is sad therefore that the only reference to him in the Encyclopaedia Britannica concerns St Clair's defeat, 1791. This was "the worst defeat of US forces in the Indian wars". He was blamed, disgraced, lost his fortune and lands and ended his days in poverty living, as a contemporary described, "in a rude cabin supported by selling supplies to waggoners who travelled the road". He was killed at the age of 84 when thrown from a wagon that he was driving. Some friends thought he had been shabbily treated and erected a modest memorial with this simple inscription-

The earthly remains of Maj. General Arthur St Clair are deposited beneath this humble monument, which is erected to supply the place of a nobler one due from his country"

His country never did raise any other monument.

The 18th century produced two other medical men with the name of Sinclair, both William Sinclair, father and son. We would not know much about them were it not for a voluminous correspondence mostly written by their patients, which survived and is now held in the NAS. The letters were part of the estate of a Mrs Ferryman of London who offered them in 1939 to the 1st Viscount Sinclair who presented them to the NAS.

William Sinclair was born in 1711, the 4th son of John Sinclair of Forss. He was indentured in 1728 to the Edinburgh surgeon and apothecary, George Young, for a period of 3 years. His name also appears on Alexander Monro Primus's anatomy class list in 1729. But in 1736, after practising for a few years in his native Caithness, he left the county again to study, this time with the great Boerhaave and Albinus in Leyden. He also had practical training in the large Paris hospitals and in 1738, he travelled to Rheims where he graduated MD. From then until his death he practised in Caithness.

His son was born in 1748 and studied Arts at Aberdeen from 1764-1768, but also appears to have been indentured in medicine, according to a letter from a Dr Livingstone of Aberdeen, who records the apprenticeship fee as 300 merks. He appears on the list of Edinburgh graduates of 1780. There exists also a certificate in Latin, curiously signed by James Robertson, Professor of Oriental Languages at Edinburgh that Sinclair had studied anatomy, surgery, theoretical medicine, botany, pharmacy and obstetrics between 1770-75.

After his return to practise in Caithness, we know most from his patients' letters to him and from contemporary accounts. Some letters were clearly the equivalent of an urgent telephone. There is no doubting the near panic in this note dated October 1784

"Dear Sir
In the utmost impatience and anxiety, I have been looking for you all day yesterday and surely thought you would be here yesterday. For God's sake hurry as Mrs Henderson is worse in every respect, with the addition of a violent cough."

Another writes in a more subdued fashion but the deep anxiety about his wife's breast lesion is obvious-
"She is done this day with syrup of poppies and I cannot see any alteration. Her breast is quite free of the black putrid flesh and has much fallen in at the top and the edges of the orifice, leaving spongy flesh without any feeling when washed which she does now only with warm water. It discharges a good deal of thin matter and is always unfixed and not nearer her armpit. Will the medicine sent be continued? I hope to hear from you and with great regard."

Another interesting letter comes from William Cormack, Reaster, a lay blood letter. He wrote-
"Sir
By your order I have attended Brodie Sinclair and brought him twice to the verge of fainting. The cupful of blood herewith sent will show you the state thereof. This is the 18th cupful- the 19th and 20th are not much better. The blistering plaster wrought well but all means do not seem to abate the rapid progress of putredo in the blood. I can proceed no further unless in the presence of a doctor or surgeon."

By my calculation, as it was usual to remove about 100 mls of blood at a time, this poor blistered and bled patient had already lost about 2 litres of blood and it is not surprising that he was fainting. Putredo in the blood is an interesting expression. In William Cullen's book, the Practice of Physic (1791), the indications for bloodletting include "the putrescent state of fluids" This occurred in the putrid fevers- probably typhus or typhoid.

From contemporary accounts Sinclair was a well regarded physician. Donald Sage said of him that he was a highly ingenious man, above ordinary size, exceedingly handsome with a fine open countenance. He married late. His death is recorded by Sage thus-

"He himself, from his medical skill, was fully aware of its approach. His more intimate friends were assembled around his dying bed. He told them that he had not 10 minutes to live but that he had resolved as he had lived so he would die. He called for a glass of port wine. Now said he, gentlemen I wish you all a good night. He swallowed the bumper of port, leaned back on his pillow and after a few strong convulsive struggles, expired"

William Sinclair Senior's dissertation was on smallpox and he later wrote a short paper comparing natural smallpox, inoculated smallpox and inoculated cowpox, which may have been intended for publication. The first reference to inoculation in Caithness is in Thomas Pennant's "A Tour of Scotland" in

1769, when he mentions an ingenious physician, Dr Mackenzie of Wick, who much practised it. He added that in all these places "the smallpox is very fatal"

The First Statistical Account of Scotland records that in the parish of Thurso the principal disease was smallpox. The observations were made John Williamson, a local doctor and surgeon to Rothesay and Caithness Fencibles. He wrote-

"In December 1796, the confluent smallpox became highly epidemic and fatal in this county." He encountered many difficulties "as the peasantry held a religious prejudice against inoculation" However, he also records support from the clergy who tried to persuade the people that inoculation was a "kind interposition of Providence to mitigate the ravages of a most fatal disease" Further general support from the Church came in a proposal that the students of divinity at Edinburgh University be instructed in the technique of inoculation. But such prejudice persisted well into the 20th century. In 1925, Dr Leask, the public vaccinator in Wick, was involved with the council in threatening action against parents in terms of the Vaccination Act.

One of the letters to Dr William Sinclair illustrates the real misery and horror of smallpox- a disease which most people nowadays have not seen. Christan Groat of Duncansby wrote on April 1st 1821 about her son David, who had developed smallpox 22 days previously and for the last 18 days had been blind. She had consulted a Reverend Dr, Dr Jolly- it was not uncommon for ministers to give advice and even simple medicines for his poorer parishioners. He had told her to open her son's eyes but she wrote "However, ere this word came, one of them had opened of itself, the other I opened with my tongue, but could see nothing but a thick scum and he could see no light."

One can imagine the desperation of this poor mother trying to save her son's sight, but it is difficult to imagine the measures that she took. It is likely that at 22 days, David would have survived, but would have remained blind.

Now we come to a nineteenth century Sinclair. Eric Sinclair was born in 1807 and became a LFPSG in 1829. He was one of the doctors who responded to inquiries from the RCPE which resulted in the College's 1850 report on Medical Practice in the Highlands. This was a most important report. Craig, in the history of the College calls it "Visionary to the extent of only stopping short of air transport". Sinclair, although agreeing that the position of medical men had improved in his area, was still concerned about poor remuneration. He must have done well later, as an acquaintance, writing some time after his death, records

"The doctor's elegantly built carriage with its richly harnessed grey horses won the admiration of all onlookers. The coachman and footman, both in tall hats with a cockade and feather ornament in the side, were conspicuous figures on the high box seat. The doctor always wore full dress with a large display of white shirt richly draped with flowing frills."

He was very much abreast of medical advances of the time. In 1848, the John o' Groat Journal reported under a large headline "The Application of Chloroform in Wick", how Sinclair had successfully removed a large growth from a man's face under general anaesthesia. This was, of course, very early in the days of anaesthesia.

He was also well versed, as so many doctors of the time were, in natural history; he wrote an account of the ornithology of the county in the New Statistical Account of Scotland of 1846, was a member of the Geological Society and established a museum in Wick, which a contemporary wrote "will well repay a visit."

One of the diseases that Eric Sinclair dealt with was cholera. The huge epidemic of cholera reached Britain in 1831, and by 1832 was in Glasgow and Edinburgh. A Board of Health was set up in Wick in April 1832 and in July issued this poster-

"The B of H, anxious that the health of the inhabitants of this extensive parish and the numerous strangers now resorting thereto, strongly recommend to householders the great propriety and necessity of not overcrowding their houses with lodgers, the number of which ought in every instance to be much more limited than in ordinary seasons.

The strictest attention to cleanliness of person, of bedding and houses and the free ventilation of the latter, together with great sobriety at all times, particularly at night, are indispensable requisites towards the preservation of public health at this period."

The B of H also anticipated the epidemic by opening a small cholera hospital in Wick and appointing an Edinburgh doctor familiar with Asiatic cholera. He was to receive emoluments of 10/6 per day and the promise of a comfortable bedchamber. Unfortunately his relationship with the B of H was not good and he resigned after a few weeks. We know who he was through a visit he made more than a decade later, a visit recorded by the J-O-G journal. He was Dr Edward Duffern Allison, an FRCPE who had resigned his Fellowship a year after his appointment in Wick. The reason for the resignation is noted in a letter of 1833 to the President in which he explained "that having made an arrangement to succeed Mr Scott, apothecary and druggist at 100 South Bridge, I am under the painful necessity, according to the laws, of resigning my place as a Fellow.

The epidemic of cholera in Caithness lasted 85 days. 96 people in the county died- a mortality rate of 23% (Glasgow's was 47%). The disease returned in epidemic form in 1848 though not as severely as in 1832. One of the Wick doctors involved at this time was a Dr Madden, who was a licentiate of the RCS in Ireland and had been a lecturer in anatomy and physiology at the Dublin School of Medicine. 54 of those affected were his patients and his records of these still survive.

Treatment consisted of lead acetate and opium, infusions of mint and bicarbonate of soda, chalk and mercury, leeches, blisters and sinapisms. It is disappointing that no mention is made of IV saline, a life saving procedure shown to be effective in a publication by Drs Latta, Craigie and Lewin during the 1832-33 epidemic in Leith.

William Henderson (1810-72) the fourth son of Sheriff Henderson of Thurso, graduated at Edinburgh, with an MD dissertation on Empyema with pneumothorax. The following year he was appointed physician to the fever wards and pathologist to the Royal Infirmary. He wrote extensively on heart disease, did pioneering work on microscopy and was one of the first, in 1843, to distinguish between typhus and relapsing fevers. He became FRCPE in 1838 and in 1842 was appointed to the University chair of pathology. No-one at that time could have predicted his dramatic fall from grace. He is referred to in the minutes of an extra-ordinary meeting of the RCPE on May 9 1851-

"The College expressed severe regret that a fellow should have been led to take a step so fatal to his reputation in the college and to his character as a scientific physician and instructs the secretary to transmit to him a copy of the resolution trusting that may lead him to withdraw from the college."

A historian of the University later wrote-

"The consternation manifested by the medical faculty in the university and by the College of Physicians was such as might have been expected if the Professor of Divinity were to announce that he had become a Mohammedan."

What he had done to merit such antagonism was to have embraced homeopathy. He was attacked by the establishment, led by his colleagues of the chairs of surgery and midwifery, Syme and Simpson, but he conducted a vigorous, reasoned and courteous defence, including several monographs addressed to his detractors. He had to resign his appointment at the Royal Infirmary but did not resign his chair until 1869. Sir Byron Bramwell, writing in 1923 of the professors who had taught him in his student days, remembered Henderson as an able man with a keen sense of humour. He recalls

"His class, held at a 4 in the afternoon, when we were all tired, was apt to get a little out of hand. One day he was lecturing on the sounds of the heart and their method of production. He stated that many animals had been used in the investigation of the sounds of the heart, amongst others the donkey. (Loud applause). To this he replied in his strong nasal voice. "The donkey, gentlemen, has been a most valuable animal in the progress of science" (Renewed and uproarious applause). Henderson's eyes sparkled, he looked up and down the benches until he had covered with his eye every individual student, then he said "Gentlemen there is hope for you all yet!"

John George Sinclair Coghill was born in Thurso in 1834. He was a medical student at Edinburgh, when the Crimean War started and he immediately volunteered for the Royal Navy as a Surgeon's mate. He kept a journal from 1854-55 while on HMS Conflict, one of the early screw steam frigates in the Baltic Fleet. The journal is an account of a young man thoroughly enjoying being at sea and delighting in visiting the Baltic ports. The call to action stations was "Drums beating to quarters" and then he and the surgeon would repair to the cockpit where they rigged amputation tables and prepared ligatures, bandages and tourniquets.

After graduating in 1857, he was assistant to Sir James Simpson for two years, probably in a private capacity. He demonstrated anatomy at Glasgow University for three years and then went to China where he was appointed medical officer to Shanghai and physician to the hospital there. The loss of a son from cholera and his wife's ill health, prompted his return to Edinburgh. There he was again associated with Simpson, editing his papers and giving lectures in his stead during Simpson's last illness. Coghill applied for the chair of obstetrics, but this went of course to Simpson's nephew, AR Simpson.

