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**THE EMERGENCE OF A GRADUATE DENTAL PROFESSION,
1858-1957**

by

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Thesis submitted for the degree of Doctor of
Philosophy to the Faculty of Social Sciences,
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ABSTRACT

This study grew from a request for information as to the date of establishment of the Bachelor of Dental Surgery (BDS) as the professional qualification for dentists in the United Kingdom. In the process of answering this enquiry it became apparent that there was no simple answer and that university dental education was not covered by the existing literature. It also became clear that, while ubiquitous for new dentists by the late twentieth century, the dental degree had only comparatively recently become the standard path to a dental career.

This study emphasises the role of professional education, and particularly university education and research, in the development of the dental profession and dental services. University dental education and research, it is argued, was a major factor in the professionalisation of dentistry, in convincing the government of the importance of dental health and thus in establishing dentistry as an essential part of the National Health Service (NHS). University dental education and research, it is argued, extended the therapeutic potential of dental treatment, promoted understanding of the relationship between oral and systemic disease, of the etiology and pathology of dental disease and of methods of prevention and control. Such was the impact of the new standards thus established, that the whole emphasis of dental

treatment would shift within the space of one hundred years, from dental surgery and dental prosthetics to conservative and preventive dentistry.

This study shows that, from the mid-nineteenth century, a dental elite campaigned for compulsory professional education and, from the late nineteenth century, for university dental education. By the beginning of the twentieth century professional education for doctors and surgeons, for the degree of MBChB, was carried out in university medical schools. Yet, although the dental curriculum was based on the surgical curriculum, it was not until the mid-twentieth century that the standards pioneered by the dental elite were extended to the majority of candidates for the dental profession. Indeed, the generally low standards which prevailed prior to the retiral of the generation of unqualified "Dentists, 1921" had damaging effects on the oral and general health of the British population. The study also suggests that the dearth of qualified dentists contributed to the delay in achieving legislation to eliminate unqualified practice. Arguably, the low standards of the majority of dentists also contributed to the delay in persuading the government that dental treatment was as important to the health and well-being of the population as any other aspect of health care. Just as the standards advanced by the dental elite ultimately persuaded the government of the relative importance of dental care.

This study therefore examines the factors which delayed the achievement of a consistent and high standard of professional dental education for dental practitioners. In so doing the study identifies several factors which contributed to the lack of demand for professional dental education and qualification and thus delayed dentistry's establishment as a graduate profession.

The lack of demand for institutional professional education and qualification is highlighted. It is also shown that those who did undertake professional education were not persuaded of the need for a scientific and theoretically-based education for a profession which had previously been substantially craft-based. Indeed, the licence remains to this day the minimum standard required for dental registration in the United Kingdom.

Access to school education was another factor which impinged on demand for professional education. Deficiencies in school education prior to the mid-twentieth century, meant that the majority of school leavers were ill-equipped for a scientific professional curriculum. Furthermore, for those with the educational and financial means to undertake professional education, there was little incentive to embark on a lengthy and expensive professional training for a career in which prospects were poor. Professional education had to be seen to be cost-effective by those embarking on a lengthy and

expensive course of study. Whereas in medicine career appointments and medical services were subsidised by the state, this was not true of dentistry until the establishment of NHS dentistry in the late nineteen-forties. In the absence of state dental services and dental health promotion, unlike other forms of health care subsidised by the state, the majority of the population sought dental treatment only as a last resort.

This study also highlights the inter and intra-professional rivalries which delayed higher standards of professional education for dentists during the period studied. The role of the Royal Colleges of Surgeons which, from 1859 in England and from 1879 in Scotland and Ireland, issued the registrable dental qualification, is examined. It is shown that the reluctance of the colleges to lose their lucrative role as the qualifying bodies for the dental profession and their consequent opposition to university qualifications was a key factor in delaying the establishment, and uptake, of university dental qualifications. Opposition from registered medical practitioners was another factor. It was in their interests to ensure that dental qualifications would pose no threat to the perceived superiority and status of general medical qualifications which entitled them to practise dentistry without dental qualifications. It is also shown that the dental profession's historical allegiance to the surgical colleges, the

perceived prestige of college qualifications and the opposition from the majority of dental licentiates to university degrees which would devalue the college licence, also undermined the demand for dental degrees.

The General Medical Council (GMC) was until 1956 responsible for supervising standards in dental education. Its role and the allegiance of its members to medicine, surgery and the surgical colleges, is examined. GMC supervision helped to maintain the scientific and medical curriculum, but did less to promote the clinical dental curriculum and university dental education. It is shown that the Royal College of Surgeons of England (RCS Eng.) was equally influential within the University of London. Thus, within the London-based medical and dental establishment there was substantial opposition to any change in the status quo.

This study shows that, without the endorsement of the London medical establishment, universities in Scotland and Ireland and the "provincial" English universities had an uphill struggle to promote their qualifications, particularly the degree, and fund dental education at a time when there was little demand for dental qualifications. Therefore, although crucial to the development of dentistry as we know it today, the establishment of dental degrees was an overly ambitious step for the means and readiness of the majority of candidates which, in the absence of

government funding and demand for dental qualifications, stretched the resources of the "new" universities.

Among those factors which ultimately facilitated the establishment of dentistry as a graduate profession, the study highlights the role of a small but influential dental elite in promoting scientifically-based university education despite opposition, apathy, indifference and underfunding. Ultimately however, in the United Kingdom, the role of the state is identified as a key factor in extending a process initiated by an elite to the majority of dentists.

From the mid-twentieth century the state substantially improved standards in, availability of, and access to education at all levels. It is shown that the extension of secondary education, the increase in the number of university places available to those with university entrance qualifications and the system of grants covering fees and maintenance together increased the number of dental undergraduates. The study highlights the further crucial stimulus provided by the government in the form of improved access to dental treatment and career opportunities for dental graduates in the NHS and in university dental schools. Together these factors created the conditions necessary to extend to all those preparing for a career in dentistry, and thus to their patients, the standards pioneered from the

beginning of the twentieth century, for a minority of able and relatively affluent candidates. Implicit in the government's change of policy regarding dental services was the key role of the elite of the dental education and research establishment. Similarly, dental research informed a series of government reports which recommended the establishment of state dental services staffed by dental graduates.

In the period following 1945 the universities assumed the role of providing professional education for dentists. The expansion of university dental schools and the establishment of entirely new dental schools, to accommodate the increased intake of dental students required to improve staffing levels in the NHS, increased the number of dental undergraduates.

Comparison with other professions shows that the factors which delayed and also those which ultimately increased the uptake of university education for the dental profession, apply also to other medical and non-medical professions. Dentistry's place in the NHS accelerated its establishment as a graduate profession, but the establishment of university education for the professions, which remains an ongoing process, was made possible ultimately by state funding. The study therefore emphasises the role of the state in the process by which university education and research sooner or later contributes to the evolution of professional standards.

IN MEMORIAM

Robert Marlborough, 1908-1992

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DECLARATION

This thesis is the original work of the author

Helen Scott Marlborough

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ABBREVIATIONS

| | |
|-------|---|
| ADA | American Dental Association |
| AJDS | American Journal of Dental Sciences |
| ALA | Associate of the Library Association |
| ASPDS | Association of Surgeons Practising Dental Surgery |
| BA | Bachelor of Arts |
| BBC | British Broadcasting Corporation |
| BChD | Bachelor of Dental Surgery |
| BDA | British Dental Association |
| BDJ | British Dental Journal (1903- |
| BDSc. | Bachelor of Dental Science |
| BDS | Bachelor of Dental Surgery |
| Birm. | Birmingham |
| BJDS | British Journal of Dental Science |
| BMA | British Medical Association |
| BMJ | British Medical Journal |
| BS | Bachelor of Surgery |
| BSSO | British Society for the Study of Orthodontics |
| CAL | The monthly magazine produced by Coe Laboratories Inc. |
| Cd. | Command paper (1900-1918) |
| Ch. | Chapter |
| Cmd. | Command paper (1919-1956) |
| Cmnd. | Command paper (1956-1986) |
| Co. | Company |

| | |
|----------|---|
| Corresp. | Correspondence |
| DBUK | Dental Board of the United Kingdom |
| DChD | Doctor of Dental Surgery, University of Wales |
| DDH | Diploma in Dental Health, University of Birmingham |
| DDO | Diploma in Dental Orthopaedics |
| DDPH | Diploma in Dental Public Health |
| DDR | Diploma in Dental Radiology |
| DDS | Doctor of Dental Surgery |
| DDSc. | Doctor of Dental Science |
| DEAC | Dental Education Advisory Council |
| DGDP | Diploma in General Dental Practice |
| DOrth. | Diploma in Orthodontics |
| DPD | Diploma in Public Dentistry |
| DRD | Diploma in Restorative Dentistry of the Royal College of Surgeons of Edinburgh |
| Durh. | Durham |
| ed. | Editor |
| Edin. | Edinburgh |
| Edit. | Editorial |
| est. | establishment |
| FDI | Federation Dentaire Internationale (International Dental Federation) |
| FDS | Fellow in Dental Surgery |
| FFD | Fellow of the Faculty of Dentistry, RCS, Irel. |
| FFPS | Fellow of the Faculty of Physicians and |

| | |
|------------|--|
| | Surgeons of Glasgow |
| FPS Gla. | Faculty of Physicians and Surgeons Of Glasgow (1654-1909) |
| FRCP | Fellow of the Royal College of Physicians |
| FRCS | Fellow of the Royal College of Surgeons |
| FRCS Edin. | Fellow of the Royal College of Surgeons of Edinburgh |
| FRS | Fellow of the Royal Society |
| GCE | General Certificate of Education |
| GDC | General Dental Council |
| Gla. | Glasgow |
| GMC | General Medical Council |
| GNC | General Nursing Council |
| HEA | Health Education Authority |
| HC | House of Commons |
| HDD | Higher Dental Diploma |
| HL | House of Lords |
| HMSO | Her (or His) Majesty's Stationery Office |
| Hon. | Honourary |
| IDS | Incorporated Dental Society |
| Instit. | Institution |
| Irel. | Ireland |
| ISEAT | Incorporated Society of Extractors and Adaptors of Teeth |
| JADA | Journal of the American Dental Association |

| | |
|----------------|---|
| JBDA | Journal of the British Dental Association (1880-1902) |
| LDSc. | Licentiate in Dental Science |
| LDS | Licentiate in Dental Surgery |
| LDS, FPS Gla. | Licentiate in Dental Surgery of the Faculty of Physicians and Surgeons of Glasgow (1879-1909) |
| LDS, RCPS Gla. | Licentiate in Dental Surgery of the Royal College of Physicians and Surgeons of Glasgow (1962-) |
| LDS, RCS Edin. | Licentiate in Dental Surgery of the Royal College of Surgeons of Edinburgh |
| LDS, RCS Eng. | Licentiate in Dental Surgery of the Royal College of Surgeons of England |
| LDS, RCSI | Licentiate in Dental Surgery of the Royal College of Surgeons in Ireland |
| LDS, RFPS Gla. | Licentiate in Dental Surgery of the Royal Faculty of Physicians and Surgeons Of Glasgow (1909-1962) |
| LFPS | Licentiate of the Faculty of Physicians and Surgeons of Glasgow |
| LHMC | London Hospital Medical College |
| Liverp. | Liverpool |
| LM | Licentiate in Midwifery |
| LRCP | Licentiate of the Royal College of Physicians of London |
| LRCPE | Licentiate of the Royal College of Physicians of England |

| | |
|------------|--|
| LRCP, LRCS | Conjoint Licence of the Royal College of Physicians of London and the Royal College of Surgeons of England |
| Ltd | Limited |
| MA | Master of Arts |
| Manch. | Manchester |
| MB | Bachelor of Medicine |
| MCCD | Membership in Clinical Community Dentistry |
| MCDE | Member of the College of Dentists of England |
| MChD | Master of Dental Surgery, University of Wales |
| MD | Doctor of Medicine |
| MDO | Membership in Dental Orthopaedics |
| MDS | Master of Dental Surgery |
| MDSc. | Master of Dental Science |
| Med. | Medical |
| MEd. | Master of Education |
| MGDS | Membership in General Dental Surgery |
| MOrth. | Membership in Orthodontics |
| MP | Member of Parliament |
| MRC | Medical Research Council |
| MRCP | Member of the Royal College of Physicians of London |
| MRCS | Member of the Royal College of Surgeons of England |
| MRD | Membership in Restorative Dentistry |

| | |
|-----------|--|
| MS | Master of Surgery |
| MScD | Master of Dental Science, University of Wales |
| n.d. | no date |
| Nat. | National |
| NHI | National Health Insurance |
| NHS | National Health Service |
| Obit. | Obituary |
| p. | page |
| PDSA | Public Dental Service Association |
| pp. | pages |
| PhD | Doctor of Philosophy |
| Qualif. | Qualifications |
| RADC | Royal Army Dental Corps |
| RAMC | Royal Army Medical Corps |
| RCN | Royal College of Nursing of the United Kingdom |
| RCP | Royal College of Physicians of London |
| RCPS Gla. | Royal College of Physicians and Surgeons of Glasgow |
| RCS | Royal College of Surgeons of London |
| RCS Edin. | Royal College of Surgeons of Edinburgh |
| RCS Eng. | Royal College of Surgeons of England |
| RCS Irel. | Royal College of Surgeons in Ireland |
| RFPS Gla. | Royal Faculty of Physicians and Surgeons of Glasgow (1909-1962) |
| RIBA | Royal Institute of British Architects |
| RICS | Royal Institute of Chartered Surveyors |

| | |
|--------|---|
| RSM | Royal Society of Medicine |
| SCME | Select Committee on Medical Education |
| SCOPME | Standing Committee on Postgraduate Medical Education |
| Surg. | Surgical |
| UK | United Kingdom of Great Britain and Ireland |
| Univ. | University |
| U.P. | University Press |
| USA | The United States of America |
| v. | volume |

CHAPTER 1. INTRODUCTION

1.1. INTRODUCTION

This study of professional education for dentists in the period 1858-1956 focuses on the long and difficult process through which dentistry has emerged as a graduate profession. In previous studies of the dental profession during this period professional education has been relatively neglected. Yet it will be argued that education was a crucial factor in raising the status of the profession, advancing standards of treatment and in developing new therapies through research. Throughout this analysis the principal aim will be to examine the tensions between the need for, and the difficulties of establishing a standard of professional education equal to other medical professions.