In 1875 Coghill moved south to the Isle of Wight. It is said that he made this move for health reasons, but disappointment with his prospects played a part. It is likely that he knew Dr Arthur Hassal, who had founded the RNH at Ventnor, (and had given his name to Hassal's corpuscle in the Thymus). In any event he succeeded him as senior physician. From then until his death, Coghill devoted himself to the treatment of pulmonary TB. He visited Robert Koch in Germany and obtained from him some "lymph" (Koch's Old Tuberculin OT). With this he treated 110 patients at Ventnor and published his results in the Lancet of 1891. The treatment consisted of up to 20 inoculations of small but increasing doses of OT which Coghill gave with pure guiacol. He could not understand the bad results which others had obtained and suggested that they were due to tuberculin, which decomposed to a toxic substance. His opinion was that this was an "invaluable essential part of the treatment of pulmonary tuberculosis."

Coghill's daughter Agnes graduated in medicine in Edinburgh in 1897, the first Caithness woman to do so and she did well, certainly in obstetrics and gynaecology. Tragically and ironically she died at 32 in childbirth.

Another 19th century doctor takes us into the 20th century and the present time. John Alexander was born in 1839 and died in 1901. He came of farming stock from the parish of Walton and at first studied for the teaching profession at Moray House in Edinburgh. But medicine interested him more and he became LRCPE and LRCSE in 1867. He practised in Northumberland where he took an early interest in public health, becoming a certificated factory surgeon and assistant surgeon to Bedlington collieries. He returned to practise in Wick, combining this with part time public health work. In 1891 he was appointed the first full-time MOH for Caithness, provided that he obtained the DPH at his own expense, which he did. He later became an MD of Durham University. Alexander overcame some very unhealthy practices and a good deal of apathy in ushering Caithness's public health into the 20th century. This was ultimately recognised by the raising of a statue to him in the centre of Wick, an honour given to few MOHs!

John had a younger brother. Alexander, who also qualified in medicine and joined his brother in practice in Wick, but tragically died at the age of 45 from typhus. His son also qualified in Medicine. William Alastair Alexander was known to generations of Edinburgh students and doctors as Sandy Alexander. He was senior physician at the Royal Infirmary and President of the RCPE. His son became a professor of paediatrics in Canada and his daughter Isobel was doctor in the student health service in Edinburgh and is a member of this society.

These are a few of the Caithness doctors who made important contributions to medicine and their communities. But there are many others and some of these are listed below.

James Cleghorn was a Surgeon General in the Indian Medical Service and an Honorary Surgeon to Queen Victoria.
Robert Gunn was ophthalmologist to the Royal Ophthalmological Hospital, London and worked on the comparative anatomy of the eye using material from the HMS Challenger expedition.
John Malcolm was Professor of Physiology at Dunedin University, New Zealand.
George Stewart was Professor of Physiology in Cleveland, Ohio.
Peter Cormack Sutherland was Surgeon General in Natal Colony and an Arctic explorer.
Halliday Sutherland was son of Dr JF Sutherland of Lybster and a well-known writer (The Arches of the Years).
William Taylor was a GP in Castletown, Caithness and became Professor of Occupational medicine at Dundee University.
I pay tribute to them all.

SIR JOHN FRANKLIN AND POLAR MEDICINE

John Franklin led a Royal Naval expedition in 1825 to uncover the last link in the North West Passage around the North coast of Canada. Nothing was known of the fate of his two ships and 129 men for nine years and the site of this Titanic of exploration disasters was not found for another three years. The evidence as to what happened was scanty: scattered decaying ships' stores, scattered skeletons and only one brief message form. Searches and theories have abounded in the past 150 years and continue to this day.

John Franklin was a national hero for his achievements and courage before his mysterious disappearance in 1845. He had joined the Royal Navy in 1800 at the age of 14 and had a very active and exciting time as a junior officer in the next 15 years. He was permanently deafened at the battle of Trafalgar in 1805, presumably due to rupture of his tympanic membranes, and he was wounded at the battle of New Orleans in 1815. In 1818 he was second in command of an abortive Royal Naval expedition to the North Pole via Spitzbergen and, in 1821 and 1824, he led overland expeditions to define the Arctic coast of northern Canada.

His doctor on these sledging and canoeing trips was John Richardson, also a naval officer. He had come from Dumfries to qualify in medicine in Edinburgh in 1807 and wrote an MD thesis in 1817 on Yellow Fever. The treatments available to him were the standards of the time- purgatives, bleeding, blistering and opium, but he had little medical action in the Arctic. He and Franklin were among the few survivors from starvation on the 1821 expedition. Newspapers of the day hailed them as the men "who had eaten their boots." They were courageous to set out on the 1824 expedition, but they had much better preparation. Richardson has the unusual distinction of deliberately executing a Méti member of the first expedition who was strongly suspected of cannibalism and the murder of a midshipman. This was described in the official record but no legal action followed nor any Admiralty enquiry. Richardson eventually became an international authority on varieties of fish, a study he began in the Arctic. This established a tradition (still continuing today) of Polar doctors filling their non-medical time with biological research.

By 1845 only 300 miles of unexplored coastline separated the eastern and western approaches to the North West Passage. The Admiralty lavishly equipped two very strongly built ships, the *Erebus* and *Terror*, and put Franklin in command, at the age of 59, to fill in the gaps on the map. Everyone concerned was confident of success. The ships disappeared westward into the ice in July 1845 and were never seen again. Anxiety rose in 1847 and the first of 15 search expeditions set off.

Dr John Rae was born in Orkney near Stromness in 1813 and became an employee of the Hudson Bay Company, after qualifying in Medicine at Edinburgh University in 1833. He soon became known for his talent for travelling vast distances in the Arctic in the manner of the native Indians and Inuit. He was sent to the Arctic coast in 1847 to look for Franklin but found nothing. Richardson (now Sir John and aged 60) joined him in 1849 for a second exploration of the coastline. In 1854, Dr Rae met a group of Inuit who had relics of Franklin and his men. Rae purchased all he could and reported the news to London along with Inuit memories of the Franklin crew dying on a long line of march southwards towards mainland Canada. The Inuit also said the last survivors had practised cannibalism. This last report was unacceptable to Victorian Britain. Charles Dickens, amongst others, wrote hotly denying that British sailors could possibly behave like that. Dr Rae was awarded part of the large financial prize that had been on offer for some years for news of Franklin. In later life, he lived in London, but his memorial is in St Magnus' Cathedral in Kirkwall.

Four doctors were lost in Franklin's crew- all young men. Three had qualified in Edinburgh in the 1830s, one of them being Harry Goodsir, son of a medical family in Anstruther. By 1840 he was a conservator of the Museum of the Royal College of Surgeons in Edinburgh. His pay was about £100 pa. in a period of unsettled economy (shades of the 1990s in the Museum!), and this may have induced him to volunteer for the Franklin expedition, in the role of junior surgeon and biologist in *HMS Erebus*. After qualification, he is reported as suffering frostbite of his lips on an ascent of Mount Etna in Sicily- a curious association of hot and cold. His brother joined one of unsuccessful searches in 1850 to look for him.

Goodsir's skeleton was not identified in 1857, (or subsequently), when the exact region of Franklin's disaster was explored by McLintock and Hobson on the shores of King William Island.

Franklin's wife, Lady Jane Franklin, became famous for her efforts to stimulate search expeditions, three of which she financed herself. The last, was led Lieut. McLintock in the *"Fox."* Like all the other ships which left Britain for the Arctic, they called at Stromness for freshwater from a well which is still present near the shoreline. Dr John Rae was still working in the Arctic at the time; nowadays there is a museum in Stromness in his memory.

McLintock found masses of abandoned stores on a beach and a number of skeletons. He buried the bones under piles of stones as deeper burial was impossible due to permafrost. Later searches by Lieut. Schwatzka of the US army (who was also qualified both in medicine and law) revealed other skeletons widely scattered along the shoreline. Only two could be certainly identified by artefacts and these he sent back to Britain. The bones of Lieut. John Irving were buried in Dean Cemetery in Edinburgh at a very large military funeral in 1881. The handsome granite pillar is now in need of support; this may be forthcoming shortly. The other skeleton, probably of Lieut. de Lesviconte is buried in the Naval College at Greenwich.

McLintock also found the only written information about the fate of the expedition in the form of 2 nearly identical Admiralty message forms, reporting the first camp at Beechey Island in the winter of 1845-46 and the subsequent entrapment of the ships in ice floes for eighteen months off King William Island. At Beechey Island, three graves were found of Franklin's men who had died in that first winter.

Many further searches were made over the next 100 years, and in 1980 two Canadian scientists, Beattie and Geiger, accidentally found a high level of lead in a talus that they had picked up on King William Island. Subsequently they found very low levels in Inuit bones and high levels in bones that they exhumed from the graves on Beechey Island. A pile of tin cans 130 years old near the graves revealed copious but incomplete lead soldering of the tins which had originally contained meat. Thus began the hypothesis that Franklin and his crew had been affected by lead poisoning. More recently, investigations into the records of the canned meat company that provided the Royal Navy with supplies in 1845 from their plant in Whitechapel has thrown suspicion on botulism as a cause of death. This also remains a hypothesis.

The death of 129 crew members seems much more likely to have been due to scurvy and starvation after two and a half years in the Arctic. Their anti-scorbutic lime juice was insufficient from age and freezing, no fresh vegetables were available and their hunting abilities were feeble. Whatever route they took to escape their imprisonment in the ice, it seems that they were doomed. Even modern medicine would not have saved them. They needed modern transport.

The Scottish Society of the History of Medicine

REPORT OF PROCEEDINGS
SESSION 2001-2002

THE FIFTY THIRD ANNUAL GENERAL MEETING

The Fifty Third Annual General Meeting of the Society was held at the Royal College of Surgeons and Physicians in Glasgow on Saturday 3rd November 2001.The President Dr John Forrester was in the chair. The minutes of the 52nd AGM were approved. Following Dr Forrester's report he handed over the chain of office to the incoming President, Dr David Wright. The Secretary and Treasurer's reports were accepted. Drs Swan and Jellinek retired from council and were warmly thanked for their contributions and Drs David Boyd and Rufus Ross were elected as council members.

THE ONE HUNDRED AND SIXTY FIRST ORDINARY MEETING

The One Hundred and Sixty First Ordinary Meeting of the Society was held at the Royal College of Surgeons and Physicians in Glasgow on 3rd November 2001, immediately after the 53rd Annual General Meeting. Two papers were read, A Minister's Brilliant Progeny by Mr Roy Miller and A Decided Novelty for the British Army by Dr John Cule.

A MINISTER'S BRILLIANT PROGENY

The family of Burne owned a small property, Corntown, at Logie in Stirlingshire, having been given it by Crown Charter granted to a Thomas Burne in 1538. In 1767, a descendant, John Burne, sold it and moved to Glasgow. In the course of buying new property, and eventually being admitted as a burgess and guild brother, the terminal "e" was lost, and he became John Burn. He was a scholar who compiled an English Dictionary as well as a Grammar, long used in Scottish schools.

His son, also called John, who had been born in Logie in 1744, was eventually also entered as a Glasgow burgess by which time the surname had become Burns. It is this man and his progeny who form the subject of my talk.

After education at Glasgow University, John Burns became assistant minister in the Barony Parish in 1770, and was ordained minister there four years later. He received the degree of Doctor of Divinity in 1808 from Aberdeen University, and ministered to the Barony congregation until his death in 1839. He was in his 93rd year, and 69th as minister there. When he began his ministry, three congregations met in the Cathedral, known at that time simply as the High Kirk. There was the Outer High, the Inner High, and the Barony which met in the crypt - an inconvenient venue because of the pillars. Worshippers seated behind them had difficulty in both hearing and seeing the preacher. As a result, these pews were known as believer's seats, because so much had to be taken on trust. However, in 1801, adjacent to the Cathedral, the first Barony Church was opened for his congregation. As a preacher he had a great reputation, even into his later years when he was referred to as "the Father of the Church in Glasgow." On 9th Jan. 1775 he married Elizabeth Stevenson, daughter of a Glasgow merchant. Several biographies credit them with nine children but the "Fasti Ecclesiae Scotticanae" - sometimes referred to as the Scottish Ministers' stud book - records ten births, with one child, a girl, having "died young," the others being given definite dates of death as well as birth. Although christened Elizabeth, she probably perished very soon after birth. At any rate five survived into adulthood and proved to be a formidable quintet.