As shown by previous histories, in the mid-nineteenth century professional education for dentists was not institutionalised or regulated according to the criteria established for physicians, surgeons, apothecaries and pharmacists. [1] The curricula and examinations for physicians or surgeons had little or no dental content and there was no examination as to fitness to practise dentistry. The competence of practising dentists was continually called into question by unprofessional activities such as

advertising and by the poor prognosis of dental treatment carried out by practitioners with little or no knowledge of medicine and surgery.

Dental reformers emphasised the importance of high standards of compulsory professional education to advance standards in dental practice and thus the reputation and status of dental practitioners. From the beginning of the nineteenth century the expansion of institutional education and the establishment of the modern examination system created the foundations and structure necessary for the development of professional education. The advance of the universities into the field of professional training in the twentieth century created an institutional framework for scientific and theoretical instruction. [2] However, prior to 1921 there was no legal requirement for formal training or compulsory examination for dentists and the registration of almost 7,000 unqualified practitioners (60%), under the terms of The Dentists' Act, 1921, meant that diverse standards of dental practice would long persist.

This work will examine the hypothesis that, despite the importance of professional education, the aspirations of the rank and file did not conform to those of the elite. The tension between the need for the high standards advanced by the reformers and the perceived needs of the majority of practitioners will

be examined. The study also examine the way in which a profession which lacked the prestige, tradition, career opportunities and autonomy of the medical profession was disadvantaged in its attempt to establish standards of education and training equal to, but different from, those required for medicine.

[3] This study of the evolution of dental qualifications from the college Licentiate in Dental Surgery (LDS) to the university Bachelor of Dental Surgery (BDS) will also investigate the role of the state and the universities in determining professional standards. In doing so it will identify those factors which delayed the demand for university training and qualification as well as those which contributed to the eventual transition to a graduate profession.

1.2. EXISTING LITERATURE

1.2.1. PROFESSIONALISATION

There have been several notable studies of professionalisation and of the role of professional education in this process. [4] A profession has been defined as an occupation differentiated from trades which involve the sale of goods or the provision of unskilled, primarily manual services. Education, qualification and the process of attaining standards, which may be measured by public and peers, are fundamental to professional status. [5] However,

education for the professions is more than vocational training in the application of standard procedures. Professional judgement and discretion are based on theoretical knowledge and intellect rather than purely technical skills. [6]

Daniel Duman's study of the development of a professional ideology in the nineteenth century emphasised the importance of regulating professional education and maintaining standards in curriculum and examination relative to other occupations. Duman concluded that in order to achieve professional status an occupation had to conform to certain characteristics which included expertise, technical knowledge, training and testing of candidates, an ethical code, a professional association and an orientation towards public service. [7] Special competence, which was acquired through intellectual training and tested by examination, qualification and registration, excluded the unqualified, restricted entry to the profession and was the most effective way to regulate and improve standards. [8] Larson has referred to the "cognitive dimension" and Downie has referred to the "wide cognitive perspective" which enabled practitioners to develop skills from a broad base of knowledge and theory. [9] These became the chief distinguishing features of new nineteenth century professions.

To examine the educational context in which

professional education evolved, reference has been made to histories of education in the United Kingdom - for instance Roach's studies of the development of the examination system and the expanding role of the universities in England in the nineteenth and twentieth centuries. [10] Similarly, Lowe highlights the increasing involvement of the State in determining standards and availability of education at all levels. [11] However useful these works are in setting the context, dentistry is not studied in detail, nor is the relationship between the expansion of university education in England and the establishment of university degrees for the professions.

The evolution of the dental profession displays many of the characteristics outlined in the literature of the professions and presents an important case study of the role of education, training and qualification in the evolution of professional standards. The dental profession's advance was based on increased demand for dental treatment and recognition of the health care role of dentists whose competence was grounded in specialised professional training in an institution providing scientific theory and clinical and laboratory experience. Once entry to the profession had been restricted to qualified practitioners, the attention of those regulating standards was directed towards improving education and thus standards in practice. The role of institutions

of higher education was crucial in ensuring that standards in practice kept pace with the scientific and theoretical knowledge base. They did this by providing training and examinations, perceived as being of unimpeachable standards, and by extending the knowledge base through research.

Accordingly, this study will emphasise the unifying function of formalized and standardized education in the process of professionalisation, the role of the state and the universities, not only by regulating but also by setting educational standards, and the gradual assumption by the universities of an enduring role as providers of professional education in a period of rapid technological change.

1.2.2. THE MEDICAL PROFESSIONS

Dentistry evolved as a specialty allied to medicine and surgery. Thus, an understanding of dentistry's position in relation to standards of education, training and qualification for the medical professions is crucial. In addition to the classic histories of the professions referred to above, more recent studies of the medical professions form the basis of this comparative analysis of the evolution of professional education for dentistry. Several published histories highlight the importance of professional qualifications in terms of recognition

and status for emerging medical specialties. Whereas S.W.F. Holloway's study of the professionalisation of the apothecaries, and Irvine Loudon's Medical Care and the General Practitioner 1750-1850 focus on legislative recognition of a professional qualification, M. Jeanne Peterson's study of The Medical Profession in Mid-Victorian London highlights the trend towards qualification by university degree in the medical profession in the late nineteenth century. [12] This suggests that the achievement of the Licence in Dental Surgery (LDS) was merely the first step towards equality of standards. Peterson also highlights other factors which impinged on the evolution of professional education for medicine, surgery and dentistry. For instance, the influence of those whose status and income depended upon the apprenticeship system delayed the integration of teaching and examination, particularly in the University of London and conversely, the importance of the growth of university medical education in the provinces as a factor for change.

The power of the London-based Royal Colleges of Physicians and Surgeons, the long struggle to abolish the profitable metropolitan monopoly of qualifications to practise, the gradual lengthening of the medical course and the emphasis on science and theory impacted on the role of the universities in training and qualification for both medicine and dentistry. [13]

The power struggle between college and university to make hospital and teaching appointments, and thus for control of medical education, has also been identified as a significant feature of the period of medical reform by Anne Digby in Making a Medical Living: doctors and patients in the English market for medicine, 1720-1911, by Lisa Rosner in Medical Education in the Age of Improvement and by Jacqueline Jenkinson, Michael Moss and Iain Russell in The Royal: the history of the Glasgow Royal Infirmary, 1794-1994.

[14]

Digby's study and that of Rosner identify other respects in which the emerging dental profession was disadvantaged compared with the established medical professions owing to deficiencies of regulation and professional education. For instance, whereas by 1858 medical education was regulated by a body responsible for self-regulation of standards in education and practice, this was not true of dentistry until 1956. Similarly, although there were facilities for medical education in most cities by the mid-nineteenth century there was no equivalent provision for dental education until The Dentists Act, 1878 provided the impetus for their establishment. Thus, the incompleteness of the medical education of the majority of medical practitioners described by Rosner in the period 1760-1826, was still true of the majority of dental practitioners until the nineteen-forties. [15]

Competition from unqualified practitioners also affected prospects in dental practice well into the twentieth century, partly by undercutting professional fees when there was no state-subsidised service for those unable to pay for treatment, and partly by contributing to the poor impression of dental care owing to the limited therapeutic benefits of the treatment provided. This study will suggest that unqualified practitioners retained their share of the market until entry to the profession was regulated and professional education capable of producing a significantly different quality of practitioner.

Intra-professional conflict, described by Irvine Loudon as "an outstanding feature of the period of reform", was another factor which impeded the progress of dental reform. [16] Loudon's study shows that the medical corporations did little to raise standards of education and training for the medical professions and did all in their power to block the emergence of new specialisations and new standards of education and training which might adversely affect the income they derived from issuing licenses to practise and also the status of their members' qualifications. Hamilton and Digby also stress the hegemony of the London Colleges over medical licensing in England from the mid-nineteenth century despite the advances in therapeutic standards and techniques being made in university medical faculties. Indeed, Digby suggests that the

universities provided "training infused by investigative science" which enhanced professional authority, raised standards in practice and increased demand for the services of trained practitioners.

[17] This study will show that until the universities assumed the role of undergraduate dental education in the mid-twentieth century, the dead hand of the medical establishment limited the therapeutic potential and the general public's expectations of dental treatment. [18]

At a time when even the medical professions were struggling to make a living, owing to clients' inability to pay for treatment, Hamilton and Digby have shown that National Health Insurance (NHI) and salaried positions in state employment were crucial to the medical professions, in terms of salaried posts and increased demand for treatment. This highlights the way in which, excluded from NHI, the dental profession suffered more acutely from adverse economic conditions. Similarly, Charles Webster's Health Services Since the War shows that dentistry's adverse position, relative to medical services, persisted within the National Health Service (NHS). Webster's account of the ongoing struggle between the dental profession, represented by the British Dental Association (BDA), and the government to reach a compromise acceptable to dentists and affordable to the government is a key source on the economics of

dental practice in the post-war years. [19]

Although several factors identified by these authors are pertinent to the history of dental education they deal in detail with medicine only. This thesis will examine the proposition that, since professional standards in dentistry were initially inferior to those established for medicine and surgery, the government's commitment to dentistry was ambivalent. This resulted in poor facilities for professional education and poor career prospects - factors which in turn contributed to the lack of demand for university degrees.

1.2.3. THE DENTAL PROFESSION

Previous studies of dentistry during the period studied provide crucial background for this analysis without, however, focusing in detail on the impact of professional education on the development of the dental profession between the mid-nineteenth and mid-twentieth centuries. Histories of the dental profession fall broadly into three categories: firstly, scientific and technical; secondly, biographical and thirdly, political. Monographs such as Walter Hoffman-Axthelm's History of Dentistry, Malvin E. Ring's Dentistry: an illustrated guide and Margaret A. Clennett's chapter on the "History and Scope of Dentistry" in her Key Guide to Information

Sources in Dentistry focus on the scientific and technical advances which improved the quality of dentistry during the nineteenth and twentieth centuries. [20] Nineteenth century histories, such as Alfred Hill's History of the Reform Movement in the Dental Profession in Great Britain During the Last Twenty Years, provide a contemporary view of the profession's advance during the nineteenth century but lack both the references and the wider perspective of later studies. [21] Similarly, the pioneering works by Lindsay, Menzies Campbell and Cope focus on the achievements of individual members of the profession in advancing standards and status. [22] Although Lilian Lindsay refers to education as one of the three legs of the tripod essential to the development of dentistry (the other two being the society and the journal), these studies are of limited value to the present study since they contain few references, do not cover professional education in detail and cover the period prior to the introduction of the dental degree.

Histories of professional associations and governing bodies have emphasised their contribution to the improvement of dental services, conditions for members and legislation. For instance, chapters by N. David Richards and J.A. Donaldson in The British Dental Association: the Advance of the Dental Profession: a centenary history 1880-1980 highlight

the educational implications of legislation, the campaign against unregistered unqualified dentists and the key role of the Dental Board of the United Kingdom (DBUK) in promoting dental education and research. However there is no chapter on the history of dental education and no account of the introduction of the degree. [23] S.H. Coplans's pamphlet "The Seven Ages of the B.D.A., 1856-1956: an historical sketch recorded graphically" refers to the development of dental education as one of several factors in the evolution of the profession. Coplans also identifies several respects in which recognition for dentistry as a specialty of medicine and surgery was delayed: the late establishment of dental degrees in the University of London; delay in establishing the dental corps in the armed forces; the exclusion of dental benefits from NHI and the late establishment of the General Dental Council (GDC). [24] The General Dental Council's pamphlet "Professional Autonomy for Dentistry, 1921-1971", which is similar in scope, outlines the establishment of the GDC in 1957 and the gradual establishment of a qualified dental profession in the period 1921-1971. [25] The present study will examine and relate these themes to the slow evolution of professional education.

Recent interest in dental history has been reflected in the publication of articles in medical and dental journals in the United Kingdom and the

United States. Similarly, doctoral theses have extended knowledge and understanding of the professionalisation of dentistry and the development of dental services. But there has, as yet, been no attempt to examine fully the contribution of professional education to this process.

N.D. Richards' thesis "A Study of the Development of Dental Health Services in the UK - the profession and treatment services 1840-1921" examines the professionalisation of dentistry with particular reference to the development of dental services and the need to promote dental health education. [26] Although several of the professional characteristics cited by Richards are premised in professional education, and whilst he argues that there could be no large scale development of dental services before the emergence of an established profession, Richards' study concludes before this was fully realised. [27] The 1921 Act which legitimised the practice of almost 7,000 unqualified dentists did not in the short term establish a trained profession equipped to extend and develop a broad range of dental services. The present study will argue that, although the 1921 Act was a necessary stage in the process of developing dental services, demand for dental treatment is driven by public perceptions and recognition of the value of dental treatment based on the efficacy of therapeutic intervention which may be directly related to

standards of professional education. This thesis will show that, as with other aspects of dental reform, although "profoundly affected by the framework of social change", professional education and research and therefore standards of care, were subject to the limitations imposed by "an erratic and pragmatic response from doctors, dentists, government and general public". [28]

Guy Dussault's thesis "The Professionalisation of Dentistry in Britain: a study of occupational strategies, 1900-1957", is a socio-political analysis which focuses on the collective action and the achievements of the BDA and other associations of dentists. [29] However, whereas Dussault suggests that "control of the market for dental services is what professionalism is about", this study will show that high standards of professional education and qualification were prominent among the objectives of dental reformers from the mid-nineteenth century onwards and will suggest that professional education is the foundation of benefits to clients and a check on professional self-interest. [30]

Rufus Myer Ross's thesis "The Development of Dentistry: a Scottish Perspective, 1800-1921" systematically examines the development of dental services in Scotland in relation to socio-economic conditions, professional politics and the role played by leading Scottish dentists. [31] As with

Richards's thesis which covers the same period, dental education is alluded to as one of the landmarks of professional development and recognition but is not examined in detail. Ross's concluding evaluation of the professional status of dentistry after the 1921 Act emphasises "confidence, faith, trust and accountability" and the need, in the period following 1921, for:

a conscientious resolve by all members of the infant profession to earn the respect and confidence of the public; only thus could dentists consider themselves to be worthy of the title of a profession. [32]

This thesis will argue that, both before and after 1921, the professional standards and accountability upon which public confidence is based had to be underpinned by high and consistent standards of undergraduate and continuing professional education and research.

Concentrating on the profession's elite, Ross concludes that:

The occupation of dentistry changed ... to a scientific branch of medicine, by qualified, skilled practitioners offering a comprehensive range of treatments [and that] this transformation was only achieved ... by the acquisition and application of scientific and medical knowledge to the developing medical

specialism. [33]

Yet Ross does not give an account of the development of professional education and research. Furthermore, the historical scope of his study concludes at a time when the majority of registered dentists had received no formal professional education and held no certificate or qualification testifying to their professional competence. [34]

The present work will suggest that the transformation to which Ross refers was only fully realised with the advent of compulsory professional education and qualification following the 1921 Act and was made possible by the universities' role in extending the dental curriculum and developing dental research. Whereas Ross emphasises the role of the Royal College of Physicians and Surgeons of Glasgow (RCPS, Gla.) and the Royal College of Surgeons of Edinburgh (RCS, Edin.) in laying "the foundations for an evolving and progressive profession", this thesis will show that although the colleges provided the foundations - in terms of the administrative structure for examining the LDS - it was left to the universities to develop the professional education and research which has greatly extended the range of conservative and preventive dental services. [35]

Ross concedes that "Scotland in many spheres pursued a different and arguably slower route to twentieth century standards from England". [36] This

thesis will suggest that Scotland's "slower route" may in great measure be attributed to the college monopoly of dental education and examination and the absence of university dental education in Glasgow and Edinburgh prior to 1947. In any event, to an only slightly lesser degree, Scotland's problems regarding educational and professional standards were shared with England.

There are few published case histories of dental education. Christine Hillam's thesis "The Development of Dental Practice in the Provinces From the Late Eighteenth Century to 1855" analyses education and training for dentists prior to formal qualifications and institutionalised education. [37] Hillam shows that, although lacking qualifications or formal institutional training, many dentists were skilled and some were capable of making significant contributions to the scientific advance of the profession. The present work will examine, in the subsequent period, the development of formal science-based professional education and qualification, culminating in the establishment of qualification by university degree, without which, arguably, there could be no guarantee of or improvement in standards of practice.

There are few histories of university dental schools, Newcastle Dental School and Hospital: an illustrated history, 1895-1995 being a recent example. [38] R.A. Cohen's History of Birmingham Dental

Hospital and Dental School, 1858-1958 sets the establishment and development of the dental faculty and the introduction of a degree in dentistry in the context of the extension of the university's activities in providing professional qualifications. [39] Some university histories refer to the establishment of dental schools, the introduction of university dental qualifications and the appointment of teaching staff. But dental education is seldom given the importance due to the subject of an independent degree. [40] There is no account of the relationship between the university LDS and the BDS, nor of the phasing out of the LDS in favour of the degree.

Thus, despite the numerical and public health significance of dentistry there is no account to date of the factors which delayed the introduction of a degree in dentistry, prompted its establishment in 1900, delayed demand for the degree and later brought about its final triumph.

1.3. CHRONOLOGICAL, THEMATIC AND GEOGRAPHICAL FOCUS

The period covered begins with the campaign for dental reform in the mid-nineteenth century. This achieved recognition of the need for professional education and established the first professional qualification for dentists, the LDS, RCS, Eng. under

the terms of The Medical Act, 1858. The study closes with The Dentists Act, 1956 which established the General Dental Council and thus autonomy in matters of professional self-regulation, education and training.

Analysis of legislation, of college and university curricula and of The Dentists Register will show the gradual evolution of the curriculum and the increasing percentage of registered dentists holding university degrees in dentistry. By 1956 government intervention which promoted demand for university education for dentists from the 1940s onwards had begun to bear fruit and, as will be shown by analysis of The Dentists' Register, an increasing number of graduates were entering the profession. [41] Once the dental degree had become established as the standard entrance qualification, attention was focused on postgraduate education and qualifications, both college and university. Developments in postgraduate education in the period 1858-1957 will be alluded to as appropriate, without being a major focus of the thesis.

The crucial century in dental education will be analyzed with respect to the knowledge base, the dental curriculum, standards of professional education and qualification, and will take into account factors which delayed and also those which promoted higher standards of professional education for dentists.

Geographically this thesis focuses to a large

extent on England for, between 1858 and 1878, the Royal College of Surgeons of England's Licence in Dental Surgery (LDS, RCS Eng.) was the only dental qualification available in the United Kingdom. Although the geographical area widens after 1878 to include Scotland and Ireland, the first degrees were established from 1900 in the Midlands and the North of England. The first Scottish dental degree was established in Dundee in 1938 and degrees were not established in Glasgow and Edinburgh until 1947. [42] Thus, owing to the late establishment of dental degrees, Scotland it is not suitable for a full local case study during the crucial decades of the dental degree's establishment.

Although the geographical focus has centred on England, comparison and contrast with dental education in Scotland has been based on several published sources plus unpublished manuscript records of both the Glasgow Odontological Society and the Royal College of Physicians and Surgeons of Glasgow. T. Brown Henderson's History of Glasgow Dental Hospital and School, 1879-1979, highlights the importance of legislative recognition of Scottish qualifications in The Dentists' Act, 1878 as an impetus to establish facilities for dental education, the limited demand for professional education and the lack of resources to develop facilities. [43] However, Henderson does not refer to the relationship between the Faculty of

Physicians and Surgeons and the University or the delay in establishing a dental degree in the University of Glasgow.

Sir Robert Bradlaw's paper on the pioneers of dental education in Edinburgh complements Henderson's Glasgow study and shows that the establishment of dental dispensaries created the first institutional clinical dental facilities to support study for the LDS. [44] Conversely, Hamilton's chapter on "The Scottish Medical Schools" suggests that the extra-mural medical schools (a peculiarly Scottish phenomenon) may have contributed to the delay in integrating medicine and dentistry in the universities of Edinburgh and Glasgow prior to 1947. [45]

J.M. Fairley's paper, which supplements Southgate's history of the University of Dundee, suggests that the early years of the twentieth century, when the first dental degrees were established in England, was a period "of little major historical interest" in Dundee. [46] His table of qualifications of dentists in practice in Dundee between 1902 and 1910 shows that none were graduates. This highlights the limited impact of the first degrees.

Thus, for Scotland, as for the rest of Britain, previous studies provide valuable material for this thesis and suggest the importance of its subject without satisfactorily establishing the interplay

between professional education and the development of modern dentistry.

1.4. PRIMARY SOURCES

There are ample primary sources with which to advance the study of professional education beyond the understandings contained in the existing literature. Contemporary periodical literature is a key source on the controversies surrounding the evolution of institutional dental education and qualification, the importance attached to professional education in the struggle for professional advance, and the need for a higher qualification than the LDS. For instance, since Hansard does not report discussion of the change in the University ordinances to permit the introduction of the first dental degrees in Birmingham in 1900, the extensive debate reported in the pages of The British Dental Journal (BDJ) is an important source on the profession's attitude to dental degrees. Similarly, although J.A. Donaldson's article on dental education in Scotland prior to 1879 points to John Smith's role in establishing the first regular instruction in dental science and practice, Smith's later opposition to dental degrees voiced in letters and addresses published in the BDJ, illustrates the conditional nature of support from leading members of the established medical and surgical professions and

highlights the importance of primary sources. [47]

Other key primary sources include the reports of committees appointed by the government to investigate dental services and the lack of recruitment to the profession [48]. These reports identify factors which contributed to the delay in establishing high standards of professional training.

The Royal Commission on University Education in London, 1912 and the unpublished Bowdler Henry manuscripts held by the BDA are key sources on the late establishment of a University of London BDS and the socio-economic factors which delayed the progress of professional education for dentists. These factors were subsequently emphasised in the Acland Committee Report of 1919. This was the first of three government reports on dental services, dental practice, recruitment and funding published in the period 1919-1956 to stress the socio-economic factors which adversely affected demand for dental services, impacted on recruitment to the profession and thus affected demand for professional qualifications throughout the period studied. [49]

The Teviot Committee Reports of 1944 and 1946 drew attention to the consequences of failure to implement Acland's recommendations, identified the need for generous assistance from public funds for all aspects of the dental service, emphasised the links between teaching and research, stressed that the

appropriate training for dentistry should be a university degree and argued that the dental profession should be self-governing. These findings were reiterated by the McNair Committee in 1956. [50] Comparison with equivalent reports on the medical profession, contemporary editorials, correspondence and articles in the medical and dental press shows that there was substantial consensus in both professions concerning the measures necessary to effect change. When compared and contrasted with subsequent legislation and with the terms upon which dental services were established within the NHS these sources highlight areas in which dentistry was disadvantaged compared with medical education, the gap between recommendation and implementation, and provide a measure of the state's commitment to dental services and the dental profession. [51]

Reports and recommendations concerning the dental curriculum issued by the General Medical Council (GMC) and later the General Dental Council (GDC) have been compared with university curricula and with the "Educational Supplement" published annually in the BDJ to identify variation between GMC recommendations, college standards and the evolution of the university dental curriculum. The extent of demand for qualifications has been established by detailed analysis of The Dentists Register.

The Register's annual "Table Showing Numbers and

Original Qualifications of Persons Registered" is not reliable or complete in two respects crucial to this study. Firstly, owing to delay between establishment and registration, The Dentists Register does not provide accurate data on the date of establishment of diplomas or degrees in universities or the appearance of the first graduates. For instance, the University of Leeds LDS, Bachelor of Dental Surgery (BDS) and Master of Dental Surgery (MDS) are not listed in the table of registrable qualifications until 1910, although the Register shows that candidates graduated BDS and MDS in Leeds as early as 1906. Secondly, until the late 1950s many dentists qualified as Licentiates prior to taking the degree. Therefore the "Table Showing Numbers and Original Qualifications of Persons Registered" does not represent the total number of dental graduates.

University sources have been used to compile tables showing the dates of introduction of dental degrees and the numbers qualifying. And, to provide a complete picture of the pattern and total number of dental qualifications, detailed entry-by-entry analysis of The Dentists Register, in certain key years, confirms the gradual establishment of dental degrees in universities in the United Kingdom and Eire and the poor demand for dental qualifications, particularly university diplomas and degrees, in the period 1900-1956.

1.5. METHODS OF ANALYSIS

This study of the evolution of professional training for dentistry and the pattern of qualifications over the first half of the twentieth century has been informed by assessments based on these sources. This study will demonstrate and examine the apparent discrepancy between standards recommended by the elite of the profession from the mid-nineteenth century onwards and the pattern of qualification of the majority of dental practitioners. It will be shown that the establishment of university courses and qualifications did not generate demand for them and the factors which delayed the establishment of dentistry as a graduate profession will be examined. [52] The role of professional training and qualification in the establishment of an effective dental profession and dental health care service will be studied in relation to those political, social and economic factors which delayed, and also those which assisted the evolution of professional training and qualification. Several factors will be identified.

The role of the professional colleges, particularly the Royal College of Surgeons in England, the University of London, the BDA and the General Medical Council (GMC), which exerted a profound and lasting influence, assisting the development of dentistry as a medical specialty yet delaying its

emergence as a fully autonomous profession, will be examined. Secondly, socio-economic factors such as career prospects, the cost of training in relation to earnings, public perceptions of dentistry, the importance assigned to dentistry by the government and the aspirations of the dental profession represented by the BDA will be related to demand for university qualifications.

To examine whether generalisations drawn from this study may be applied to other professions, the role of the universities and the state, as arbiters of standards for the professions of engineering, surveying, architecture, law, general medical practice and nursing, will be surveyed with reference to published and unpublished studies of these professions. [53]

This thesis will examine the proposition that, despite the shift in emphasis from technique to science and theory which established the case for radical extension of the dental curriculum and despite improvements in and wider access to school and university education there was, until the end of the period studied, more continuity than change in the pattern of qualification. Educational criteria alone, it will emerge, may not have been sufficient to alter the pattern of demand for professional qualifications from diploma to degree.