John, the eldest, was born in November 1775. After study at Glasgow and Edinburgh Universities he was appointed apothecary and surgeon's clerk at Glasgow Royal Infirmary, soon after it opened for patients in 1795. He entered the Faculty of Physicians and Surgeons of Glasgow in 1796 and was appointed a surgeon to the Infirmary in 1797, whereupon he forthwith obtained permission to give the first ever lectures in surgery to students. He also opened a private anatomy school in Virginia Street. His appointment was not renewed at the Infirmary because he was accused of obtaining bodies for dissection illegally. He persuaded the magistrates to quash proceedings by agreeing to discontinue his courses. He gave lectures in midwifery instead. Later he taught anatomy, surgery and midwifery at Glasgow's Anderson's College. He was not reinstated as surgeon at the Infirmary until 1808 and 1809. When Glasgow University instituted the Professorship of Surgery in 1815 John Burns was nominated for the Chair by the Duke of Montrose. He was the first to be awarded the degree of Ch. M. in 1817, the degree having been, of course, and by coincidence, only introduced in 1815. He was awarded an M.D. of the University in 1828.

Duncan in his "Memorials of the Faculty of Physicians and Surgeons of Glasgow," claims that John Burns' long incumbency of the Chair of Surgery (i.e. until his death in 1850) was of much advantage to the University, stating that he was an able lecturer in both anatomy and midwifery, a reputation which was the means of attracting many students from a distance. He is described as a man who combined strength of character with great suavity of manner. "In later life he had long white hair, a bright face, a trig figure in a quaint costume of collarless coat, knee breeches, black silk stockings and buckled shoes. He was the last to stick to the old fashion." This was a period of conflict between the University and the Faculty over the right to teach and to issue degrees. Furthermore, only "pure" physicians were appointed to permanent posts in the Royal Infirmary. John Burns became heavily involved in the conflict and succeeded in being appointed - as physician - to the Infirmary in 1833. He wrote a textbook of Midwifery which was very successful, and reached several editions as well as being translated into several foreign languages. His later textbook of Surgery achieved none of these. He was an intensely religious man, eventually favouring the Episcopal Church rather than the Church of Scotland, writing "The Principles of Christian Philosophy" in 1828 and a number of other religious articles and books. His portrait by Graham Gilbert is in the University's Randolph Hall, near that of his father.

Allan, the second son to survive, was born in 1781. His pupil and colleague, Granville Sharp Pattison, informs us that, "At the early age of fourteen years, Mr. Burns entered the medical classes and by his diligence and application he was enabled two years afterwards to take upon himself the sole direction of the dissecting-rooms of his brother, Mr. John Burns." He proved to be adept at dissections for demonstration, and "his collection of vascular preparations were, at one time, superior to any other in the world."

Unlicensed, and therefore unable to practise as a doctor himself, he visited his brother's cases, noted the symptoms and tried to explain them on anatomical principles, and whenever possible used post-mortem examination to verify or deny his speculations. Cardiac problems, especially, intrigued him.

He was held in high regard by the practical anatomists of the day, including Astley Cooper. In 1804 he went to London determined to obtain a medical commission in the army, but before he could do so he was invited to St. Petersburg to help establish a hospital "on the English plan" for the Russian Dowager Empress, whom Sharp Pattison and subsequent biographies, including the Dictionary of National Biography, have wrongly named Catherine the Great. She died in 1796, eight years earlier. Astley Cooper made the initial recommendation to a well connected Scottish doctor, Sir Alexander Crichton, who had become physician-in-ordinary to Czar Alexander I. It was proposed that Allan Burns should have charge of the Surgical Department there. He agreed to go for a six month's trial period. The Dowager Empress, who was the driving force in this project, was Maria Fedorovna of Wurttemburg (also known as Sophie Dorothea Augusta, but certainly not Catherine). She had married Catherine's son, Paul I in 1776. His views were not popular, especially with his noblemen, and so they murdered him in 1801 after decreeing he was mad. Maria Fedorovna, despite Burns' early departure, presented him with a ring with a huge topaz surrounded by diamonds in gratitude for his services. It was so cumbersome that he only wore it on the first lecture of each term.

Back home Allan took his brother's place in 1805 as a lecturer in anatomy and surgery and was very popular with his students.

He published in 1809 "Observations on some of the most Frequent and Important Diseases of the Heart" which is considered the first cardiological textbook written in English. It contains many sound observations, including the relationship of the symptoms of angina to the underlying disease of the coronary arteries. Some Glasgow physicians, such as the eminent Dr. Joseph Wright, believed him to be the first to so correlate these but a paper in the Journal of the Royal Society of Medicine as recently as December 1999 entitled "Caduceus, Porcelain and Palette, John Wall of Worcester" awards him the credit in 1772.

In 1812 Burns published his "Observations on the Surgical Anatomy of the Head and Neck." By this time he was in poor health. Dissecting a cadaver he had sustained a puncture wound and spent the last two years of his life in more or less constant pain. The symptoms were originally attributed to dyspepsia but he most probably suffered from intermittent flare up of low grade septicaemia. Granville Sharp Pattison, who was associated with him in his last four years of life, named the condition "cholera morbus" Allan Burns sought relief in fresh air and rest, taking long vacations in the Hebrides and the Island of Bute, all to no avail. Generalised pain eventually centred in the right iliac fossa in what was most assuredly a large appendix abscess. Pattison performed the post-mortem. He found a large pelvic abscess, draining into the rectum and "caput coli."

Allan Burns died on 22nd June 1813. He was only 32.

James Burns, the third son of the Rev. John to survive, was born in 1789. His life should be considered in conjunction with his younger brother George, who was born six years later. They had a life-long working partnership which began in 1808 as produce merchants. To further their trade they developed an interest in shipping, beginning in 1824. George promoted the shipping side while James remained in charge of the produce.

Their first venture was as the Glasgow Agents for six sailing smacks, trading between Glasgow and Liverpool. The owners and agents in Liverpool were Theakestone and Mathie. When Theakestone retired they joined Mathie as equal partners and ship - owners. Two other Companies, each with six smacks, also plied this coastal trade. George went into an amalgamation with one of them, the "Glasgow Joint Stock Company," owned by the brothers Martin. Having seen Henry Bell's "Comet" sail, and having been impressed, George decided steam was the only way forward. His first steamship, the "Glasgow," sailed past the Cloch lighthouse en route for Liverpool on Friday 13th March 1829. She was joined by the "Ailsa Craig" a month later, and the "Liverpool" the following year. David M'Iver, a shipping agent in Liverpool, tried to set up in opposition but ended as a partner. They soon began a service to Ireland. It was only common sense to use their own ships to trade there. George, the farsighted one, was always on the alert for new opportunities, but his honesty and integrity were inviolable. As a result, men who did business with him, trusted him and came back again, knowing his word was his bond.

Until 1838 the Lords Commissioners of the Admiralty entrusted Her Majesty's trans-Atlantic mails to the uncertain mercies of sailing brigs, commonly known as "coffin brigs." In that year they sent out circulars inviting tenders for mail transport by steamer. George Burns, after due consideration, decided he was too involved in his vast coastal trade to show interest. However in Halifax, Nova Scotia, a young Quaker, involved in shipping saw one of these circulars in 1839. He was already contracted to convey mail between Boston, Newfoundland and Bermuda for the Admiralty. He firmly believed that steamers over a route of thousands of miles might start and arrive as punctually as trains, given a sound construction, a sound crew, and a course laid down with the greatest accuracy. There was one drawback. He had no capital. Nonetheless he travelled to London, determined to win the contract. His name was Samuel Cunard.

In Halifax he was also the East India Company's agent. Through the Company's secretary he obtained an introduction to Robert Napier who had built several ships for the Company. Napier had also built ships for George Burns.

Learning of Cunard's problems, Napier arranged a meeting with George. It did not go well due to opposition from Burns' partner David M'Iver. It took several meetings until, in George Burns' own words, "I told Mr. Cunard we could not take up such a large concern as the proposal before us would amount to, without inviting a few friends to join us." When asked how long that would take, Burns replied "Perhaps a month."

The requisite capital of £270,000 was raised in a few days through George Burns' endeavour and reputation, enabling Cunard to tender successfully for the conveyance of Her Majesty's Mails, once a fortnight, between Liverpool, Halifax and Boston. The contract was for seven years in the first instance. It was taken in the names of, and signed by Samuel Cunard, George Burns and David M'Iver. The original formal title was "The British and North American Royal Mail Steam Packet Company." The first four ships were "Britannia,""Acadia,""Caledonia" and "Columbia," Clyde-built wooden paddlewheel vessels, engined by Robert Napier.

On Friday 4th July 1840 "Britannia" left the Mersey, punctually to the minute, with Samuel Cunard on board. She reached Boston 14 days and eight hours later. She was only 207ft. long and 34ft. wide.

In 1850 there was a family tragedy. John Burns, the surgeon, although in his 75th year, was still active. After a business trip to London, he decided to return via Liverpool, and sail on one of his brothers' ships. He boarded the "Orion," regarded as the most powerful and finest fitted ship of the fleet at that time. The "Glasgow Herald" of 2lst June has a full report of events thereafter:

"The "Orion" left Liverpool on the afternoon of Monday 17th current with a more than usually extended list of passengers, especially those belonging to the cabin which was crowded in every port.

Shortly after one o'clock (on the 18th) she ran upon a sunken rock, became a total wreck within a few minutes, and there is reason to believe from 50 to 100 persons lost their lives.... This occurred on a summer morning when the sea was calm and the weather not dark, close by the village of Portpatrick - a part of the coast notoriously known to be bold, rocky and dangerous to navigation."

The paragraph concludes:-"There must have been in the management on board either recklessness on one hand or negligence on the other." The report expresses the hope that there will be an enquiry.

The wreck occurred less than 150 yards from the shore and the ship settled upright with her funnel and masts above water in only 10 to 15 minutes. A cabin passenger told how he was awakened by a collision, and before he had time to put on no more than his trousers the water was up to his knees. Two of the ship's boats capsized because of overcrowding and most of the occupants perished.

The ship's captain wrote an incredible letter addressed to Messrs. J & G Burns on the day of the tragedy from Portpatrick.

"Gentlemen - It has been my painful duty to announce that the "Orion" struck a rock a little to the northward of this place this morning at about a quarter past one, and instantly filled, and sank in seven fathoms of water. From the moment she struck the engines became useless and I found it impossible to run her on shore to save the passengers. I very much fear the loss of life is great but as yet cannot ascertain the particulars.

I have forwarded those passengers who are in a fit state to be taken via Troon to Glasgow.
I am exceedingly sorry to state that Dr. Burns is among the deceased. His body is now in safe keeping till I know your wishes.
I send this to you by Mr. Langlands, my chief officer, to whom I beg to refer you for particulars.
Captain Dalzell is on the spot and has written to the underwriters.
I am, gentlemen, your obedient servant,
Thomas Henderson."

The case was heard at the High Court in Edinburgh on August 29th with the captain, first mate and second mate indicted for culpable homicide, as well as culpable and reckless neglect of duty.

A key witness was Captain Robinson R.N. who had charted the waters and marked out a safe course for shipping as being a mile and a third off Portpatrick. Captain Henderson lodged a defence that he had retired for a little rest leaving the ship in charge of a competent officer. The shipwreck arose after that time, from causes over which he had no control. The second mate claimed he was steering the ship properly.
The truth probably is that they were cutting the corner deliberately to save time and perhaps catch a favourable tide at Greenock.

In the course of the trial the Solicitor General stated that he had expected to fix on the first mate an independent responsibility in regard to the state of the ship's boats, but the court had not found so and therefore he had a duty to withdraw the charge. The jury returned a verdict of not guilty against Langlands, who left the bar and shook hands with the captain as well as several friends in court. He later spoke on the captain's behalf.

Williams, the second mate, was sentenced to seven years transportation. The captain was considered guilty only of culpable neglect of duty and was given 18 calendar months imprisonment.

The following year Elizabeth, the Burns' only sister, died.
These two events bore heavily on George and so he resolved to divest himself of some of the smaller lines of steam traffic, beginning with the West Highland Service. 18 years previously, in 1832, Messrs. Burns had bought a half share in three vessels owned by a plumber, Mr. Young, plying for trade in the West Highlands. Next they bought the vessels of Wm. Ainslie, of Fort William. Soon the whole trade was in their hands with a large fleet of pleasure and cargo boats interconnecting the islands and the mainland.

After the Burns had arranged for Queen Victoria to be transported through the Crinan Canal in a barge drawn by horses with postillions dressed in scarlet tunics provided at the Burns' expense in 1847 when she was going to join the royal yacht at Oban, this was known as the "Royal Route."

In 1851 they transferred the entire fleet to David Hutcheson who had been with them since their first six sailing smacks. Alexander Hutcheson, his brother, joined him, as did a young David MacBrayne. When the two Hutchesons retired successively in 1876 and 1878, David MacBrayne acquired their share of the business until he was the sole owner in 1879, and began to run it in his own name.