It is argued that ultimately the role of the

state in financing health care and education was a crucial factor in the transition to a graduate profession. Yet the relatively low priority assigned to dentistry throughout the period studied and the current controversy regarding dentistry's place within the NHS, establishes the enduring relevance of this study to the dental profession. Similarly, ongoing change in undergraduate and postgraduate training and qualification for both medical and dental practitioners, although beyond the scope of this study, justifies its relevance to the present day.

[54]

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 - ii. a structured system of education and training in schools based on a curriculum and with standards of competence;
 - iii. standards of qualification and entry;
 - iv. association involving regular contacts;
 - v. group consciousness and cohesion amongst the professional grouping;
 - vi. self-control, integrity and a code of ethics;
 - vii. provision of an altruistic service and commitment to the community;
 - viii. an authority recognised by the state in statutory recognition, protection of title and registration;
 - ix. exclusive jurisdiction, self-policing and autonomy of control and regulation.

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CHAPTER 2: THE HISTORICAL CONTEXT: THE ORIGINS OF MODERN DENTISTRY

Prior to the mid-nineteenth century many dental practitioners had more in common with the trades of goldsmith, hairdresser, barber and blacksmith than with other medical professions. As previous studies have shown, one of the main objectives of the nineteenth century dental reform movement was to raise standards of dental practice to those of an educated profession equal to other medical professions. [1] To achieve professional status dentists needed to become recognised by the general public and by the state, either as an autonomous profession with its own governing body or by becoming more closely associated with the established Colleges. As the latter strategy was dominant to begin with, this chapter will focus on the significance of the dentists' association with the Royal College of Surgeons in terms of the status of dentistry and standards of professional education for it. The concluding section will show that advances in dental science and technology in the mid-nineteenth century underlined the need for education, training and qualification to ensure that dentists were competent and also to advance dental science.

2.1. THE MEDICAL HIERARCHY

Prior to the mid-nineteenth century dentistry had no place within the medical hierarchy. In England, eminent physicians graduated in medicine following a liberal university education based on the classics and mathematics. [2] This established them as professional men - according to the criteria of the time. Although positions of prestige required a degree, only the wealthy could afford a university education and, before 1870, non-Anglicans were ineligible. [3] The majority of practitioners took a college qualification following a period of clinical training acquired during pupillage or apprenticeship which was supplemented by attendance at lectures and demonstrations provided by the private anatomy schools. [4]

In England and Wales, although physicians were respected for their learning, their status was not necessarily based on their professional education. In evidence to the Select Committee on Medical Education (SCME) in 1834 Sir Henry Hallford, President of the Royal College of Physicians of London, (RCP) justified a preference for Oxford and Cambridge on the grounds that:

a knowledge of both languages, a knowledge of metaphysics, a knowledge of mathematics, are absolutely necessary as a preliminary education

to physic. [5]

The universities of Oxford and Cambridge did not provide clinical training in medicine or surgery. [6] From 1852 the reports of a series of Royal Commissions drew attention to the lack of medical education in Oxford and Cambridge:

Oxford has ceased altogether to be a school of Medicine. ... and no one has left Oxford ... much more fitted for one profession than for another... [7]

Similarly, although the Royal College of Physicians had the authority and status of a Royal Charter, clinical practice was not examined for the Licentiate. Indeed, in evidence to the SCME in 1834, Dr John Sims, MD, University of Edinburgh, LRCP, commented on the examination for a College licence in the following terms:

I think the examination ... might prove that he knew something of medicine, but it would fail to prove that he knew much. [8]

Thus, by the mid-nineteenth century the status of Oxbridge medical degrees and the Licence of the RCP was not directly related to the quality of their medical education. [9] However, the prestigious and profitable metropolitan monopoly of the qualification to practise medicine in England and Wales exerted a profound influence on patterns of training, examination and qualification for newly emerging

medical specialties. [10]

Dentists as such were initially excluded from the medical hierarchy owing to their early association with the barber-surgeons. Barbers were prohibited from practising surgery but had long been permitted to extract teeth. [11] Surgery itself was regarded as a manual skill and surgeons were initially linked with barbers in the Company of Barber-Surgeons. Their status was perceived as inferior to the physicians and closer to that of tradesmen. The early association of dentists with the barber-surgeons and with surgery itself, which was not recognised as a profession until 1800, was a damaging legacy in terms of status and reputation.

In 1745 Parliament dissolved the union between surgeons and barbers and by the early nineteenth century the surgeons had advanced in terms of standards and status. Sir Caesar Hawkins, was knighted in 1778 and in 1800 the surgeons obtained the Royal charter enabling them to form the Royal College of Surgeons of London. [12] However, the reputation of surgeons was tarnished by their association with body-snatching and the poor prognosis before anaesthesia and aseptic methods were introduced. However, even before The Anatomy Act, 1832, private anatomical and surgical schools were established, eminent surgeons, such as John Hunter, achieved positions of equality with leading physicians and the

practice of surgery advanced scientifically. But there was no place for dentists as such within this hierarchy.

The science and technique of dental surgery was developed during the eighteenth century. In 1746, Fauchard, "the initiator of independent dentistry", published the second edition of his treatise Le Chirurgien Dentiste, and the appointments of William Green as "operator for the teeth" to George II, succeeded by Thomas Berdmore, as "operator for the teeth" to George III, indicates increasing recognition for the specialty. [13] The surgeons' rise in status and John Hunter's contribution to dental science were to have a significant impact on the practice of dental surgery and on the need for education for it. [14] Hunter's contribution to dental science may have been accidental rather than deliberate, since his main interest was in the digestive system. Nevertheless, his The Natural History of the Human Teeth published in 1771 and lavishly illustrated with:

superb descriptions of the development of teeth and jaws, their articulation, gross anatomy, histology and physiology

has been described variously as "a modern anatomy of the teeth and jaws" and as "the record of an anatomical and natural philosophical investigation into the structure and function of the jaws". [15] The second edition of Hunter's Treatise on Diseases of

the Teeth published in 1778 described the early carious lesion, periodontal disease in relation to pregnancy and tooth deposits, trigeminal neuralgia and orthodontic problems and treatment. [16] This marked the beginnings of odontological research. [17] Hunter may not have been primarily concerned with the treatment of the teeth, other than his surgical interest in experiments in transplantation. Nevertheless, his work marks the beginnings of research in dental anatomy and physiology in the United Kingdom. Furthermore, his research emphasised the role of the teeth as an essential mechanism of the essential physiological function of digestion thereby raising the importance of dental health to health and well-being - a role which would be emphasised when large numbers of recruits were found to be incapable of masticating army rations during the Boer and First World Wars.

Research and education went hand-in-hand. At Hunter's invitation William Rae delivered "the first recorded series of lectures on the teeth in Britain" at Hunter's home in Leicester Square in 1785. [18] This practice was continued from 1799 by Rae's pupil Joseph Fox in his capacity as dental surgeon to Guy's Hospital, London. [19] Thus, advances in dental science and recognition of the need for dental specialists were accompanied by the recognition of the need for professional education.

Initially, other than an apprenticeship indenture, dental training formed part of a surgical training and was primarily anatomical. [20] Although dentistry was becoming recognised as a distinct specialty, it did so under the auspices of surgery. The only dentists with any claims to qualification were the small number of surgically qualified "surgeon-dentists" who, rather than establishing a distinct professional identity, saw themselves as surgeons first and dentists second. [21] In the mid-nineteenth century the majority of dentists had no formal training or qualifications.

2.2. MEDICAL SPECIALISATION AND CHANGE IN MEDICAL EDUCATION

The evolution of the dental profession was part of a wider process of specialisation and professionalisation made possible by advances in learning and facilitated by new trends in organisation and qualification during the nineteenth century. From the early years of that century, learned societies increased in number and between 1841 and 1881 professional occupations trebled. [22] Engineers, accountants, surveyors, teachers, pharmacists, doctors - and dentists - formed associations and claimed recognition. [23] Examinations and qualifications, which helped to ensure that advances in knowledge and

expertise were applied in practice, became accepted as the measure of professional status and competence in the medical professions. [24] Until university education became more widely available the professional bodies examined candidates and issued licences but did not generally undertake responsibility for teaching. [25] Subsequent to the lapse in ecclesiastical licensing, prior to 1815, the Royal Colleges of Physicians and Surgeons had virtually complete control over licensing surgical and medical practice in England and Wales. [26] However, increased demand for treatment, especially from the growing urban population who could not afford professional fees, was met by a growing number of partly skilled, semi-trained practitioners. [27] And, from this period, new occupational groupings sought professional recognition and state intervention to regulate and protect practitioners from unfair competition and to protect the public from unscrupulous practitioners by legislative intervention.

Dentistry was not the first medical specialty to seek recognition. The petition accompanying the Bill which ultimately became law as The Apothecaries Act, 1815 called for "regular medical education", and suggested that "the health of the community was endangered" by the existence of the unqualified practitioners. [28] Qualified practitioners needed

to be clearly distinguished from the unqualified. Professional qualifications and high standards in practice established such a distinction. Both depended on professional education.

The Apothecaries Act, 1815, has been described as a prototype for professional specialisation in medicine. [29] However, in terms of equality with the established medical professions, the Act was a flawed model which would shortly become obsolete.

Competent general medical practice was based on knowledge of both medicine and surgery. In the early nineteenth century 90% of the membership of the Associated General Medical and Surgical Practitioners held the Membership of the Royal College of Surgeons (MRCS). Yet the terms of the Apothecaries Act left general medical practitioners allied with neither physicians nor surgeons, assigned a system of training and qualification which was more appropriate for apothecaries than general medical practitioners and the term "general practitioner" had no status. [30] Although the Act established the combination of curriculum and examination for a college licence as the means of achieving legislative recognition, the apothecary's training was based on a five year apprenticeship. This was the established method of acquiring membership of a trade or craft guild rather than a learned profession. Therefore the requirement that henceforth those in general medical practice in

England and Wales must hold the licence of the Apothecaries' Company caused resentment amongst qualified medical practitioners. [31]

Furthermore, concessions to those in practice permitted many, with no training or qualification, to claim equal status with the qualified thus compromising standards of practice and damaging the status of the profession in the short term. [32] Lastly, prohibition of unqualified practice proved ineffective. It was difficult to enforce the Act owing to the shortage of qualified apothecaries. There was therefore little incentive to undertake the lengthy and costly process of training. Legislative protection for the qualified practitioner was ineffective without recognition of, and demand for, the services of qualified practitioners. [33]

The Apothecaries Act, 1815 reflected the desire and the ability of the established medical corporations to block the emergence of new specialties in order to retain status, privilege and power for themselves and for their members and fellows. In short, The Apothecaries Act, 1815 was "a shameful compromise forced on the general practitioners by the medical colleges in a naked struggle for power and status". [34] The deficiencies of the legislative outcome of a campaign to improve standards of education and practice among an emerging group of medical practitioners, and the subsequent failure of

the Association of General Medical and Surgical Practitioners to improve professional education and to establish professional autonomy by establishing a College of General Practitioners, in many ways foreshadowed the later campaign for dental recognition.

The Apothecaries Act established the criteria to be met by emerging medical professions in order to achieve legislative sanction and protection. This model would be followed later by the dentists in their campaign for recognition as a medical specialty. However, new methods and standards of professional education were evolving which would in the long term challenge the suitability of apprenticeship and erode the monopoly of the Colleges.

Training for the medical professions was affected by social change and by advances in medical science. The great increase in demand for medical care resulting from industrial expansion and the increasing urban population led to the establishment of charitable hospitals: one hundred and fifty-six new hospitals were founded between 1700 and 1825. [35] These institutions offered wider clinical experience and supervised clinical observation and practice which brought a new dimension to medical education. By the end of the eighteenth century many medical students supplemented apprenticeship by attendance, observation and instruction in the wards of medical hospitals.

[36] As hospital medical schools, and later universities, became more involved in medical education the limitations of apprenticeship, owing to the narrow range of experience and subjectivity of instruction, became more apparent. Furthermore, the medical corporations played no part in training candidates for their examinations. Licensing regulations were inadequate but reform would have "required years of battling through diplomacy and political in-fighting, against numerous conflicting vested interests" [37]. Instead, William Blizard and John Maddocks sought to remedy the inadequacies of existing medical training by establishing a complete medical school combining clinical training and lectures. [38] In 1783 they appealed for money to build a medical school (which subsequently became The London Hospital Medical College) in the following terms:

A skill in the practise of Physic or Surgery cannot be acquired without an attendance at an hospital. But that degree of skill which can be acquired from an attendance on hospital practice, without a proper knowledge of principles, as it is the result of mere imitation, must be comparatively very small. It is necessary therefore that the principles be studied. [39]

Thus, although the apothecaries had achieved professional recognition by establishing curriculum,

examination and licence, training by apprenticeship had already been perceived by some as outmoded and inadequate. In medicine and surgery clinical experience and theoretical principles taught in an institutional setting were in the ascendancy.