Who was David MacBrayne? Elizabeth Stevenson Burns was the only daughter of the Rev. John Burns

to survive to adult life. She married a Glasgow merchant, David MacBrayne, and this was her son. In 1906 MacBrayne's became a private limited company, with David Hope MacBrayne, Elizabeth's grandson at its head. The Cunard Company survived competition on the North Atlantic run by insisting on safety and punctuality. It was not until 1852 that they had sufficient confidence in the reliability of the screw propellor and iron ships that they invested in them. The original shareholders were bought out by degrees until the whole concern belonged to the three founding families, Cunard, Burns and M'Iver, each holding one third of the property. On George Burns' retirement in 1858, his holding was divided between his two sons, John and James Clelland Burns. A joint stock company was formed in 1878 but no shares were offered to the public until 1880 when John was elected chairman of the board.

When George Burns retired he bought the estate of Wemyss Bay and built for himself Wemyss House. His son, John took up residence in Wemyss Castle which had been built in three different ages. It was converted into a harmonious unit for him. George Burns, when he was 92, was invited to the laying of the foundation stone of the new Barony Church, and delivered a highly entertaining and humorous speech. He was created a Baronet at the age of 94, and died the following year 1890. James, Sir George's brother, and business partner, was a rather solitary and a very religious man. He was given over to great benevolence, but lived a life of self denial. He dedicated a window in the Sacristy of Glasgow Cathedral "In memory of his father the Revd. John Burns D.D. of the Barony Parish who died in 1839* of his brother John Burns M.D., F.R.S. Profr. of Surgery Univty. of Glasgow who died 1850 & of his nephew Lt. Col, John Burns 2nd Queen's Royals who died 1853." James retired to his estate of Kilmahew, Cardross, where he died on 6th Sept. 1871. Castle Wemyss and House have both been demolished. George's son, John was created Baron Inverclyde. With the fourth Baron's death in 1957, the title lapsed. His sisters had no desire to live there. Lawrence the builder moved in and the rest, as they say, is history.

A DECIDED NOVELTY FOR THE BRITISH ARMY

It was not until the nineteenth century that a purpose built, four wheeled ambulance vehicle was provided for European armies. Reduction of mortality in the wounded is directly related to the speed and comfort of transport towards a place for proper care and treatment.

During the Far East Campaign in the 1940's a British regiment of 750 men still found it necessary to use human transport in the form of covered stretchers ("doolies" or "palanquins") carried on the shoulders of 4 or 6 local natives. This regiment was entitled to 75 "doolies", thus expecting a similar 10% casualty rate to that of the Romans. Under such conditions it might have been possible to use baskets, known as *cacolets* on either side of a pack horse or camel.

Horses had been used from early times. A description of the Roman "pickup" for the wounded by horsemen is given in an account attributed to the Emperor Maurice, in a book *On Tactics*, dated about AD 590, during the period of the Byzantine Empire. The date is important because the Roman saddle in use was said to have been stirrupped. An earlier Roman saddle had had four pommels to keep the rider secure in his seat. Pommels have not been reported in Britain on Roman saddles made after the 4th century. This may be attributable to the arrival of the stirrup making them unnecessary.[1-3]

Professor Vivian Nutton has kindly given me an account from the Strategikon, attributed to the Emperor Maurice, but which Professor Nutton believed was written by a military man about the same time circa 590 AD. This reads:

"The stirrups should be on the left of the saddle, one by the front shoulder, the other to the rear, so that both aide and non-combatant can mount together."[4]

Professor Nutton wrote that the text implied that there is no stirrup on the offside, but both were placed temporarily on the nearside, the one in front of the other,

"So that both aide and injured can mount together".

The aide would usually have had his stirrups hung in the usual way, one on either side, but when waiting just behind the battle line to pick up casualties, he would adjust them. The text implied that what mattered was speed of mounting. My lack of a clear description of the mounting process itself presents difficulties in understanding the detailed use of the stirrups.

The exact date or place of the invention of the stirrup has not been established. A comparatively late date is suggested in an engraving by Jan van der Straet (1523-1605) "celebrating the stirrup as a "modern" discovery on a par with that of America, the compass, gunpowder, printing, the mechanical clock, guiacum

(a supposed specific against syphilis), distillation, and silk".[5]

The stirrups themselves were of military significance. There is evidence of their use in the western world in the 8th and 9th centuries, which enabled the fighting man to use his lance or spear without becoming unseated, welding horse and rider together into a single heavy attacking unit. However, the four horned saddle also gave a firm support and had been used by the Romans, Gauls, Parthians, Sassanid Persians and Sarmartians. The inventor remains unknown but it was probably the Gauls from whom the Romans copied it. The front horns gripped the thighs and the rear horns prevented backward movement. Practical experiment demonstrates that they give a stable seat.[6]

The stirrup was as important a development in its time as the steam and the piston were to later generations. But there is evidence suggesting that the Roman army had used stirrupped horsemen for removing the wounded, long before Columbus discovered America.

At first, surgeons arrived by foot or on their own horses to attend the wounded on the battlefield. Napoleon's chief surgeon Larrey instituted the *ambulance volante.*
L'idée d'établir une nouvelle ambulance qui fut en état de porter des prompts secours sur le champ de bataille même. [7]

It is important to appreciate that Larrey was not thinking only of a horse drawn ambulance vehicle. The word ambulance in this context referred to a Field Hospital, *un hôpital ambulant* which was to move with the battlefield to remain near the troops.

Each division consisted of a *chirurgien-major*, (1st class), 2 *chirurgiens-aides-majors* (2nd class) and 12 *chirurgiens-sous-aides-majors* (3rd class). Two of these last 12 men functioned as pharmacists. Each of these divisions had a complement of 113 men, with 12 light vehicles and 4 heavy vehicles. Twelve medical orderlies *[soldats infermiers]* were mounted and twenty-five on foot. The mounted medical orderlies wore a sash of red wool, which, "if necessary could be used for transport of the wounded." [8] The *ambulance volante* was first designed for Napoleon's Italian campaign and consisted of 3 divisions. The light vehicles for transport of the wounded consisted of both 2 wheeled and 4 wheeled vehicles.

An example of an extraordinary horse drawn vehicle used for a short period was that of Baron Percy, Chief Medical Officer to the French Northern Command. Baron Percy's ambulance brought his surgeons to the field, riding astride a triangular seat in a most dangerous position for their own urethrae. It was described as a sort of wurf - a litter or equine sedan chair – *"sur lequel les officiers de santé sont à cheval"* and it also had space below for their surgical equipment.

"Ambulance" in its English sense as a transport for the wounded was not in use until 1854 and after the Crimean war. It had not appeared in the English language until 1819, when it referred to "a moving hospital, attending an army as it moves, so as to succour the wounded without delay". [OED] The wounded were brought to it. It was the ancestor of what today is known in English military terms as the Field Hospital.

The best-known horse drawn ambulance vehicle has wheels. The Red Indian, however, had also made a primitive contribution to a horse drawn transport without wheels, an adaptation of which was said to have been used for the wounded in the American Civil War. It had an advantage over very rough ground, but must have been very uncomfortable. The Red Indian used his tepee both as a shelter and as transport for the squaw and family. The tepee poles were placed on either side of the Red Indian pony and the family sat on the skin hides of the tepee stretched over them at its rear end, where the poles touched the ground. In the 20th century there were ambulances without wheels, based on the tepee type transport, immortalised by Stanley Spencer (1891-1959) in his painting of "Travoys with wounded arriving at a dressing station at Smol". (Imperial War Museum London).[10] This shows an army stretcher strapped to two elongated shafts, reaching from the sides of a mule to the ground.

The speeds of horsed transports are important. The cavalry can walk at 4 mph and trot at 8 mph. The average over long distances for a mixture of walk, trot and canter is about 5-6 mph; field artillery at 4 mph; horsed transport at 3mph.[11]

Although, on a world-wide scale, all sorts of other draft animals had been used, the horse remained paramount. It is very much more efficient as a draft animal than its nearest rival, the ox. A horse has much more endurance than an ox and can work one or two hours longer at a time. Its efficiency was continuously enhanced by scientific improvements in harness making. For example, the invention of the neck collar

increased load-pulling efficiency about four or five times. Mules were used as well as horses: sure footed animals, but frequently very stubborn and given to braying and disclosing their presence to the enemy, necessitating a throat operation to silence them.

The provision of adequate transport for the wounded in the British Army was a long time a-coming. The situation during the Crimean War was appalling. Dr Andrew Smith on 17 February 1854, when sending a requisition for medical stores had appended "an appeal for wagons in which to transport wounded men, a decided novelty for the British Army ". They were never to appear.[12] To conclude, there was a frightening illustration of a mule drawn ambulance at full gallop in the Royal Army Medical Corps Mess at Keogh Barracks entitled:
"Evacuating a fractured femur at the full gallop. "
I hope the medical officer had been liberal with morphine!

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THE ONE HUNDRED AND SIXTY SECOND ORDINARY MEETING

The One Hundred and Sixty Second Ordinary Meeting of the Society was held at the Health Services Centre at the Western General Hospital in Edinburgh on 23rd March 2002. There were two speakers, Dr David Watt talked on Lionel Penrose and Eugenics and Dr Bryan Ashworth talked on Alfred Nobel and the Medical Prizes.

PENROSE, EUGENICS AND SCOTLAND

Before considering Penrose's contribution to the present understanding of mental deficiency, we should briefly consider the earlier state of knowledge and provision for this condition. Before 1850, there was no public provision for the care and training of mental defectives. Where families could not provide this, they were looked after under the Poor Law.

Less stigmatising disposals for mental defectives were few, and community provision of care was occasionally undertaken by the church. An outstanding example of this was the shrine of St Dymphna [1], associated with a church and convent and founded at Gheel in Belgium in 1349, after Dymphna was murdered by her father, an Irish king, because she resisted his incestuous intentions. The shrine later became renowned for its miraculous effect on the mentally disabled and attracted them and their families as pilgrims. A custom arose of patients and relatives finding accommodation in the neighbourhood and later becoming resident. This led to a collection of patients, largely mental defectives, being formed and boarding there. It has continued to the present day as a colony of boarded out mentally affected patients, passing its authority from the church to the local state government in 1850 and in 1938, for instance accommodating about 3,700 patients.

The identification of mental defectives.

The first well described attempt to identify mental deficiency arose from a remarkable event, which occurred in 1800 in the South of France where a naked boy was observed in the Forest of Aveyron, about 25 miles NE of Carcassonne. He was extremely agile at climbing trees and astute in hiding himself and it was

some days before he was captured. He ran about naked on his hands and feet and did not speak. He did however react to sounds, showing that he was not deaf. The boy was named Victor and came under the care of Dr Jean-Marc Itard, a medical officer in a local institute for deaf-mutes, who undertook to investigate and instruct him, which he did for six years. It is notable that though Itard was a doctor, his approach was almost entirely psychological and educational, as was that of his student Edouard Séguin, another doctor who, among other staff at the Deaf Mute Institute took a strong interest in Victor and his training. He also later opened a residential school for idiots and introduced exercises for their sensory discrimination and motor control. One of these procedures (the Séguin form board) was incorporated into an intelligence test and is still in use.

Séguin made reports to the management on Victor's progress during the six years of his training, which show that he had improved. Although he never spoke, he could use and understand written communication. He became attached to Mme Guérin, a member of the institute staff who took a major part in his care and training and aroused his affection and gratitude. When Itard terminated his training, Victor went to live in Mme Guérin's household. Ten years later, however, he was still unable to speak. He died there in 1828 in his forties.

Itard's management regime for Victor formed an important starting point for educational systems notably those of pioneer educationists Montessori [2], who was also a doctor and Froebel [3]. Victor became well known to doctors in France, many of whom considered him to be an hereditary idiot, while others thought that his handicap could have been caused by his isolation and social deprivation, a conclusion that Itard himself favoured. An interesting article by RN Zingg called *"Feral man and extreme cases of isolation"* [4] was published in 1940 and reviewed thirty six children who had lived in isolation, some in the wild possibly with animal companions. All children were mute when captured, with little or no subsequent achievement of speech: sexual impulses were inhibited; vision, hearing and olfactory sense were acute, particularly in relation to finding food. Most of the children shunned human society and sought escape back to the wild.

Itard's legacy is that he sowed the seeds for the adoption of a scientific method of investigation of mental defectives, which he combined with an attitude of comprehending their expectations, thus creating the possibility of identifying and meeting their needs. We are indebted to Séguin, Itard's collaborator, for taking the first steps towards a procedure for measuring the general faculty labelled intelligence.

The care of mental defectives.