Changes in the content and method of teaching the medical curriculum were accompanied by the establishment of the examination system, the reform of the ancient universities of Oxford and Cambridge, the establishment of provincial colleges preparing candidates for university examinations and the establishment of universities in London and the provinces. These developments enabled universities to extend their role by providing education for "a professional class of learned and scientific men". [40] After the incorporation of the University of London in 1836, it too awarded degrees in medicine to students of constituent colleges. By the 1870s full-time studentship and training in the basic sciences, followed by instruction in medicine and practical hospital experience, was gradually replacing apprenticeship in medicine and surgery. And, by 1879, the profession recognised the need for a teaching university in London with full-time teachers and State-endowed professorships. [41]

However, in 1858 The Educational Times suggested that progress was too ambitious for the standard of general school education and, prior to the

establishment of the provincial universities in the early twentieth century, opportunities for university education and training were very restricted. [42] Nevertheless, the establishment of medical schools outside London was, in the long term, an important factor in the eventual assumption by the new universities of education for medicine and dentistry. Founded in response to demand for medical, scientific and theoretical training, the new universities widened social access to university training for the professions. The University of Birmingham, founded to break the London monopoly of medical education in England, would provide the institutional facilities necessary for the introduction of the first dental degree. Thus, at a time when new specialties were emerging and seeking to establish their professional credentials, professional training and examination for the medical professions were in a state of flux. Although the prestigious colleges resisted change in order to maintain the status of their qualifications, they were attempting to "petrify an obsolete pyramidal structure". [43]

College standards and qualifications were beginning to be challenged by hospital medical schools and by university degrees. This meant that emerging medical specialties, which sought to cling to the coat tails of the established medical professions by following the model of training and qualification

established by the Royal Colleges, were seeking a place in an obsolete structure and by so doing were delaying its demise.

2.3. DENTISTRY IN THE MID-NINETEENTH CENTURY

By the mid-nineteenth century there were roughly three groups calling themselves dentists: a small group with medical and/or surgical qualifications, those who had entered practice following pupillage or apprenticeship, and the unqualified majority. [44] Dentistry was often combined with trades such as peruke maker, publican, jeweller or hairdresser and practices which were subsequently perceived as strictly non-professional, such as itinerancy and advertising, were common among even the most reputable dental practitioners. [45] Some dentists established themselves in practice with little or no formal training, others had followed a formal apprenticeship or had been employed as assistants, learning by observation and practical experience. Although some surgeons had attended lectures in dental surgery the majority of dental surgeons or surgeon dentists gained their dental experience in pupillage or in surgical practice, were not specifically qualified in dentistry and were not obliged to undertake any formal dental training. [46]

As the consumption of sugar rose the

corresponding rampant increase in dental disease affected all classes, demand for dental treatment increased and for some dental practice became lucrative. [47] As Irvine Loudon and Christine Hillam have shown, some dentists were more prosperous overall than their medical counterparts. [48] Expectation of high earnings was especially attractive at a time when requirements for medical practice were becoming more demanding, failure rates in college examinations were rising, and there was no compulsory training or examination in order to practice dentistry. [49] John Tomes, one of the most respected dentists of the Victorian era, embarked on dental practice with the prospect of a good income very much in his mind:

I have made up my mind to become a dentist ... Kiernan when I told him my resolution, said my fortune was made ... Bell tells me that it will be my lot to make not less than £200 the first year, and to go on doubling it. [50]

By 1844-45 Forceps claimed that:

anyone, however ignorant enters the profession, taught perhaps by one of those gentlemen who form a perfect practitioner in six lessons, or perchance not taught at all; a brass plate and brazen impudence being all the diplomas necessary. [51]

Such practices jeopardised the claim of dentists as a

group to professional status:

They had the soul of a shopkeeper, the spirit and method of the tradesman; and although there ... is nothing of which anyone need be ashamed in following the walk of commercial life, yet professional life is, and always will be, very distinct from it. [52]

From the mid-nineteenth century The Lancet also published complaints from members of the Royal College of Surgeons practising as dentists that their earnings were being eroded by "imposters who call themselves surgeon-dentists". [53]

Such outrage directed by those claiming the legitimate practice of dentistry against "irregular" practitioners or quacks must be seen in the context of the mid-nineteenth century deluge of anti-quack propaganda motivated as much by the desire of some practitioners to control the market as by genuine concern for the wellbeing of patients. [54] Prior to the establishment of formal dental education in scientific method and theory as well as technical skill, based on a curriculum taught and examined by professional teachers in an institution where standards were measured and monitored by an appropriate authority, the distinction between quack and legitimate dental practitioners was tenuous. [55] The abuse directed at those perceived to be "irregular" practitioners suggests that there was a

body of trained surgeon-dentists, but at this time even qualified surgeons had little or no specifically dental formal training or qualification. Indeed, the 1851 Census pointed out that "the best oculists, aurists and dentists have the licences of surgeons and are so returned". [56] John Tomes defended those who had followed an apprenticeship when it was the only dental training available:

it cannot be denied that they more than held their own against those whose surgical education was complete before they thought of dental practice. [57]

As Christine Hillam points out, not all so-called "quacks" were ignorant and incompetent. [58] Hillam's research has shown that experienced dentists who had been in practice for more than a few years might have provided a better and more specialised service than their medical or surgical counterparts. [59] Indeed, the careers of James Robinson and John Tomes demonstrate that it was possible to attain professional respectability and even eminence without a dental licence or degree. But with no professional association, curriculum or qualification, the "quality, quantity and even necessity" of professional training for dentists was not regulated and there was no guarantee of standards. [60] Apprenticeship often amounted to little more than benchwork on dental mechanics, observation of clinical operations and

practical experience of extractions on the poor who sought free dental treatment. [61] Without formal instruction, a prescribed curriculum or external supervision to monitor standards, the quality of teaching depended on the characters of individual masters and apprenticeship was open to abuse as a lucrative side-line and a source of cheap menial labour, rather than a professional responsibility. [62]

Thus, by the mid-nineteenth century, dentists lacked the status and reputation of doctors and surgeons which was derived from their self-perceived life-saving role, the achievements and reputation of notable members, the prestige of their professional colleges and their professional qualifications. In a period when "medical knowledge became more scientific [and] medical education more systematic", dentistry was still regarded primarily as a trade for which no formal training was required and, with no means of identifying competent practitioners, the general public was at risk. [63]

2.4. ADVANCES IN DENTAL SCIENCE AND TECHNIQUE

By the mid-nineteenth century dental practice was becoming more complex. From 1830 onwards, dental equipment - forceps, the dental key and dental chairs - were greatly improved. The introduction of

anaesthesia in the 1840s marked a great leap forwards in dental surgery. However use of ether and chloroform was accompanied by an increasing number of fatalities. [64] Safe administration would require new skills and medical knowledge.

Even though swaged metal denture bases and porcelain teeth were now available they were still a luxury within the reach of the more affluent. [65] However, from the 1850s, the low cost and ease of production of vulcanised rubber (vulcanite), meant that the working classes could afford dentures. [66] The increase in dental caries, the availability of painless dental extraction and cheap and lasting dentures of good appearance meant that it became increasingly common to wear dentures.

Unscrupulous practitioners could profit by extracting teeth and replacing them with dentures - an ethical issue which would haunt the reputation of dental practice for many years. [67] Extractions and prostheses constituted a substantial proportion of the earnings of even reputable dentists well into the twentieth century. Thus, some technical advances were open to abuse which cast a long shadow. To extend the range of preventive and restorative dental care, practitioners would need education in biological and medical sciences and clinical training to equip them to practise a wider range of dental treatment.

The adoption of specialised techniques

accentuated dental practitioners as a distinct occupational group. At the same time, systematic observation of oral disease enabled some dentists to raise perceptions of dentistry from an occupation to a learned profession. The foundations of oral bacteriology were laid late in the nineteenth century by the discovery that acids, formed by the action of bacteria in the mouth on dietary carbohydrate, were responsible for dental caries. [68] This was a valuable discovery at a time when the incidence of dental caries (described in 1892 as a problem "more widespread and serious than in any former generation") was increasing rapidly. [69] However, many of "the difficulties which confronted the cultured and conscientious dental practitioner in the first half of the nineteenth century" arose from the lack of formal institutional dental education. [70] For instance, although the publications of the eminent Glasgow dentist Francis Hay Thomson, 1814-1870, cite experimental evidence to support his theory that acidity was a cause of dental decay, his lack of understanding of the dental tissues and of tooth development emphasised the need for specialised education for dentists. [71] The careers of Thomson and his contemporary William Robertson of Birmingham, another pioneer of oral science, would remain exceptions and their achievements incomplete until appropriate professional education was more generally

available and required of those practising dentistry.

[72]

Scientific and technical advances widened the potential scope of dental practice. The skill and expertise required to understand the processes of dental disease and to carry out anaesthetic and aseptic procedures, meant that training in science and medical theory as well as clinical dentistry were necessary to ensure professional competence, the safety of the patient and to continue to develop dentistry therapeutically. The therapeutic potential of dental care would only be recognised when the majority of dentists were educated and trained in theory and practice.

2.5. ENDNOTES

1. CAMPBELL, J. Menzies. Dentistry Then and Now. Privately printed, 1981; CARR-SAUNDERS, A.M. and WILSON, P.A. The Professions. Oxford: Clarendon Press, 1933; COHEN, R.A. and SPENCER, E.M. (eds.). The British Dental Association: the advance of the dental profession: a centenary history, 1880-1980. London: BDA, 1979; GADDES, Thomas. "A Plea for the Specialty of Dentistry and for University Recognition": a presidential address delivered at the annual meeting of the Midland counties branch, held at Harrogate, June 28, 1901. JBDA, v.22, 1901, pp. 323-329; HILL, Alfred. History of the Reform Movement in the Dental Profession in Great Britain During the Last Twenty Years. London: Trubner Co., 1877; HILLAM, Christine. "The Development of Dental Practice in the Provinces From the Late Eighteenth Century to 1855". Ph.D. Thesis. University of Liverpool, 1986; MILLERSON, Geoffrey. The Qualifying Associations: a study in professionalization. London: Routledge and K. Paul, 1964; READER, W.J. Professional Men: the rise of the professional classes in nineteenth century England. London: Weidenfeld and Nicholson, 1966; RICHARDS, N.D. "A Study of the Development of Dental Health Services in the UK - the profession and treatment services 1840-1921". Ph.D. Thesis. University of London. 1979.
2. READER, W.J., 1966.
3. PETERSON, M. Jeanne. The Medical Professions in Mid-Victorian London. Berkeley: University of California Press, 1978.
4. Although, owing to the superiority of their clinical training, medical graduates of Scottish universities played a leading role in the London medical schools until the mid-nineteenth century, Scottish graduates were excluded from membership of the Royal College of Physicians of London on the grounds that some Scottish universities, for instance St. Andrews, granted degrees to students who had studied abroad. Another factor in Scottish medical education was the extra-mural schools which widened social access to medical, and later, dental education but may also have delayed the integration of medicine and dentistry in the universities of Edinburgh and Glasgow. [HAMILTON, David. "The Scottish Medical Schools" in G. McLachlan (ed.) Improving the Common Weal: aspects of Scottish health services 1900-1984. Edinburgh U.P., 1987, pp. 495-504.]

5. HALFORD, Sir Henry. Report from the Select Committee on Medical Education with the Minutes of Evidence and Appendix. Part 1. Royal College of Physicians, London. Ordered by the House of Commons to be printed, 13 August 1834, p. 25.
6. Teaching in medicine did not take place in the English universities. The Oxford or Cambridge MD took the form of an oral examination, often in Latin, and paid only superficial attention to anatomical or clinical medicine and yet the Oxford or Cambridge MD conferred the right to practise medicine throughout England and Wales and opened the door to the Fellowship of the Royal College of Physicians of London for which the examination was oral and conducted in Latin. [CARR-SAUNDERS, A.M. and WILSON, P.A., 1933, p. 79.]
7. Report of the Oxford University Commission, 1852, p. 71. Cited by READER, W.J., 1966, p. 129 and by CARR-SAUNDERS, A.M. and WILSON, P.A., 1933, p. 79.
8. SIMS, John. Evidence to The Select Committee on Medical Education. Part 1. Royal College of Physicians, London. Ordered by the House of Commons to be printed, 13th August 1834, p. 128.
9. Access to the College's licence was restricted, there was little attempt to increase the number of qualified practitioners and the profession was controlled by a privileged elite content to maintain the status quo. [READER, W.J., 1966 and CARR-SAUNDERS, A.M. and WILSON, P.A., 1933.]
10. It is also interesting to note that whereas Edinburgh traditionally favoured university education for medicine, Glasgow was against it. In Glasgow the lack of hospitals was an obstacle which was compounded by the opposition of the Faculty of Physicians and Surgeons of Glasgow. [HAMILTON, David. The Healers: a history of medicine in Scotland. Edinburgh: Canongate, 1981.]
11. HAMILTON, David, 1981, p. 27 and pp. 62-63.
12. CARR-SAUNDERS, A.M. and WILSON, P.A., 1933, p. 75.
13. CARR-SAUNDERS, A.M. and WILSON, P.A., 1933, p. 107; FAUCHARD, Pierre. Le Chirurgien Dentiste ou Traite des Dents. 2ieme edition. Paris, Pierre-Jean Mariette et l'Auteur, 1746; HOFFMAN-AXTHELM, Walter. History of Dentistry. Chicago:

Quintessence, 1981. There had been royal operators for the teeth since 1641.

14. John Hunter the Scottish anatomist was one of the leading surgeons of his times and was to dental surgery what his brother William was to midwifery in terms of developing the science of the specialty through anatomical investigation. MASON, D.K. "John Hunter: his origins and his influence". Dental Historian, no. 26, 1994, pp. 5-10.
15. HUNTER, John. Natural History of the Human Teeth. London: J. Johnstone, 1771; MASON, D.K. "John Hunter: his origins and his influence." Dental Historian, no.26, 1994, pp. 5-10. KING, R. "John Hunter and The Natural History of the Human Teeth: dentistry, digestion, and the living principle." Journal of the History of Medicine and Allied Sciences, v.49, 1994, pp. 504-520.
16. HUNTER, John. Practical Treatise on the Diseases of the Teeth. 1st ed. London: J. Johnstone, 1771. 2nd ed. London: J. Johnstone, 1778. MASON, D.K., 1994, p. 9.
17. HOFFMAN-AXTHELM, W., 1981, p. 219.
18. KING, R., 1994, pp. 517-518. In Edinburgh in 1764 James Rae had advertised a series of lectures which, although intended primarily for medical students, had a specific dental content. ["The Centenary Brochure: Edinburgh Dental School and Royal College of Surgeons of Edinburgh 1879-1979". RCS Edin., 1979. Pamphlet.]
19. LINDSAY, L., 1933, p. 62; COHEN, R.A. "Joseph Fox of Guy's (1775-1816) Dentist and Philanthropist". 1st Lilian Lindsay Memorial Lecture delivered at the British Dental Association Conference, Birmingham, 3rd June, 1995. Published by The Lindsay Society for the History of Dentistry, 1995. Fox was succeeded in 1817 by Thomas Bell. [RICHARDS, N. D., 1979. p. 36.]
20. CARR-SAUNDERS, A.M. and WILSON, P.A., 1933, p. 108.
21. As shown by Christine Hillam's research based on the descriptions of dentists in eighteenth and nineteenth century trade directories. For instance, John Blair was described in a Leicester trade directory in 1775 as a barber, in 1782 he was described as a peruke maker, in 1791 as a dentist, in 1794 as a toyman and from 1807 until his death in 1817 as a dentist. ["Index to

- marriage bonds in the Archdeaconry of Leicester". Leicestershire Record Office. Cited by HILLAM, C., 1986.]
22. For instance, the Society of Antiquaries, the Geological Society and the Royal Astronomical Society.
 23. PERKIN, H. The Origins of Modern English Society, 1780-1880. London: Routledge and Kegan Paul, 1969 and READER, W.J., 1966. Appendix 1, p. 211.
 24. READER, W.J., 1966.
 25. LOUDON, Irvine. Medical Care and the General Practitioner 1750-1850. Oxford: Clarendon Press, 1986.
 26. CARR-SAUNDERS, A.M. and WILSON, P.A., 1933 and PETERSON, M. Jeanne, 1978.
 27. Since medieval times there had been legislative attempts to protect both the medical profession and the public from disreputable practitioners. The Ordinance of 1421 and the Act of 1511 restricted the legitimate practice of medicine and surgery to licensed practitioners and in 1518 the Royal College of Physicians of London received its charter. Henceforth only those who had graduated from Oxford or Cambridge or those who had been examined by the College could practise as physicians. [CARR-SAUNDERS, A.M. and WILSON, P.A., 1933, p. 69.]
 28. "Parliamentary Debates", v. xxvii, Friday, Nov. 19, 1814. Cited by CARR-SAUNDERS, A.M. and WILSON, P.A., 1933, p. 78.
 29. Unpublished paper presented by S.W.F. Holloway at the Wellcome Institute for the History of Medicine, University College, London, January 1992. For a full account of the apothecaries' achievement see HOLLOWAY, S.W.F. "The Apothecaries Act, 1815: a reinterpretation". Medical History, v.10, 1966, pp. 107-129 and pp. 221-236. See Irvine Loudon for an account of the general medical practitioners' campaign for recognition and the consequences for them of The Apothecaries Act, 1815. [LOUDON, I., 1986.]
 30. HOLLOWAY, S.W.F., 1966, pp. 223-224 and LOUDON, I., 1986, pp. 171-175.
 31. HOLLOWAY, S.W.F., 1966, pp. 223-224.

32. Chemists, druggists and apothecaries in practice in 1815.
33. CARR-SAUNDERS, A.M. and WILSON, P.A., 1933, p. 88.
34. LOUDON, I., 1986, p. 172.
35. BRADLAW, Sir Robert. "Milestones". BDJ, v.123, 1967, pp. 340-345.
36. In Scotland the medical schools in Edinburgh, Glasgow and Aberdeen offered a loosely structured course of lectures which increasingly led to a doctorate, whereas in England a medical student was more likely to gain his professional training by apprenticeship supplemented by clinical examinations. [HAMILTON, David, 1981.]
37. ELLIS, Sir John. LHMC, 1785-1985: the history of the London Hospital Medical College. London: London Hospital Medical Club, 1986, p. 13.
38. William Blizard, born in 1743, was apprenticed to a surgeon and apothecary. He became assistant to a surgeon and attended lectures on chemistry at Guy's Hospital, surgery at St. Bartholomew's and anatomy (given by Hunter) at St. George's. In 1772 he passed the examination of the Corporation of Surgeons. He also founded the Samaritan Society, RCS, Eng., Anatomical Society, Horticultural Society and the Hunterian Society. [ELLIS, Sir John, 1986, p. 5ff.]
39. ELLIS, Sir John, 1986, pp. 7-8.
40. PATTISON, Mark. Suggestions on Academical Organisation with Especial Reference to Oxford. 1868. p. 169. Cited by ROACH, J.P.C. Public Examinations in England, 1850-1900. Cambridge: Cambridge U.P., 1971, p. 266.
41. See ELLIS, Sir John, 1986, Chapter 4.
42. Educational Times, v.xi, 1858, p. 251. Cited by ROACH, John, 1971. p. 159. The civil service examinations introduced at this time exposed deficiencies in national education, particularly in secondary school education. [ROACH, John, 1971, p. 28.]
43. HOLLOWAY, S.W.F., 1966, p. 115.
44. The period prior to 1858 has been examined by Christine Hillam in her thesis "The development of dental practice in the provinces from the late

- 18th century to 1855" cited above. See also her "Professional Education for Dentistry Before 1859". BDJ, v.163, 1987, pp. 204-207.
45. HILLAM, C. "The Biography of English Provincial Dentists: some primary sources". BDJ, v.145, 1978, pp. 213-217 and pp. 311-314; FAIRLEY, J.M. "A City Set on a Hill: the story of dentistry in Dundee up to 1940." Paper presented to the Lindsay Club, February 1987, subsequently published in Dental Historian, No.14, 1988, pp.3-16. A summary was published as "A City Set On A Hill: dentistry in Dundee". BDJ, v.163, 1987, p. 94.
46. Qualified surgeons delivered lectures in dental surgery in medical hospitals and dispensaries as part of a surgical training. For instance the lectures in dental surgery given by Dr John Smith in Glasgow at Glasgow Royal Public Dispensary in 1857. ["Medical Schools of Scotland and Ireland". The Lancet, v.ii, 1857, p. 316.]
47. Sugar consumption rose from 20lb in 1830 to 60lb per head per annum in 1880. [HARDWICK, J.L. "The Incidence and Distribution of Caries Throughout the Ages in Relation to the Englishman's Diet". BDJ, v.108, 1960 pp. 9-17. See also CORBETT, M.E. and MOORE, W.J. "Distribution of Dental Caries in Ancient British Populations. IV. The 19th century". Caries Research, v.10, 1976, pp. 401-414.] Census figures between 1841-1911 show a striking rise in the number of dentists between 1860 and 1911. The number of dentists recorded increased from 1,584 in 1861 to 3,583 in 1881 and 5,309 in 1901 and these figures excluded dental mechanics and prosthodontists. [GOURVISH, T.R. and O'DAY, Alan (eds.). Later Victorian Britain, 1867-1900. London: Macmillan Educational, 1988, p. 20.]
48. At a time when general medical practitioners could expect an annual income of under £200 in the provinces and £300-£400 in London, successful London dentists were reputed to be earning as much as £1,000-£5,000. [LOUDON, I. "Doctor's Cashbook: the economy of general practice in the 1830s". Medical History, v.27, 1983, p. 259; HILLAM, C. "The Financial Attractions of Being a Dentist in the Early Nineteenth Century". The Society for the Social History of Medicine Bulletin, v.41, 1987. pp 70-71; The Lancet, v.i, 1846, pp. 105-106. Edit.] Samuel Cartwright for instance was reported to have earned £10,000 a year. [LINDSAY, L. "Personalities of the Past". BDJ, v.98, 1955, p. 259.]

49. W.J. Reader shows that by 1875 the failure rate among London candidates at the Royal College of Surgeons Membership examinations was considerably higher than failure rates early in the century. However, candidates for the Apothecaries Society examination were more successful which illustrates the appeal of easier access to newer medical specialties. [READER, W.J., 1966.]
50. TOMES, John. Letter to Harris, January 1840. Cited by COPE, Sir Vincent Zachary. Sir John Tomes, a pioneer of British dentistry. London: Dawsons, 1961. pp. 10-11.
51. ROBINSON, James. Forceps, v.1, 1844-45, p. 62. Cited by Hillam, C., 1986.
52. HILL, A., 1877, p. 6.
53. "Quack Dentists". The Lancet, v.ii, 1839, pp. 383-384. Corresp.
54. HILLAM, C. "Quackery is in the Eye of the Beholder". Dental Historian, no.29, 1995, pp. 3-17.
55. For a discussion of the ongoing anti-quack debate in relation to alternative or complementary medicine in the 1990s see KOTTOW, M.H. "Classical Medicine v. Alternative Medical Practices" and PIETRONI, P.C. "Alternative Medicine: methinks the doctor doth protest too much and incidentally befuddles the debate". Journal of Medical Ethics, v.18, 1992, pp. 18-22 and pp. 23-25.
56. RICHARDS, N.D., 1979. Chapter 3, p. 90.
57. COPE, Sir Vincent Zachary, 1961. p. 15.
58. HILLAM, C., 1995, pp. 3-17.
59. For a detailed account of standards in practice in the mid-nineteenth century see Christine Hillam's thesis.
60. HILLAM, C., 1987, pp. 204-207.
61. The training of Thomas Sheffield of Exeter, 1804-1884 gives a picture of the training obtained in this way. [HILLAM, C., 1987, pp. 204-207].
62. MILLERSON, G., 1964. Chapter 8.
63. HOLLOWAY, S.W.F. "Medical Education in England, 1830-1858: a sociological analysis". History, v.49, 1964, pp. 299-324.

64. One of the most important innovators being John Tomes, working with the French instrument maker Jean-Marie Evrard. In 1844 the American dentist, Horace Wells, 1815-1848, became aware of the anaesthetic properties of nitrous oxide but his findings were not accepted by the medical establishment. William Morton, a fellow American, left dentistry and took medical training in order to convince a sceptical medical establishment of the benefits of the new discovery. [MALAMED, Stanley. Sedation: a guide to patient management. St Louis: C.V.Mosby, 1985. Chapter 11: "Historical Perspective". pp. 151-165.]
65. In the mid-eighteenth century Etienne Bourdet introduced gold as a denture base. In 1791 "mineral paste", now known as porcelain, was patented by Nicolas Dubois de Chemant. Greatly improved in quality by his successors, it became essential to prosthetic dentistry. [HOFFMAN-AXTHELM, W., 1981, pp. 210-213, 252ff.]
66. DONALDSON, J.A. Written communication. 1988. For details of his status within the profession see Appendix 10.3. Biographies.
67. Such was the emphasis on prosthetic work that of 255 bodies buried in Ashton-under-Lyme prior to 1850 only four had fillings and three of these were members of the same wealthy family. According to Corbett "there was little evidence of conservative work having been carried out and the few fillings seen were of poor quality". [CORBETT, M.E. & MOORE, W.J., 1976, pp. 401-414.]
68. HOFFMAN-AXTHELM, W., 1981, p. 405; MILLER, W.D. The Micro-organisms of the Human Mouth: the local and general diseases which are caused by them. Philadelphia: S.S. White D.M. Co., 1890.
69. CRICHTON-BROWNE, Sir James. "An address on tooth culture". The Lancet, v.ii, 1892, pp. 6-10.
70. NOBLE, Henry W. "Francis Hay Thomson: a man of art and science". Unpublished paper delivered to the Lindsay Club, Glasgow, 4th July 1987, subsequently published in Dental Historian, No.17, 1989, pp 3-17.
71. See Appendix 10.3: Biographies for details of Thomson's career and achievements.
72. COHEN, R.A., MARSLAND, E.A. and HILLAM, C. "William Robertson of Birmingham, 1794-1870". BDJ, v.142, 1977, pp. 64-69 and pp. 99-102.

CHAPTER 3: 1841-1858: DENTAL REFORM AND THE MEDICAL ACT, 1858

Although this chapter covers the period before the establishment of the first dental qualification and relies to a considerable extent on existing secondary literature, it provides essential background to the development of dental education in the subsequent period and focuses attention on professional education and qualification, the main theme of the thesis. This chapter will focus on education and qualification which were central themes of the dental reform movement of the nineteenth century to regulate standards within the profession. Examination of contemporary sources will show that a small professional elite, active and vocal in the campaign for dental reform, recognised that dental education and qualification were necessary to ensure that standards in practice reflected advances in dental science. The significance for dentistry of The Medical Act, 1858, which established the first British professional qualification for dentists, the Licence in Dental Surgery (LDS) of the Royal College of Surgeons of England (RCS Eng.), will be assessed. The chapter will conclude by examining the limitations of this achievement and the failure of the College of Dentists to establish independent training and qualification.

3.1. THE CAMPAIGN FOR DENTAL EDUCATION AND QUALIFICATION

By the mid-nineteenth century the huge increase in dental disease and the growing demand for dental treatment had created lucrative opportunities in dental practice. At the same time some far-sighted and public-spirited dentists established charitable dental dispensaries and reputable practitioners such as John Tomes, William Robertson, Robert Nasmyth and J.L. Levison provided free dental treatment for the necessitous poor. [1] But the low standards and disreputable practices of the majority of dentists were used to fuel the campaign for the recognition of respectable dental practitioners and for structure and standards for the profession.