An interesting detailed account, in the journal History of Psychiatry, by Robert Houston [5], a medical historian of St Andrews University, describes the various modes of care and living of mentally ill and defective individuals in Scotland before 1820. He quotes from a national survey of 1818, which showed that of 4608 mentally disordered persons (including mental defectives), 9% were in an asylum or private madhouse, 29% lived with relatives, while 62% lived independently, (of whom 85% were maintained wholly or partly with the aid of parish relief).

About the middle of the 19th Century, however, the diagnosis "degenerate" as an indication of pathology began to be used to distinguish a social group whom we are now accustomed to separate into several distinct categories of which mental defective is a characteristic example. The concept of "degeneracy" originated with two French physicians, Jean Moreau de Tours [6], who described it as an hereditary disposition to mental illness, which also accounted for scrofula and rickets and Benedict Morel [7], who (1809-73) whose book on the subject was "Dégénérèrescences Physiques, Intellectuelles, et Morales de l'Especе Humaine" (1857). George Rosen, a medical historian, outlined the causes and effects of this condition in 1968 [8], in discussing the aetiology of dementia paralytica as follows

"Degeneration was due to intoxication, social milieu, hereditary and acquired or congenital insults of various kinds. Once acquired the various generations of a family went inexorably to their doom... The theory of predestination in terms of original sin was powerfully attractive to many psychiatrists and divided their attention away from any concept of scientific aetiology. This was a comfortable position to occupy at a time when specific aetiology was largely out of favour and epidemiological theories were framed in vague environmental terms... The dissemination of Mendel's contribution to heredity continued from the beginning of the 20th century and completely undermined the theory of degeneracy scientifically, but it still remains alive in the mind of the general public and re- emerges from time to time in scientific work"

LS Penrose [9]

Lionel Penrose was born in London in 1898. His father, a portrait painter, and his mother were both Quakers as their ancestors had been for more than a century. His entry in the Biographical memoirs [10] of the Royal Society observes that he and his three brothers

"were brought up strictly according to the religious principles of the Society of Friends...in later life he remained a member... (but) he was not particularly enthusiastic about religious meetings. However, his Quaker upbringing and schooling no doubt played an important part in determining his extreme dislike of show and pretentiousness and his pacifist outlook. Also he never acquired a taste for fiction."

He became an undergraduate at Cambridge in 1919, where he studied mathematics, logic (under Bertrand Russell) and psychology. He later studied abnormal psychology and visited Fulbourne, the local mental hospital. Stimulated by the lectures of WH Rivers (who treated First World War psychiatric casualties at Craiglockhart [11]) and by Dr John Rickman, he went in 1922 to Vienna to visit Freud, to see if psycho-analysis could be subjected to scientific evaluation. He published, in 1953, his reasons for answering this in the negative. He was himself psycho-analysed by Dr Siegfried Bernfeld [12]. He worked in the laboratory of Prof. K Buhler, (a well known German experimental psychologist and author of *Handbuch der Psychologie* [13].

On his return to England, he started medical training, first at Cambridge and then at St Thomas's Hospital in London, qualifying in 1928. He later became a member of the London branch of the Psychoanalytical Society and undertook a brief period of supervised psychotherapy. In 1928, a research scholarship took him to Whitchurch mental Hospital in Cardiff, which at that time was pre-eminent for psychiatric training. His MD thesis concerned schizophrenia being based on a patient who had had the illness for fifty years, and on whom he had published a paper in 1931 [14].

The Colchester Survey.

In 1931, Penrose was appointed by the Medical Research Council (MRC), as Director of Research into the cause of mental deficiency at the 2000 bed Three Counties Hospital at Colchester. The project continued for seven years, his report to the MRC being published in 1938 [15]. This publication is important in understanding Penrose's contribution to the nature and direction of future research in the subject and I will return to it. In 1939, he was appointed Director of Psychiatric Research in the Ontario Department of Health, Canada, a post he held for six years. His investigations there used the case records mainly of schizophrenics, depressives and manics, which were archived in the Ontario Department of Health, to whom he reported his findings (which Dr TJ Crow published in 1999 [16]). After his return to England in 19445, he was appointed Professor of Eugenics at London University, in the chair endowed by Sir Francis Galton. It is however notable that he had the title of the post altered to Professor of Genetics as soon as the obstacle of the wording of Galton's endowment could be overcome.

Galton and Eugenics.

Galton (1821-1911) was the man whose theories instigated the ideas of eugenics, which led to the formation of the Eugenics Society and became a world-wide movement in developed countries. He was a Victorian polymath, with many interests, who studied the heredity of human genius and the distribution of human attributes and abilities, which he identified and measured in about 9000 persons [17]. He made notable improvements in the methods of the times in population research and blazed a trail for others. He was greatly influenced by the ideas of his half-cousin, Charles Darwin, on natural selection in the evolution of biological species and he applied them to Man. He conceived the notion that judicious marriage, planned in the light of the hereditary endowments of prospective parents could effect an upgrading in the intelligence and social value of offspring. In his book, *Hereditary Genius* (1869), he writes

"I propose to show in this book that a man's natural abilities are derived under exactly the same limitations as are the form and physical features of the whole organic world. Consequently, as it is easy, notwithstanding those limitations, to obtain by careful selection a permanent breed of dogs or horses gifted with peculiar powers of running or doing anything else, it would be quite practical to produce a highly gifted race of men by judicious marriages through several generations [18]."

In her study of the history of eugenics in Great Britain, Pauline Mazumdar [19] observes that it was Galton's statement of the inheritance of mental qualities that eugenists saw as the foundation of their movement, and he derived this belief from the research reported in his book *Hereditary Genius*, where he noted significantly greater frequency of distinguished individuals among the blood relatives of notable men. This however also carries a negative side. In Galton's address to the Royal Commission on the Care and Control of the Feeble-Minded, appointed in 1904, he approved a proposal of the commission for life-long institutialisation of mental defectives in the following terms:

"the feeble-minded are bearers of degeneracy and the most dangerous from the eugenics point of view. They are not in apposition to contract a marriage or rear a family.... 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 freely.... who whether they be as little or less or more mentally endowed than themselves, are in all cases subject to the most undesirable conditions of nurture[20]."

The Cambridge Professor of Divinity, Dean Inge, a Eugenics Society member, commenting on the religious view of the Royal Commission's report, 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 [21]"

The Mental Deficiency Act, providing for the possible life-long segregation of mental defectives came into force in 1913 [22], after lobbying of MPs by the Eugenics Society and a deputation from them to the Prime Minister. However, Galton's optimistic speculation that it would be quite practical to produce a highly gifted race of men by judicious marriages during several generations was made before the implications of the findings of Gregor Mendel [23], which were published obscurely in 1866 and were first drawn to startled attention 34 years later in 1900 by deVries and Correns [24], and by Tschermak [25], who independently discovered and confirmed them. They were emphatically publicised by William Bateson [26], Professor of Biology at Cambridge and disputed by others, but nevertheless they initiated meteoric progress in establishing genetics as the mechanism of heredity during the 20th century. So far as its policy was concerned, however, the Eugenics Society largely adhered to the theory of heredity based on Galton's notion which is conveniently summarised in the adage "like begets like" and is evidenced in an authoritative book "*Eugenics; Galton and after*" published in 1972 by Dr Carlos Blacker (1886-1975), a powerful secretary of the Eugenics Society from 1931-1960. In this book he writes:

"The eugenic policies which are advanced in the next chapter (which were based on Galton's view)... are justified by a principle on which action has been taken since the dawn of civilisation and from the application of which has been produced man's array of domesticated animals and plants... namely that like produces like. Man (Darwin writes) can and does select the variations given to him and thus accumulates them in any desired manner. He thus adapts animals and plants to his own pleasure [27]"

When this scheme is applied to humans however, it overlooks the fact that the characters sought in breeding animals are physical, mainly single, easily recognised (eg colour of coat), can often be tested for or measured, in contrast to human qualities like honesty, determination, judgement, prudence and intelligence. Furthermore observation in humans is limited to two or at most three generations. In addition, individual animals can be chosen for mating from a pre-arranged scheme. Despite these points, the easily grasped popular notion of heredity remained influential in guiding the Eugenic Society's plans.
In 1926, Leonard Darwin, son of Charles Darwin, in the fifteenth year of his Eugenics Society presidency addressed its Council in a meeting preparing to give its approval to an outline of its policy, saying

"The proposal to which I wish to draw especial attention, however, is that when the amount of assistance from public funds to a couple indicates the probability that further parenthood would be immediately 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... it is my firm belief that it will only be by proceeding on the lines here broadly laid down that the nation can be saved from racial deterioration [28]"

Sterilisation of mentally defective subjects and their parents was a less heartily endorsed section of the Eugenics Society's policy in Britain and was not recommended to be carried out without consent. However this practice spread widely throughout the rest of the Western World, mostly in Northern Europe, Scandinavia, North America, Canada and Australasia.

Penrose's Study of the causes of mental deficiency.

I would now like to return to Penrose's Colchester project, a report of which was published in 1938 by the Medical Research Council as "A Clinical and Genetic Study of 1280 cases of Mental Defect [29]". In the seven years of his directorship of research at Colchester, he and his team measured and diagnosed 1280 inmates, 2560 parents, 6629 siblings and 59 children of inmates. In a review of the report of this research, Eliot Slater, the leading psychiatric geneticist of his period said

" Dr Penrose's study has aroused interest and admiration in quarters both expert and lay. His material is larger and more comprehensive than any other yet published and it has been subjected to a careful examination that

would pass the most critical standards. The book represents original work of a high order and is a very substantial addition to our knowledge [30]."

Penrose's findings provided a foundation and impetus for understanding mental deficiency which remained a dominant interest for the rest of his life. It bore a rich harvest in his book "The Biology of Mental Defect", first published in 1959 with a fourth edition appearing in 1972 [31]. He, often with other colleagues, published about thirty papers on matters arising from the Colchester Survey in scientific journals.

The main innovative features of mental defect introduced in the Colchester Survey report were a) the differentiation of two types of mental defects, those in whom causative pathology can be demonstrated and those who are labelled defective but are at the tail of normal distribution of the general population's intelligence levels b) differentiation of over a hundred disorders and diseases that show severe mental defect and c) Analysis of those genetic disorders leading to mental deficiency, such as Down's Syndrome, phenylketonuria, autosomal dominant tuberous sclerosis, cystathioninurea and the recessively inherited distinctive form of microcephaly.

This conspectus did not sit at all easily with that which underlay the Eugenics Society's policy on the subject. The inadequacy of their traditional "like breeds like" view of heredity was pointed out by Penrose and he affirmed the expensive futility of life-long institutionalisation and demonstrated the inapplicability of sterilisation as means of decreasing the incidence of mental defect. His reasons for this were firstly, the manifestations of dominant genes which account for a large section of severe cases of mental deficiency are naturally eliminated by the sterility of affected subjects (Huntington's disease, with late onset, is a notable exception) and secondly, turning to recessive inheritance, which more frequently produces conditions causing mental deficiency (such as Tay Sachs disease, microcephaly, retinitis pigmentosa and phenylketonuria), sterilisation of affected patients and their blood relatives accomplished nothing, the affected are already sterile and those unaffected, but carrying a recessive gene, are not identifiable until the birth of an affected child., thirdly, it is impossible to predict the birth of an individual disadvantaged as a result of a genetic mutation so the selection of parents for sterilisation is impossible. A more effective procedure is to advise cousins in a family manifesting a recessive gene not to have children, as there is greater likelihood of both parents carrying the recessive gene. It has been demonstrated that a significantly higher proportion of individuals affected by recessively inherited ideas than those in the general population are the children of consanguineous parents.

Phenylketonuria.

Penrose continued to make contributions to the distinguishing features and aetiology of diseases producing mental defect. One notable item was his paper in the Lancet in 1946 entitled *Phenylketonuria; a problem in eugenics* [32], which begins

"For academic purposes eugenics is defined as the study of agencies under social control that may improve or impair the racial qualities of future generations either physically or mentally"

Penrose however rejected the attribution of "racial" pointing out, among other things that

"No qualities have been found to occur in **every** member of one race and no member of another"

and he states that

"The **human** race constitutes the field of eugenic enquiry"

The article continues to point out that a popular estimate of eugenics embraces the view that medical prolongation of the lives of individuals who have inherited disabling characteristics, of which mental defectives are an example, suspends the action of natural selection and will result in degeneration of the population unless eugenic measures are taken to counteract it. However genetics has shown that contrary to this belief, what are transmitted in inheritance are not qualities but genes, and the relationship between an inherited gene and the quality it manifests is very variable. |In a few cases, blood groups, for example, there is a direct link between a gene and a clearly identifiable characteristic in an individual. But on the other hand, recessive genes pose a problem which should cause the popular eugenicist to pause and consider. Penrose's work on Phenylketonuria illustrates the difficulty.