Progress in the science and technique of dental practice meant that education, training and examination became necessary to establish competence amongst those practising dentistry. The lack of regulation and standards encouraged some dentists to seek professional recognition for the specialty. Although dental business reported in The Lancet and The British Medical Journal was subject to the editorial priorities of the established medical professions, by the mid-nineteenth century both periodicals published correspondence from surgeons and dentists drawing attention to the lack of regulation

and the absence of formal training or qualification. These issues were taken up in editorials. Meanwhile, the establishment of professional education for dentists in the United States did not go unnoticed in the United Kingdom.

The opening shots of the dental reform movement were fired in 1841 by George Waite, J.L. Levison and W.H. Lintott. The latter addressed the need to provide "some protection for society against the inroads of empiricism" and drew attention to:

the strenuous efforts made on the other side of the Atlantic, to rescue a most useful, though perhaps humble branch of surgery, from the depth of degradation to which it has been reduced, by the disgraceful quackery of a great proportion of those who profess to follow the avocations of the dental surgeon. [2]

Lintott, a pioneer histologist, recognised the importance of making new knowledge more widely available and he commended the foundation of the American Society of Dental Surgeons and its organ The American Journal of Dental Science from 1839, which established a method of disseminating "knowledge in dental theory and practice". [3] This marked a significant educational advance against the tradition of empiricism where success depended on secrecy.

Education and a licence to practice were well-established in medicine and surgery as the criteria

for professional status. Dental reformers accommodated their demands to these standards. [4] Training and examination to regulate and improve the quality of dental treatment were essential aspects of the campaign for dental reform. J.L. Levison called upon "respectable members of the dental profession" such as "Mr. Thomas Bell, Mr. Nasmyth, Mr. Rogers &c." to form a "faculty of surgeon-dentists" and establish examinations. [5] He called upon eminent members of the profession to lend respectability to the venture.

From the outset it was recognised that training in dental technique was not sufficient. Examination "in general and special anatomy, physiology, and pathology" was needed "to give the public confidence in dental practitioners". [6] Levison's recommendations stressed the scientific and medical foundation of the dental curriculum as it was to evolve in the United Kingdom. George Waite, a Member of the Royal College of Surgeons (MRCS), and a surgeon-dentist, published a pamphlet which stressed that, although some "unprivileged by diplomas, are of high honour and respectability", legislative recognition and the establishment of an examination in dental surgery were needed to regulate standards of treatment. [7] Compulsory education and examination were central to Waite's proposed reforms:

that no persons be admitted hereafter to practice without having undergone examination by one or

more censors of the Royal College of Surgeons ... the ranks of the profession and the interests of society demand legislative interference. [8]

However, whereas Levison proposed the establishment of a college of dentists, Waite recommended the establishment of an examination in dental surgery for a qualification to be awarded by the RCS Eng. Two factions with divergent aims had emerged.

In 1843 a small group of leading surgeon-dentists including Arnold Rogers, John Tomes, Alexander Nasmyth and Edwin Saunders, applied to the Royal College of Surgeons of England for provision for dental education in Sir James Graham's Bill to regulate the medical professions. [9] The "Memorialists", so-called because of the series of Memorials or petitions which they presented to the RCS Eng., argued that patients were suffering as a result of treatment from untrained dentists. Although by this time dentists in France, Germany, Austria and the United States required certification, the Royal College of Surgeons did not grant this request. The eleven signatories of the petition seeking closer association with and acceptance by the Royal College were respected and influential within the medical establishment, but they represented a minority of those practising dentistry and "would have had just as much right to speak for the surgeons of England as they had for the dentists". [10] This was an

advantage in pressing their case with the Royal College of Surgeons but it did not help to unite the majority of dentists behind the movement for reform. Prior to 1855 only 4% of all provincial dentists had a formal training. [11] The majority of dentists, who were not qualified, did not identify with the Royal College of Surgeons.

In 1843 qualified surgeon-dentists were less concerned with advancing the cause of the diploma in dental surgery than with the rumour that, as surgeons practising dentistry, they would be debarred from the proposed Fellowship of the Royal College of Surgeons. The College refused to allow the election of any member engaged solely in practice as a dentist, orthopaedist or midwife. Rather than upgrading training and qualification for the specialties, the medical corporations were intent on holding their ground against specialisation and the establishment of specialist qualifications which would challenge the status of general qualifications and erode the earnings of those who could not charge specialists' fees. [12]

John Tomes played a leading part in advancing the case for dental reform. He was a highly skilled practitioner and an original scientific investigator. Like John Hunter before him, the respectability and eminent reputation which enabled him to advance the dentists' cause, was based on his professional and

scientific reputation in the medical establishment. However, his career illustrates the lack of official status for dentistry at that time, the lack of structure within the occupational grouping and the way in which advanced practice had developed to such an extent that competence could not be established without formal qualifications. [13]

Following an apprenticeship to an apothecary, Tomes studied at King's College Medical School and became house-surgeon at the Middlesex Hospital. He subsequently specialized in dental surgery and employed assistants to deal with mechanical or technical procedures, a level of distinction between technical and clinical practice which was far in advance of the majority of dental practitioners. [14] His course of lectures at the Middlesex Hospital School of Medicine "marked a new era in dentistry", but the attendance was poor: "I am resolved never to deliver any more lectures unless I have a class of at least six". [15] Nevertheless, publication of his lectures was "perhaps the most prominent event in the profession between the years 1848 and 1854". [16]

Tomes's scientific research and his invention of "the adapted forceps" advanced the reputation of dental science. Tomes was admitted a Fellow of the Royal Society in 1850 in recognition of "his acquaintance with the science of anatomy and

physiology", an unprecedented honour for a dentist at that time which demonstrated that dentists were "capable of the highest kind of scientific work".

[17] Edwin Saunders, who was dentist to Queen Victoria for thirty-seven years, and John Tomes both received knighthoods in 1883 and Tomes's example was noted in the Journal of the British Dental Association in the following terms:

His scientific reputation and integrity were instrumental in breaking down the feeling almost of contempt with which dentists as a body were then regarded by the medical profession. [18]

Publication of Tomes's Lectures on Dental Physiology and Surgery and Alexander Nasmyth's Researches on the Development, Structure and Diseases of the Teeth and his illustrated Three memoirs on the development and structure of the teeth and epithelium emphasised the science base of dental surgery, contributed to the body of scientific literature and to the scientific content of the dental curriculum later proposed by Tomes. [19] Tomes's reputation within the medical establishment derived from his scientific research and integrity as a dental practitioner. He was a dentist qua dentist and he did not take the Membership of the RCS Eng. until his position as an examiner for the dental licence of the college obliged him to do so in 1859. [20]

Professional education, qualification and

registration has been characterised as an almost self-seeking "occupational strategy", a tactic used by occupations to achieve recognition, raise their status and eliminate competition. [21] Yet William Robertson's Practical Treatise on the Diseases of the Teeth, in which "the origin and nature of decay are explained..." ran to four editions, which suggests that there was a demand for professional literature before the establishment of training and qualification. [22] However, James Robinson's attempts to institute a professional society and regular training in 1942-43 failed, as did his dental journals, The British Quarterly Journal of Dental Surgery in 1843 and Forceps in 1845. In 1850 Charles Smart described the lamentable state of dentistry:

In England we have - examinations, nil; association, nil; periodical literature, nil. How then can we seek or disseminate knowledge, or offer the public assurance of competence ... the greatest extent of effrontery deprives the educated dentist of his just reward, and brings the art into disrepute. [23]

This encapsulates two key aspects of the campaign for dental reform: the genuine concern of reputable practitioners to improve the quality of dental treatment and their claim to status within the medical establishment. This could only be achieved by dissociating themselves from disreputable untrained

practitioners and distinguishing themselves by means of professional education and qualification. However, even eminent dentists were not united as to the way forward and there was no unanimity regarding the suitability or necessity of a dental qualification. Eminent dental reformers, whose influence was based on their position within the established medical professions, had to overcome opposition from their peers to the establishment of dentistry as a medical specialty.

The memorials from Tomes and his associates for the recognition of the dental profession in the form of a course of study and diploma for dental students, were ignored by the Royal College of Surgeons. Yet, neither internal rivalries among those practising dentistry, nor obstruction from the medical establishment succeeded in obliterating the mid-century reform movement with its strong emphasis on education and qualification.

In 1851 James Keene, a dentist and former house-surgeon at St. George's Hospital, London, called for the appointment of qualified dentists as teachers and for the establishment of chairs in dental surgery in every hospital as the first step towards establishing a Dental College "where dentists must pass an examination to become members of our rising and important profession." [24] He challenged "Messrs Bell, Saunders, Robinson, Clendon, Tomes" and others

to "fresh exertions in behalf of dental science...".

[25] The hopes of the reformers were vested in education and eminent practitioners were relied upon to champion the cause.

A similar outlook characterised the influential Samuel Lee Rymer. Writing in 1855 he lamented the ignorance of the majority of dentists:

I can speak from experience as to the roguery (for that is not too strong a word) of a very large number of men who call themselves dentists, but who, in reality, are wholly ignorant even of the surgical anatomy of the mouth and parts adjacent, as well as of the principles (to say nothing of the practice) of mechanism as applied to dentistry. No wonder such men are the origin of so much disappointment, pain, and, as I believe, death. [26]

He requested that the Royal College of Surgeons appoint a Board of Examiners to hold examinations for a "Licentiate in Dentistry" so that "the public would be spared a vast amount of injury, and ... dental surgery would take its just position by the side of other liberal professions." [27] Such a course would necessitate the establishment of a dental college as training by apprenticeship alone was not sufficient. [28] Rymer's stance was endorsed by D. Mackenzie who pointed to the inadequacy of general medical education for dental practice and recommended that the campaign

acquire a well-respected and influential leader.
[29]

In the year that the British Medical Association was founded, the first associations of dental practitioners were also formed. Resenting the elitism of Tomes's "unconstitutional" petitions to the Royal College of Surgeons, Rymer called a public meeting of dentists on September 22nd, 1856. [30] At this meeting resolutions in favour of the establishment of a society of dentists, a college of dentists and a scheme of professional education and examination to promote the advancement of dental science, were carried unanimously. [31] A committee was formed to put this into effect and, from 1856 Rymer reiterated his call for the establishment of a society of dentists for educational purposes in the columns of The Quarterly Journal of Dental Science.

A month later the Memorialists formed The Odontological Society of Great Britain "for the encouragement and diffusion of knowledge of dental surgery, and for the promotion of intercourse among members of the dental profession". [32] At the Odontological Society's first general meeting its president Samuel Cartwright described "two distinct bodies of practitioners - the one practising dentistry as a profession, the other carrying it on as a trade or business", and stressed the importance of both technical and theoretical education as a means of

bridging the gap between them:

the more education is extended in all ranks of society, the more it becomes necessary that the members of our profession qualify themselves as highly as they can; for those who employ the services of the dentist in these days have a right to look, and do look, to the qualifications of the mind as well as to the mechanical adroitness of the fingers. [33]

By its exclusive nature, the Odontological Society polarised differences between reformers whose objectives were, in a very general sense the same, namely the elevation of dentistry to the ranks of a profession by means of education and qualifications. The Odontological Society, which had been formed by an elite, could not claim to represent the majority of dentists. Rymer complained that "the formation of this Odontological Society has not emanated from any recognised representatives of the profession". [34] Meanwhile, he had called a third public meeting of dentists which was held on December 16th, 1856. At this meeting the College of Dentists of England was founded "to unite members of the dental profession into a recognised and independent body, and to provide means of professional education and examination." [35] Although Rymer's public meetings were attended by dentists from as far afield as Edinburgh, Carlisle, Taunton and Norwich and the College of Dentists had a

membership of over one hundred and fifty compared with the Odontological Society's membership of less than fifty, the College of Dentists was shunned by the dental elite. [36]

The formation of these separate dental associations confirmed the existence of two opposing views on dental education. Tomes and the Memorialists recommended that dentists should acquire a legitimate status within the Royal College of Surgeons. The more radical approach of Rymer and the College of Dentists followed the American example and favoured an independent stand. Donald MacKenzie described the efforts of the Memorialists and the formation of the Odontological Society as an "unconstitutional ... effort ... to steal a march on the great body of dentists practising in Great Britain" and questioned the suitability of the Royal College of Surgeons as a college of dentists:

I cannot see how the College of Surgeons, as it is constituted, can possibly institute an examination of dental students, when it is well known that the matters cognizable by that College form but an adjunct to the most necessary requirements of a dentist. [37]

Although Robinson, Rogers, Tomes, Cartwright, Underwood and Hepburn proposed the amalgamation of the two societies in 1857, lack of unanimity weakened the campaign for reform. Nevertheless, as Hill pointed

out:

Although divided in opinion as to the method of progress, the profession was certainly more united than it had ever been before in the general desire for improvement. [38]

From 1856 The British Journal of Dental Science, which became the Dental Review in 1859 and continued publication until 1867, published the transactions of the Odontological Society, drew attention to scientific developments within dentistry and raised its reputation. [39] The success of dental journalism was an important development in dental reform and was recognised as such at the time. In 1857 an editorial in The Lancet stated:

If the late agitation amongst members of the dental profession had effected nothing more than the establishment of this journal, it would have conferred an immense benefit on dental science.

[40]

Demand for dental literature and the formation of associations indicated a more professional approach towards the dissemination of information and the advancement of dental science.