As recounted by his son, Phenylketonuria was first observed by Fölling, a Norwegian biochemist in 1934. The essential feature is a fault in the metabolism of phenylalanine leading to urinary excretion of

phenylpyruvic acid and a ketonic acid. This is detectable from infancy and is accompanied by severe mental defect. A dark bluish-green colour appears when ferric chloride is added to the urine of affected subjects, which fades within a few minutes. Penrose acted promptly on this information, applying the ferric chloride test to 500 residents in the Royal Eastern Counties Institution, revealing a family with an affected male, with an affected brother living at home and a similarly affected sister. The parents were consanguineous, so that consistent signs of recessive inheritance were shown, which is what phenylketonuria turned out to be.

Penrose's paper addresses the eugenic proposal of sterilisation aimed at reducing the procreation of phenylketonuric mental defectives. He observes that as phenylketonuria is a defect due to heredity, it might be thought to be a matter of pure eugenics, but, he says, this is not correct. He points out that some inherited defects of sight can be alleviated by wearing spectacles, and that similar appropriate remedies should be sought in other hereditary disabilities. His second point is that two genes, one from each parent, are required to produce phenylketonuria. Its calculated frequency in the general population of this country is about one in fifty thousand, making the calculated gene carrier frequency about one in a hundred. Even if the carriers could be identified, which at present they cannot be, it would require the sterilisation of 1% of the normal population to prevent the birth of a handful of harmless imbeciles, which as he observes, no-one but a lunatic would contemplate. Affected individuals are sterile as are all severely mentally defective persons and nothing is gained by sterilising them. Penrose's suggestion for reducing the number of births with recessively inherited disorders is to warn prospective parents in affected families to avoid consanguineous mating.

Eugenics in Scotland.

When I reviewed the material I had collected in preparing this lecture, I found somewhat to my surprise and discomfort, that I had no information about the interest in or the effect of eugenics in Scotland, with one exception; I read in the Journal of the London Eugenics and Education Society (later the Eugenics Journal) of 1910-11, a notice of the Glasgow Eugenics Educational Society in 1911 [33]. It contained a list of 39 members (three of whom had Edinburgh addresses). The London Society, at one year old, had about 650 members at this time (again with three members with Edinburgh addresses). Later, it was reported in a summary of the year's activities delivered by its secretary, that six lectures were held by the Glasgow Society. There were further brief mentions in the next two years of the same journal, but then nothing more. In an extensive search for other relevant eugenics literature in Scotland, (in the Mitchell Library, Glasgow, The National Archives, Edinburgh, the Archives of the Eugenics Society, London) and from relevant persons, to most of whom the brief existence of the Glasgow branch was news, I drew a complete blank. However, a Scottish psychiatrist[34], Dr Primrose of Larbert, a former colleague of Penrose, very kindly searched for me in several possible locations. His search included the Mitchell Library, (both subject index and societies section), the 1910-12 Glasgow telephone directories; the Transactions of the Royal Philosophical Society of Glasgow, where an article of 1909, by a prison officer on the causes of crime, does not mention heredity or eugenics. All these sources made no mention of eugenics. He also spoke to a Medical Officer of Health and a Librarian, both of Glasgow and retired, who were dismissive of eugenics being of any significance in Scotland, the librarian adding that perhaps it was not considered respectable. The National Library of Scotland put me in touch with Dr Roger Davidson, who was researching the history of Venereal Disease in Scotland and who had touched on eugenics in a lecture [35] and I wrote enquiring about his source. He was unable to direct me to any sources, although like me, he was surprised that there was no material. This point is further illustrated in the archival legacies of two illustrious Scottish figures who were members of the Eugenics Society during their main working lives.

The first, Frank Crewe (1886-1973), qualified in medicine at Edinburgh in 1912. Deciding against clinical medicine, after qualification, he switched to animal genetics and, shining as a demonstrator in human physiology under Sharpey-Schafer, Lancelot Hogben co-operated with him to set up the Edinburgh University Department of Experimental Biology. Crewe [36] became Director and, with Hogben, set up the Society of Experimental Biology with its journal of the same name. He had a brilliant military career in the 1914-18 War, rising to Colonel and becoming Commander of the Army Hospital in Edinburgh Castle. He subsequently became Professor in the Edinburgh Department of Genetics, which a Rockefeller grant of £30,000 helped him to inaugurate and in 1927 he became Professor of Public Health and Social Medicine. He became a member of the Eugenics Society early in his career, but was disappointed with his first task of lecturing on eugenics. He wrote to the Secretary of the Society saying

"I hold the view that it is infinitely better to present the eugenics argument to a class of senior medical students than to spend one's time rushing round the country talking to mothers' meetings"

However, he later became president of the English Eugenics Society and gave the 1938 Galton Lecture on

"The Welfare State: a Eugenic appraisal". I learnt from UK National Register of Archives that Rice University Library in Houston Texas holds a considerable correspondence between Crewe and Julian Huxley, who was also a longstanding and influential Eugenics Society member, but I have been unable to get access to this.
My second illustrious person is Naomi Mitchison [37], (1897-1999). She was the sister of JBS Haldane and was a renowned Scottish author, with a lively interest in local government and in family planning, to which she and her husband were introduced by Marie Stopes, also a Eugenics Society member. While a student at Oxford from 1918, Mitchison became a member of the Eugenics Society. The aspect of eugenics in which she was most active was setting up and running family planning clinics in Scotland and England, and she was a counsellor in a clinic in South Kensington, London.

Two biographies of Naomi Mitchison have been published, the first by Jill Penton in 1990, in which she is described as "one of the most prolific and versatile Scottish writers in the 20th century" and the other by Jenni Calder in 1997. Eugenics does not appear in the index of either of these books, nor was it evident in a cursory reading of the chapter titles and texts. I made an enquiry at the Fawcett Women's Library in London about Mitchison's interest in eugenics and was told that there was no mention of it in her biographies, nor in a memoir which she wrote herself, entitled "You may well ask: a memoir 1920-40" [38]

I was therefore left with the question "Why this emphatic blank on the subject of eugenics in Scotland, in view of widespread interest elsewhere in the world?"

Rumination on this subject revived a memory of a duty I had performed for a short time as a locum GP in Oban towards the end of World War II, which was to visit single patients living with families in small farms scattered over a large area. I had to see that they were well, satisfactorily provided for, reasonably nourished, had a bedroom and were suitably occupied in work and leisure. On each visit my findings were recorded for report to the local government administrative body. Only within the last ten years, have I come to realize that these patients were improved or recovered and safe people who had been in a mental hospital and were then managed in a scheme, nationally organised and administered through parish councils. I obtained most information about this through the 1860-1910 volumes of the Journal of Mental Science (now the British Journal of Psychiatry). I learned that the patients I visited were in a nationally organised boarding out scheme. This arrangement, officially initiated by the Lunacy Act (Scotland) 1857, permitted authorities to lodge lunatics, (including mental defectives), in private houses. Dr A Mitchell, a deputy Commissioner and Inspector of the Lunacy Board for Scotland, had from the 1860s been advocating care of the insane within the community in this way, as Janet Saunders relates in Chapter 3 of the psychiatry history series "The Anatomy of Madness" says, "His ideas were based on the system applied by the Scottish Lunacy Commission by which mental defectives and other harmless lunatics were either subsidised to remain with their families or boarded out to "kindly guardians" [39]

This practice had become an established part of the care of the insane and a Board of Control return of 1867 reported that over a quarter of Scotland's non-paying lunatics, including a large proportion of mental defectives, were cared for in this way. Edinburgh Asylum, for instance, boarded out 110 patients in 1863. At the end of the year only 9 cases had been returned to the asylum and the rest remained in private dwellings. It was however difficult for Edinburgh, as for all urban areas, to find their boarding-out residences for patients within the city and most of their boarded-out patients were in Kennoway in Fife.

As further reported by Janet Saunders in "The Anatomy of Madness", the Departmental Committee, established in 1881, included among its considerations whether provision should be made for the care and custody of imbeciles, who it was maintained by prison medical officers, were habitually criminal, being " treacherous, unpredictable, dangerous and recidivist, and (needing) a greater control than other offenders" [40] However Dr Mitchell spoke to them vigorously and effectively against permanent segregation in institutions of mental defectives.

He was also opposed to the detention of mentally disordered people by the prison department outside the control of the Lunacy Laws... what he found most disturbing was the prison officers' insistence that such sequestration should be for life. He pointed out that not even under the Lunacy Laws were people banished to an institution for life. He gave evidence to challenge the stereotype of the criminal imbecile, which originated largely from the prison doctors' experience of imbeciles in prison, who he insisted, represented only a handful of the weak-minded as whole.

In 1870, Dr Alexander Robertson [41], Physician to the Town's Hospitals (Poorhouses) and the City Parochial Asylum in Glasgow, described in a lecture to a meeting of the Scottish branch of the Medico-Psychological

Association (now the Royal College of Psychiatrists), how in 1863 four hospitals were found suitable as residencies for harmless lunatics in a country district north of Glasgow. In 1870 they contained 30 boarded out patients, the majority women beyond middle age. Young women were lodged in a house with no male inmates. The majority were elderly demented, a few were metal defectives. Many of these ladies were employed in the houses they lived in, a few entered the social life of the village. A beneficial feature of boarding-out was that the cost per patient was between a half and two thirds of the cost per patient in an asylum and thus it recommended itself to rate payers.

But there was another reason which added impetus to this boarding out movement. The asylums being built in Scotland from 1820 filled up surprisingly quickly and, after about 10-20 years use, extensions to many of them were built. This was almost universal with publicly financed asylums, particularly when admission to them was liberalised[42]. It was at first attributed to an increase in the incidence of mental disorder, but was later shown to be due to the accumulation of unimproved and incurable patients, of whom mental defectives were a considerable portion. Boarding-out proved a satisfactory alternative for patients, their families and rate-payers.

This humane, well administered, effective and economical Scottish way of supporting families who cared for feeble minded members in their own home and where this was not suitable or possible, boarded them out with other families, gives an answer to my question about the lack of interest in Eugenics in Scotland compared to England. Boarding-out catered for about a quarter of the patients under mental health supervision in Scotland. It spared the psychiatric accommodation and resources of the asylums (or mental hospitals) for the use of the curable and disturbed, enabling chronically incapacitated patients to live free of the necessary social restrictions and inevitable discomforts of institutional life. It relieved the anxieties of supporting parents aware of the probability of their dying while their disabled offspring remained alive but incapable of living fully independently and relieved the burden particularly on the unmarried sisters of patients. Finally it rendered superfluous the eugenic proposal of life-long segregation for many mentally disabled people.

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ALFRED NOBEL AND THE MEDICAL PRIZES

December 2001 marked the Centenary of the Nobel Prizes. It seemed appropriate to review the system of awards and some of the recipients. The name Nobel does not suggest a Swedish origin. Alfred Nobel was born in Stockholm in 1833 and was a descendent of farmers in the South of Sweden. The family can be traced back for at least a hundred years. His father was an engineer and manufacturer of machine tools who twice became bankrupt. The family moved to Finland (then part of Russia) and on to St. Petersburg but later settled in Stockholm. One brother of Alfred Nobel developed the petroleum industry in Sweden and another established an arms factory.

Alfred Nobel attended school for a brief period but most of his teaching was from a private tutor. He became a scientifically trained chemist and continued to work in his laboratory throughout life, but also evolved as an inventor and a successful man of business. He was fluent in German, English, French and Russian as well as Swedish. His father was ambitious for his success and arranged visits to the United States and Paris early in his career. He worked in his father's factory for some years and then set up a plant in Stockholm to manufacture nitro-glycerine. This compound was unstable and an explosion killed one of his brothers. He then combined nitro-glycerine with kieselguhr to form a much more stable compound and this was patented as Dynamite in 1867. He went on to manufacture Blasting Gelatine (Gelignite) and Smokeless Powder and established factories worldwide including Ardeer in Ayrshire. Nobel wrote little but published a book *On Modern Blasting Elements* in 1875. His letters are preserved in Nobel House in Stockholm.

Alfred Nobel was a loner and kept out of the limelight. He never married and never established a home. He disliked pretence or show, did not accept organised religion and was a pacifist. He visited Stockholm each year

on his mother's birthday and when she died he passed on his inheritance to his relations. He defended the manufacture of explosives on the grounds that when nations could annihilate each other in a few seconds he hoped that they would withdraw from war.

In his last Will made in 1895, a year before his death, Nobel left the equivalent of two million pounds to establish a fund so that the interest could be used to give prizes to outstanding achievers. This differed from his contemporary philanthropists, notably Henry Wellcome and James Carnegie whose endowment was used to fund research and support studies. There was dispute over the Will arising within the family and it was difficult to reach agreement over the arrangements and whether the prizes should be confined to Sweden or worldwide. In 1901 prizes were awarded in literature, chemistry, physics, medicine and physiology and the peace prize presented in Oslo. At that time Norway was linked with Sweden. The prize for economics came much later (1969). There was some overlap between the prize categories. Roentgen was awarded the first physics prize for the discovery of X-rays and Madame Curie received two prizes in relation to her work on radium. The presentation of prizes by the King takes place each year in Stockholm on December 10th, the anniversary of Nobel's death.

Nobel intended that the prize in medicine and physiology should be awarded for work during the previous year but there has usually been delay. Inevitably there has been argument over the recipients and major contributors have sometimes been left out. Representatives in most countries make nominations for the prize. The claims are reviewed by experts, who are rewarded for this task. The awards are made by the Nobel Committee of the Karolinska Institute. It is thought more difficult for a Swede to obtain an award. Altogether 91 medical prizes have been awarded with gaps during wars and occasionally no award. Only six women have obtained a medical prize. Over the years there has been a shift of emphasis from discoveries of major therapeutic benefit such as penicillin, to theoretical advances in genetics and molecular biology. In 1950 there were 77 candidates nominated from seventeen countries and of these 17 were investigated.

Among the outstanding contributors have been Banting and Macleod with insulin, Fleming, Florey and Chain with penicillin, Hench and Kendall with corticosteroids, Whipple, Minot and Murphy on pernicious anaemia treated with liver, James Black on beta blocking agents and H2 inhibitors, Medawar on autoimmunity, Watson and Crick on the double helix structure of D.N.A. and Houndsfield on computerised scanning. Other interesting topics included Landsteiner on ABO blood groups, Ryberg on the use of light therapy in tuberculosis, and Forsmann, who carried out cardiac catheterisation on himself. There were problems of presentation and Domagh who introduced Prontosil, the first sulphonamide, was unable to go to Stockholm because of the Nazi regime. Egas Moniz was awarded a prize for frontal leucotomy but he also introduced carotid arteriography which many thought was more important.

Nobel was highly intelligent, strongly motivated, and able to combine scientific knowledge with invention and a global approach to business. He was considered generous but whether he was happy is more doubtful. He endowed a major scheme to reward discovery which continues.

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THE ELEVENTH HALDANE TAIT LECTURE

The Eleventh Haldane Tait Lecture was held on the 8th May 2002 in the Pollock Halls, Edinburgh. Dr Andrew Doig gave a paper on "The Contribution of the academic Gregory family to Medicine and Science". Dr Doig talked about the remarkable family which, between the 17th and 19th centuries, provided Professors of mathematics, astronomy, chemistry, philosophy and medicine to the Universities of Aberdeen, Edinburgh, Glasgow, Oxford and St Andrews. This comprehensive and well illustrated talk was followed by an excellent dinner, making a memorable evening's entertainment.

THE ONE HUNDRED AND SIXTY THIRD ORDINARY MEETING

The One Hundred and Sixty Third Ordinary Meeting of the Society was held at Perth Golf Club on 15th June 2002. After a good lunch, two papers were given, Dr Henry Noble talked on Transplantation of Teeth and Dr Ernest Jellinek talked on the Russell family.

TRANSPLANTATION OF TEETH

No-one likes to lose a tooth. The Tooth Fairy helps the very young over this psychological crisis. The loss has always been equally keenly felt by adults- even when accompanied by the possibility of relief from toothache. The manner in which Nature replaces one tooth by another in the same position in the jaw, during growth and development, must surely have been the initial stimulus which prompted thoughts about the possible replacement of a damaged tooth by a sound one later in life.

The transplantation of human teeth from one individual to another has been described as a theoretical possibility in texts from early days right up to the 9th edition of a very well known textbook on Dental Surgery and Pathology as recently as 1953. It is a procedure that has always been surrounded by controversy; firstly on the moral and ethical front, secondly with regard to the contemporary state of knowledge of tissue repair, tissue regeneration and tissue rejection and thirdly as regards the possibility of bacterial cross infection and transmission of disease.

It is difficult for us now to experience the fierce censure intended by Rowlandson in a cartoon of 1787 entitled "Transplantation of Teeth" which may have featured the dentist Ruspini. I was reminded of this cartoon the other evening when watching television. A social worker in a large South American city told of the young mother with two daughters who returned to where they had been playing to find them missing. Two days later she was told that she would find them sitting on a particular seat in a public park. She found them there with their upper and lower eyelids sutured together- their corneas having been removed for the lucrative implant market. I felt that this anecdote aroused the same sort of shock and horror that Rowlandson had intended.

It is not surprising that in the earliest days, when surgeons saw how successfully teeth could be **re-planted,** that without much in the way of basic science to guide or restrain them, they should hope for equal success when a tooth was **transplanted** from an animal or another human.

The earliest detailed surgical text to include dental techniques was perhaps that by Albucasis (around 1100). This does not mention transplantation but gives detailed methods for the successful re-plantation of dislodged teeth. Ambroise Pare in 1562 or thereabouts describes re-plantation in detail but is the first author to mention transplantation, although he never carried this out himself. He relates the case of a lady of prime nobility who had a tooth taken out and immediately replaced by another, supplied by one of her ladies in waiting. After a time she masticated with it as well as she had done with the former one.

Neither our own Maister Peter Lowe in 1597, nor the distinguished French Surgeon Jacques Guillemeau in 1598, mention transplantation. Guillemeau was Pare's successor at the Hotel Dieu and stands out for his recommendation that for artificial teeth, elephant ivory is too soft and quickly turns yellow in the mouth whereas that from the tusk of the walrus is harder. He also suggested the use of a plastic material prepared from white granulated wax, melted with resin of the olive tree to which is added mastic powder and finely grounded white coral and pearls. It is questionable whether such a material could ever be used to produce an artificial denture, but as a filling material it is obviously the first step to our current cements. It is also the first known attempt to break away from bone and ivory as materials for artificial teeth.

Charles Allen in York produced the first dental textbook in the English Language in 1685. He regarded transplantation as commonplace but objected to it forcibly on moral grounds.

"Following the loss of decayed teeth, artificial teeth may be provided. This could be done in such a way that the artificial replacements are indistinguishable from the natural teeth and serve to support and maintain the remainder of the natural dentition. Advantages include preventing the remaining teeth becoming loose, the preservation of facial appearance and assistance with speech and pronunciation. Loss of teeth may be remedied by replacement with artificial teeth or natural teeth. Extraction of the decayed tooth is immediately followed by replacement in the socket of a natural tooth extracted from some poor Body's head."

Allen knows this to be difficult but feasible- not only by reason, but by experience. He gives as example the successful re-plantation by his Master. He does not like the concept of transplantation from one individual to another because it is inhumane, is attended by difficulties and cannot be called a restorative procedure when the repair of one dentition is at the expense of ruining another. Allen is much more in favour of transplanting teeth from animals and cites Dog, Sheep, etc. He outlines the procedure as follows- Choose an animal whose teeth most closely resemble the tooth of the Patient to be replaced. Dog, Sheep, Goat or Baboon are listed. Immobilise the animal and resect the required tooth with a little of the surrounding gum. Remove the tooth from the patient's mouth with similar care. Fasten the animal tooth in place in the patient's mouth.

Pierre Fauchard, the founder of modern scientific dentistry, published his celebrated work "Le Chirurgien Dentiste" in 1728. In chapter XXX he gives an account of tooth transplantation. A captain in the army, with a left upper canine which was decayed and aching, enquired of Fauchard if it were possible to draw it and replace it with another person's tooth. Upon receiving an affirmative reply, the officer sent for a soldier of his company to whom he had already spoken. Fauchard found the donor canine to be too large, nevertheless for want of a better he extracted it and after having diminished it in length and thickness he transplanted it. It was not possible to do this without the central cavity of the tooth remaining open. In two weeks time the tooth was firm and he filled it. The filling caused such insupportable pain that he was obliged to remove it the following day' on which the pain ceased directly. Fauchard saw the patient eight years later and was assured by him that the transplanted tooth had lasted him six years, but that its crown had been gradually destroyed by caries. The root had been extracted by a dentist but not without considerable pain.

Philipp Pfaff in 1756 cautions against the transmission of scurvy and venereal fluids with the transplantation of teeth from one individual to another. He emphasises the need to take care of the periodontal membrane of the transplanted tooth and advocates the sealing of the apical foramen with lead or wax *"a very important advice in an evil affair"* His dislike of the whole process is underscored by the remark that *"he seldom uses human teeth because most people have a dread of teeth which have come from a corpse"*

Etienne Bourdet, the most significant French author after Fauchard, wrote in 1757 supporting transplantation. He suggested that because of the variations in size and shape of the roots of a tooth *"one should make sure that you have several donors, Savoyard boys or others, so that if one tooth does not fit, it can be put back in (replanted), so that the donor be not deprived of it, and several others can be tried"*. Savoyard boys seem to have been used exclusively in Paris at that time for transplantations on account of their poverty.

Meanwhile Whitlock, the earliest provincial dental surgeon and based firmly in Norwich, by 1762 was trumpeting his skills in transplantation. Carl August Grabner in 1766 reported several cases of tooth transplantation, including a singer who had rewarded her serving maid with a bridal gown for having donated her tooth. Thomas Berdmore, Surgeon Dentist to his Majesty, made a significant literary contribution in 1768 in which he strictly rejected tooth transplantation. Mrs De St Raymond visited York in 1775 and offered *"to transplant teeth from the front of the jaws of poor lads into the heads of any Lady or Gentlemen without putting both patients into anguish."*

John Hunter published *"A practical Treatise upon Diseases of the Teeth"* in 1778. He made many important observations upon clinical dental techniques, based upon his insight into the detailed anatomy and physiology of he jaws and oral and dental tissues. His interpretation of his scientific knowledge led him to believe that transplantation of teeth should be possible and he advocated numerous practical measures, which in his opinion, would promote success. He tested his theories by practical experiment and was responsible for a great upsurge in demand for this method of treatment.

It must be remembered that Hunter and his contemporaries knew nothing of the homograft reaction and would therefore expect equal success in the case of a tooth replanted in the mouth from which it had come as with a tooth transplanted from the mouth of one individual to the mouth of another.

Hunter is however guilty of not appreciating the significance of syphilis appearing in seven patients following tooth transplantation. Several of his contemporaries in this country and abroad advised in the words of Joseph Bell *"great caution in carrying out transplantation, since it had been proved by many examples that contagious maladies of a serious nature may easily be communicated from one individual to another."*

William Rae, a pupil of Hunter, gave the first series of lectures on dental surgery in 1782. He deals with the transplanting of teeth
"It must be a tooth with one root only, as we cannot find them with two or more roots to fit; this operation does not succeed once in five times, and though they fix for a little time, they generally act as extraneous bodies, and like pease in an issue keep up a continual discharge. In the first place it is cruel to take the teeth of a poor creature, whose necessities may induce him to part with it as a means of subsistence; and in the second place, we are obliged to take them from poor people, who are often diseased, and generally with the lues venerea, Mr Hunter says we cannot inoculate the venereal diseases by the blood, yet we have many instances to the contrary. A very singular case of this kind happened a few years ago and made a great noise in the world. A young lady (Miss Morris) from Southampton, came to town to have a tooth transplanted, and being very anxious to have a proper one got and perfectly free from infection, the subject from whence the tooth was taken, was examined by some eminent surgeons, who pronounced it very safe: the operation was performed and she was soon affected with the venereal disease, which destroyed all that side of her face, and she very shortly died. The tooth had produced inflammation, great ulceration and discharge with violent pain, though while she was taking mercury, she appeared to be better, but again grew worse and at length died. If there is no venereal disease, the tooth always produces local suppuration, by acting as an extraneous body. Mr Rae had been called to extract many of them. Sometimes the root is absorbed and made like a honeycomb."

Meanwhile in Edinburgh, John Rae, William's younger brother, who in 1781 had been admitted the first Fellow of the Royal College of Surgeons, advertised in the Edinburgh Advertiser of 12 January 1784 that
"He continues to transplant teeth and to perform every other operation relative to natural teeth"

Benjamin Bell, Edinburgh's first scientific Surgeon, also spoke of tooth transplants with enthusiasm in his *System of Surgery* in1786. He criticised Hunter's disregard of the possibility of the transmission of infection. He advised that *"teeth should not be taken from donors who appear to be sick and that in every case the tooth to be transplanted should be immersed in luke-warm water before being cleared of blood or any matter that might adhere to it by rubbing it gently between the folds of a piece of soft old linen"*

D Steuart, Dentist at 22 Princes Street, Edinburgh, advertised in the Edinburgh Evening Courant of 8 December 1791 that he *"fills decayed teeth and transplants real ones on the most moderate terms"*

Robert Spence, Dentist, James Court, Edinburgh, advertised in the Edinburgh Evening Courant of 1 August 1795 that he continues to practise his profession in all its branches. *"Teeth drawn, Transplanted, Cleaned with perfect safety."*

August Gottlieb Richter of Gottingen writing in 1798, described tooth transplants without any ethical reservations and discussed the possibility of transmitting venereal disease with quotations from Hunter.

Johan Jacob Joseph Serre in 1803 expressed grave scruples regarding tooth transplantation because of the danger of transmitting syphilis. *"Hunter believes that this disease can only be transmitted by pus. Is it not possible however that a drop of impure blood from the alien tooth... could infect the entire mass..?"*

Frederick Hirsch in 1804 stated that even when the gum and the alveolar bone are quite healthy in individuals entirely free from scurvy and syphilis and under fifty years of age, transplanted teeth do not take root perfectly except in one case in three. *"Continental operators prefer to avoid the use of teeth extracted from the mouth of a living person but instead use teeth from young and healthy subjects who had died a violent death. These teeth were carefully cleaned before transplanting and this was believed to make the transmission of disease nearly impossible."*

This controversy rumbled on for the next 150 years, with succeeding authors repeating that transplantation of human teeth from one individual to another was possible, but that the chances of success were poor, there was a great danger of infection and it was a thoroughly immoral procedure.

The reason why it continued was that there was a continually increasing demand for the replacement of damaged or missing teeth by aesthetically acceptable substitutes, not only for transplantation but also for the

production of partial or complete dentures.

In 1840 every dentist required a good stock supply of sound non-carious human teeth. The possible sources were those extracted by the dentist himself, those from the bodies of hung criminals which the courts had directed could be used for dissection, those from the unclaimed bodies of paupers, from mortuaries or graveyards, from battlefields (hence Waterloo teeth) and finally by purchase or reward from living donors.

In a letter of 6th March 1782, the daughter of a London dentist wrote to her brother in Paris asking to do everything he could to get some teeth.

"Father asks you to do everything you can to get him some teeth, and if you can get in to the mortuary, you must take advantage of this opportunity. If that is not possible, you must try to know the brother friar who is in charge and ask if some can be provided. You may have to pay for the incisors and laterals. Father used to pay 12 livres per hundred for the canines."

The shortage of supply was also severe in New York in 1782, when Pierre Le Mayeur advertised that *"Any person disposed to part with their FRONT TEETH may receive Two Guineas for each tooth, on applying to No 28 Maiden Lane, New York"*

On to this stage stepped Nicholas Dubois de Chemant, with a discovery that he patented in 1791, that teeth and dentures of a sufficiently natural appearance could be made from "mineral paste" and hardened by firing in an oven.. Such porcelain dentures were non-porous and inert as far as the fluids and bacteria in the mouth were concerned. The paste could be moulded to fit accurately a model made from an impression of the fitting surface. This was the first time that a "plastic" material had been used instead of carving a fitting surface and would be followed by vulcanite and acrylic resin in later days.

There were however problems to be solved. The shrinkage upon firing was substantial, they were initially glazed with lead or arsenic, they were heavier, the colour was difficult to control, they were liable to fracture, the glaze might crack and they ground away any opposing natural teeth.

De Chemant's discovery led however to a major technical innovation, the individual porcelain tooth, introduced by da Fonzi in 1808. This discovery was not superseded until the introduction of plastic resin in 1940.
By 1840 porcelain teeth were being produced in huge numbers. Half a million were being exported annually from Paris alone. Their arrival coincided with great increases in the numbers of dental technicians and dentists. This major advance in dental materials played a large part in the growth of demand from dental treatment in the first half of the 19th century and thus in the number of dental practitioners. It also signalled the end of the distasteful practice of recycling human teeth from the mouth of one individual to another.

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THE RUSSELL FAMILY

William Russell (1852-1940) was born in the Isle of Man, both his parents hailing from Caithness. A gold medallist Edinburgh MD in 1875, he wrote much about heart murmurs and about the possible relationships of blood pressure, arterial spasm and arteriosclerosis. Before becoming physician at the Edinburgh Royal Infirmary, he was a pathologist and described intracellular globules in the periphery of various tumours, accepted in the literature as "Russell bodies" which he misinterpreted as a fungus, and the cause of cancer. After his death they were shown to be polysaccharide inclusion bodies.
He became the first Moncrieff Arnott Professor of Clinical Medicine in 1913 and President of the Royal College of Physicians of Edinburgh (1916-1918), and was much concerned with the proper place of women in the profession, and with the social dimensions of medicine.
Beatrice Russell, nee Ritchie (1873-1962), the daughter of a Perth civil engineer, pursued her then contentious vocation in medicine in the Edinburgh extra-mural schools and took the Scottish triple qualification in 1894, the year of her marriage to the 20 year older William Russell, who had been her Pathology teacher. After also taking an MD with distinction in Brussels the following year, she never practised. They had six children, and she strongly supported the careers of the four who became doctors. Her own outstanding contribution outside the family was organising and running the hundreds of personnel of the Scottish Women's Hospitals in France and in the Balkans, which had been instigated by her friend Elsie Inglis during the First World War.
Their eldest daughter, Sybil Russell (1895-1978), qualified in 1919 and spent most of her working life in West Africa (Gold Coast), first with the Scottish Mission and then with the Colonial Service. Her concern was obstetrics; her Edinburgh1939 MD thesis described a horrific clinical load; she was elected FRCPE in the same year. She seems to have started midwifery and the treatment of malarial infants throughout that country, and was given an Ashanti chief's tribal cloak for her pastoral work.
Mary Russell (1897-1987), qualified in 1920 and became the first woman MRCPE in 1924 and FRCPE in 1929 alongside Dr Ella Pringle. She trained in Edinburgh and Vienna as a pathologist and worked in the Balkans with the Quaker relief organisation and in Colonial Service research on Yellow fever in Accra. Serious illness forced her return to Edinburgh and she later became the Pathologist at the Manchester Christie Hospital and Radium Institute from 1944 to 1962. In the 25 years of her retirement in Edinburgh she gave vent to her great literary and artistic abilities, culminating in translations from the Hebrew of the writings of Maimonides and the design and weaving of tapestries.
W Ritchie Russell (1903-1980), qualified in 1926 in Edinburgh, and became like his father a gold medallist by his 1932 thesis on head injuries. His training as a neurologist was with Edwin Bramwell at Edinburgh and at Queen Square in London, returning to Edinburgh Royal Infirmary. Then, there was RAMC service in the Second World War, which resulted in a major study of traumatic aphasia, mainly at St Hugh's College Centre for Head Injuries at Oxford. He stayed at Oxford after the war, eventually as the first Professor of Neurology there, and head of a great clinical department, with interests in speech and memory studies, poliomyelitis, (including aspects of the then novel intermittent positive pressure ventilation), the treatment of pain and of spasticity etc, becoming one of the leaders of his specialty in mid twentieth century Britain.
Scott Russell (1912-1971) also qualified in Edinburgh, in 1935. After some years in general practice he opted for a career in ill-paid obstetrics and gynaecology, moving from Edinburgh to Oxford as lecturer, then to Manchester as Reader, and in 1950 to Sheffield as the first Professor. His influential studies concerned the application of statistics, the evaluation of ergot derivatives, the introduction of foetal monitoring in an attempt to reduce neonatal brain damage, and the surgery of vesico-vaginal fistulae. His greatest contribution was the unequivocal demonstration of the harm resulting from smoking in pregnancy.
Dr Jessie Sym, the centenarian member of the SSHM, knew all the Russells: she considered that William and Beatrice Russell had bequeathed to their offspring that very unusual combination of high intelligence with practicality.

A fuller version of this paper was published in the Proceedings of the Royal College of Physicians of Edinburgh, Vol. 31, pp 3432-351

This meeting brought to an end the 2001-2002 session of the Society.

The Scottish Society of the History of Medicine

Constitution as revised at AGM of 1999

The Society shall be called "THE SCOTTISH SOCIETY OF THE HISTORY OF MEDICINE," and shall consist of those who desire to promote the study of the History of Medicine.

A General Meeting of Members shall be held once a year on the last day of October or within four weeks of that date, to receive reports and to elect Members of Council and (when required) Office Bearers. The quorum shall be 20 members and decisions shall be taken by a majority. The President shall have a casting vote, and there shall be no proxy voting.

3. The management of the affairs of the Society shall be vested in a Council, comprising a President, a Vice-President (serving as Deputy President and President-Designate), a Secretary, and a Treasurer (the four Office-Bearers), along with nine other members ("Ordinary Members of Council"). The immediate Past President may also be included as a member of Council, as provided below. The quorum at Council meetings shall be six and there shall be no casting vote.

4. The President and Vice-President shall be elected at an Annual General Meeting, to serve normally for a tenure of three successive years, and shall not hold their post for more than three successive years, but shall be eligible to serve again after the lapse of one year if re-elected. In addition, the immediate Past President may remain a member of Council for two years after the end of his or her term of office as President.

The Secretary and Treasurer shall be elected at an Annual General Meeting, to serve normally for a tenure of three successive years, and shall be eligible to serve again if re-elected, but should not normally hold office for more than six consecutive years.

The names of all candidates for election as Office-Bearers and of their proposers shall be made known to the Secretary before the Meeting at which election is to take place.

5. Any Office-bearer may be required to retire from office by resolution at any AGM, but the proposer and seconder of the resolution shall give a month's notice in writing to the Secretary (or in the case of the Secretary to the President), and the resolution must be pre-circulated to Members in the papers for the AGM.

6. Three Ordinary Members of Council shall be elected at each Annual General Meeting, to serve normally for a tenure of three successive years, and shall not be eligible for re-election at the end of their tenure until a year has elapsed; each year, the three Ordinary Members most senior by date of election shall demit office. If an Ordinary Member is otherwise unable to complete his or her term of office, the Council shall co-opt a replacement to complete the term, and this replacement shall be eligible at the end of the term to be elected for a further full term, despite having already served part of a term.

7. The Council shall have power to co-opt at any time other members who in their opinion are fitted to render special service to the Society. Such co-opted members shall be in addition to those in clause 6 above, and the co-option shall require the approval of each subsequent Annual General Meeting if it is to continue further.

8. To recognise outstanding service to the Society or to Medical History in general, upon occasion an Honorary Member of the Society may be elected at any Annual General Meeting. Any name proposed (with the name of a proposer and seconder, and details of the case) must be intimated in writing at least three months before the meeting to the Secretary, so that they are included in the pre-circulated Agenda for the meeting. Honorary Members shall pay no subscription.

9. The Annual Subscription shall be reconsidered from time to time by Council and reported to the Society at the Annual General Meeting. The Subscription (or revised Subscription) will fall due immediately following the AGM. A Member whose subscription is outstanding for a full year shall cease to be a member of the Society.

10. The Council shall ensure that full and punctual Accounts are kept for the Society and shall cause to be prepared once a year a Statement of Accounts and a Balance Sheet for the previous year.

11. The Society's funds shall consist of funds in the hands of the Treasurer, together with other sums of money and securities. These funds shall be held by the Treasurer, acting with the President and the Secretary (the Trustees), in trust for the Society's aims and objects, and in furtherance of this purpose the three Trustees shall have the following powers:

(a) Payments shall be made out of income or capital of the Society as the Trustees shall determine; all cheques shall require the signatures of two of the three Trustees.

(b) The Trustees may purchase and sell stocks, bonds, securities and other investments.

(c) The Trustees may delegate the management and investment of the Society's funds to the Treasurer and will consult with him on a regular basis as to the performance of the investments and assets comprising the Society's funds.

12. The Secretary shall keep brief Minutes of the proceedings both of the AGM and of the Council, shall prepare Agenda, and shall conduct the correspondence of the Society.

13. Meetings shall be held at least twice yearly, and the place of meeting shall be in any of the University centres, or elsewhere, as the Council may decide.

14. This Constitution may be amended at any General Meeting of the Society on four weeks' notice of the proposed amendment being given by the Secretary, such amendment to be included in the Agenda circulated for the Meeting. No such alteration or amendment shall have the effect of prejudicing the Society's charitable status in law.

15. The Council may resolve that the purposes for which the Society's funds are held can no longer be carried out by them or could be carried out more efficiently by some other body, fund or institution, and shall so report to a General Meeting of the