In 1857, eighteen prominent practitioners, including Samuel Cartwright, Robert Nasmyth, Edwin Saunders and John Tomes, sent a further memorial to the Royal College which expressed the need for a recognised and standardised qualification. The

majority of signatories were members of the Royal College of Surgeons of England who regarded the existing medical and surgical qualifications as inappropriate for the dental practitioners. [41] The substance of the Memorial, which Tomes was to reiterate in 1881, stressed that:

The memorialists do not suggest an education and examination inferior to that required of the medical practitioner; but propose a certain difference in kind only - not a difference in degree - an education and an examination specially adapted to the requirements of the dental surgeon, as distinguished from that fitted to the general surgeon. [42]

In Tomes's view dental education should be equivalent in standard to that required for other medical professions, although its substance would vary. However, medical specialties required medical qualifications plus additional specialist qualifications, the Licentiate in Midwifery being one such example. Tomes held that this model was inappropriate for dentistry. In his view, although dentists needed formal education and qualification based on a surgical model, full medical qualifications would be inappropriate for dental practice. General qualifications would be beyond the needs and means of the majority of dental practitioners at that time, lacked specifically dental content and included much

that was irrelevant to dental practice.

Tomes's views on the appropriate training and education for dentistry and his central role in the campaign for dental reform were to exert a profound influence on the evolution of dental education in the United Kingdom. The dental curriculum subsequently proposed by Tomes would be based on the surgical curriculum and underpinned by knowledge of biological and medical sciences and surgical technique. In his view, it was therefore appropriate that the dental curriculum should be examined by the Royal College of Surgeons of England.

Robinson on the other hand proposed specialised teaching for dentists in the following terms:

We have the highest respect for the College of Surgeons, and an equal respect for the College of Physicians; but we think that dentists can best be educated and examined by a College of Dentists ... a prescribed course of independent instruction will be sure to elevate our profession intellectually and socially. [43]

The Lancet issued a powerful attack on Robinson's "impolitic and inexpedient proposals for a separate College of Dentists" which would create "unnecessary divisions in the science of medicine". [44] At the same time however, The Council of the Royal College of Surgeons was also chastised for its "criminal apathy" in having failed to respond to the "most respectful

and reasonable request for the acknowledgment of the College ... submitted by a number of the most influential of the metropolitan dentists". [45] This delay had led to the "objectionable" establishment of a separate college which would adversely affect "the interests of other institutions". [46]

Despite "a certain amount of what may be, perhaps, called jealousy" at the prospect of dentists assuming equality with members of the Royal College of Surgeons, the College of Dentists and its new qualification were regarded as greater evils. [47] The Royal College of Surgeons of England was faced with the prospect of the establishment of a rival specialist college and the loss of revenue from licences over which it would have no control and which would challenge the right of those with general surgical qualifications to practise dentistry. [48] Thus, the formation of the College of Dentists was a major factor in the eventual success of the Memorialists campaign for recognition in the Medical Act, 1858. [49]

The Lancet urged the Royal College to rekindle its "sense of duty" regarding dental education and to confer its status on "a body of men whose occupation demands much skill, knowledge, and judgment". [50] Alarmed by the determination of the majority of dentists to proceed unilaterally, the medical establishment conceded a measure of recognition for

dentistry in the form of a dental diploma awarded by the RCS, Eng. With the support of A. Beresford Hope, M.P. the clause proposed by the Odontological Society empowering the Royal College of Surgeons of England, to institute a diploma course, to hold examinations for dentists and to grant certificates of fitness to practise was incorporated without dissent into The Medical Act, 1858. [51] However, dental practitioners who held dental qualifications only had not achieved equality with medical practitioners.

3.2. THE MEDICAL ACT, 1858 AND THE ROYAL COLLEGE OF SURGEONS OF ENGLAND LICENCE

The purpose of The Medical Act, 1858 was to enable the general public to distinguish qualified from unqualified practitioners and thus establish some measure of protection for qualified physicians, surgeons and apothecaries against encroachment from the unqualified. [52] The Act also did much to regulate standards in medical practice. The Medical Act, 1858 established the General Medical Council for Medical Education and Registration (GMC) on which colleges and universities in the United Kingdom and Ireland and the State were represented. [53] The GMC would be responsible for regulating standards in medical education and for maintaining The Medical Register, a list of practitioners authorised to

practise either by virtue of registrable professional qualifications or by having been in practice before 1st August 1815. Registration in The Medical Register became the mark of a "legally qualified medical practitioner" and this enabled the established medical professions to regulate and restrict the emergence of new specialties, since those seeking public appointments would need to be registered. [54]

For the dental profession the most significant clause of The Medical Act, 1858, Clause 48, permitted the RCS Eng. to institute and hold examinations in dentistry. [55] The College Charter was altered on 8th September 1859 to enable the College to grant the Licence in Dental Surgery (LDS). [56] However, the dental qualification would not be registered in The Medical Register, would not be compulsory and dentists as such were not represented on the GMC. [57] Furthermore, the right to issue licences was restricted to the Royal College of Surgeons in England. This restricted access to the new qualification at a crucial time in the profession's development. Thus, as with the apothecaries, the "powerful forces, weight and authority and sense of dignity at work in support of the Royal College of Surgeons", imposed significant limitations on dental recognition. [58] Exclusion from The Medical Register diminished the status of the new qualification and, since The Medical Act afforded no

protection to qualified dentists, there was little incentive to qualify. Exclusion from the GMC would also limit the ability of dentists to influence standards in dental education.

Surgeons and physicians had successfully resisted the suggestion that in future they might require a separate diploma to practise dentistry. Apprehension that their status and earnings might be diminished by specially qualified dentists were the motivating factors. Fear of competition, fear that those with general qualifications might lose the right to practise dentistry, apprehension that dentists might use their qualification to encroach on surgical practice and that their dubious professional reputation might jeopardise the status of College and Register would be major obstacles to dental reform.

[59]

An editorial in The Medical Times and Gazette encapsulated these apprehensions:

These dental licentiates ... will call themselves surgeons, and are not likely to confine their practice to their speciality. Instead of a high order of dentists, we shall have a low class of surgeons thrust upon us. This however is a trivial mistake compared with the blunder the council has made in granting their diplomas to men who have not complied with the educational regulations of the college. [60]

Outnumbered on the one hand by established medical and surgical practitioners and on the other by unqualified dental practitioners, the Memorialists had adopted a pragmatic approach in their struggle for recognition. But, although the dental elite set great store by accreditation by the medical establishment, the terms upon which they had been granted recognition imposed great limitations on this achievement. As Peterson points out, the establishment of the LDS in 1858, "the first and for decades sole step towards recognition of a specialty" was remarkable in view of the reluctance of the Royal Colleges to issue special diplomas. [61] However, since this special dental qualification did not require general qualifications, dentistry was not established on terms equal to physicians and surgeons nor had it been established as a medical specialty.

This meant that the medical establishment could undermine confidence in and demand for the new qualification, by emphasising the relative ease with which dental qualifications could be obtained and the consequent inferiority of standards. Furthermore, in terms of status, a college licence was the lowest form of qualification available to the medical professions and its status was dwindling. Although only a minority of Victorian medical practitioners could afford university degrees and those of modest means preferred college qualifications, degrees were

becoming essential to those seeking high office. The percentage of Fellows of the RCS, Eng. who were also graduates increased in the period 1850-89. [62] Hence, in the long term the establishment of a degree would be important for a profession whose members sought equality with the established medical professions.

3.3. THE DEMISE OF THE COLLEGE OF DENTISTS

The College of Dentists proposed to establish an educational system, a test of efficiency and a governing body representing all practitioners. Its diploma would lead to the membership of their own College, the Membership of the College of Dentists of England, (MCDE) and after 1857 entry would be by examination only. [63] The College established its own Metropolitan School of Dental Science in 1859 and the National Dental Hospital in 1861. [64] George Waite, who had previously proposed recognition for dentists in the College of Surgeons, became President of the College of Dentists in June 1859. [65]

Francis Hay Thomson, Vice-President of the College of Dentists, drew attention to the limitations of the achievement of the LDS, RCS, Eng. Despite the establishment of the dental diploma, dentists required medical or surgical qualifications before they were entitled to register:

a profession which is unworthy seemingly even of a position in this reform act has for its educational requirements not only the necessity of a long and tedious medical education, but the candidate must also then pass his own board examination plus acquiring proficiency in all the branches daily practised in the dentist's workroom. [66]

Thomson suggested that, although qualified to examine the subjects common to both professions, the Royal College of Surgeons was less well-qualified to regulate standards in dental education:

the College of Surgeons may by charter institute examinations in dental surgery ... it does not follow that any purely surgical or medical body of examiners are in a position to judge on all the practical branches necessary in the education of the dental student. [67]

Thomson also pointed out that in the United States, where dental colleges had been established, dentistry was becoming increasingly specialised. In Thomson's view inappropriate professional education might delay advance. Although Thomson favoured specifically dental education "by some well-organized and legalized educational course bearing more particularly on his own subject", his proposed curriculum was not unlike that of Tomes. Both stressed the importance of "the proper amount of medical and scientific knowledge".

[68]

This controversy highlights the difficulty of establishing appropriate education for a specialty comprising both medical and technical competencies, the strengths of a curriculum based on the medical and surgical model and also its limitations. The task ahead would be to persuade dentists of the need for a curriculum based on the sciences.

Whereas membership of the Odontological Society was initially by invitation only, the College of Dentists appealed to a wider group of dental practitioners who did not aspire to status within the RCS, Eng. [69] In addition there was a further and larger body of dental practitioners who did not aspire to the ranks of the Royal College of Surgeons, the Odontological Society or The College of Dentists:

quiet, unobtrusive practitioners, who have no wish to be considered surgeon-dentists, but merely dental artists for supplying artificial teeth [practising] purely mechanical arts, and require no college, but a workshop. [70]

Although its constitution favoured the adoption of ethical standards, the College of Dentists was more lenient towards non-professional practices, such as advertising, and did not insist on a curriculum prior to examination. [71] Respectable practitioners were determined to distance themselves from the practices of unethical dental practitioners. In its attempt to

appeal to a wide range of dental practitioners, the College of Dentists made compromises which alienated many respectable dental practitioners whose resignations "told more against the project than the mere loss of numbers". [72] The effect of the spate of defections from the ranks of the independents represented by the College of Dentists was "not merely like so many guns captured from the enemy, but those very guns turned against the artillery of the opposing side". [73]

The Medical Act did not recognise qualifications issued by the College of Dentists and this was regarded by many as a "fait accompli" which cut the blood supply from the embryonic College of Dentists. [74]. The College of Dentists could not compete in status with a qualification awarded by The Royal College of Surgeons of England; there was not the demand for professional qualifications or the resources to support an independent qualifying body especially when the rank and file did not aspire to qualifications of any description. In 1860 The Lancet stated:

It is sufficiently obvious that the diplomas of a self-constituted college, without any charter or other recognised legal standing, will labour under a great disadvantage as compared with those of the Royal College of Surgeons ... the dental profession has everything to gain by attaching

itself to the surgical profession and to the College of Surgeons. [75]

The prestige of the Royal College and legal recognition of its dental diploma in the 1858 Act meant that its diploma carried more weight than those of a new college whose status and reputation had yet to be established. [76] Thus, unlike their peers in the United States, dentists in the United Kingdom did not pursue an independent course.

In 1858 David Hepburn, an active member of both the College of Dentists and the Odontological Society of Great Britain, recommended that the two bodies should unite:

I am firmly of the opinion that however much the College has done (and it has accomplished a great deal), unless it is carried on in connection with the gentlemen who comprise the Odontological Society, it will ultimately fail in carrying out the projects it has in view. [77]

Robinson's death in 1862 removed the driving force behind the College of Dentists and in 1863 the two societies merged to form a newly constituted Odontological Society of Great Britain. The College of Dentists and its diploma were dissolved. [78] In the long term respectability and allegiance to the Royal College of Surgeons of England enabled the Memorialists to succeed where the College of Dentists had failed.

The Medical Act, 1858 established dentistry as a profession grounded in technical, scientific, biological, medical and surgical principles, linked with the prestigious RCS, Eng., but as an inferior satellite of the surgical profession. This had crucial implications for the subsequent evolution of professional education for dentists. The dental curriculum and examination were set by a surgical college under the overall supervision of a medical council on which dentists were not represented. This set the future course of dental education for the profession in the United Kingdom. Although the dental curriculum would not focus on technical skills at the expense of biological and medical science, as was the case with the proprietary schools in the United States, the distinctive skills of clinical dentistry were less of a priority to a surgical college. Thus, dependence on the protection and legitimation offered by association with the RCS, Eng. imposed restrictions on dentistry as a specialty. Furthermore, the scientific and medical emphasis of the curriculum was beyond the aspirations of the majority of dental practitioners and, since the dental qualification was not registrable, there was neither incentive nor compulsion to qualify. These factors ensured that there would be little demand for professional education.

As a new profession, dentistry had to justify its

claim to professional status by demonstrating skills, training and ethical standards superior to occupations and trades. Education endorsed by examinations and certification was important in establishing standards of competence which distinguished reputable professional practitioners from those providing inferior services. The outcome would benefit both the public and the status of the dental profession. It was left to the reformers of the 1870s to establish the principle that dental practitioners required dental qualifications and qualifications would need to be registered before standards could be raised. It would also be necessary to establish standards equivalent to other medical professions before the dental profession could challenge the exclusive hierarchical structure of the medical establishment.

3.4. ENDNOTES

1. The earliest, the London Institute for the Diseases of the Teeth, was founded by Edwin Saunders, James Snell and William Harrison in 1840 and remained in operation until c.1845. [RICHARDS, N.D. "A Study of the Development of Dental Health Services in the UK - the profession and treatment services 1840-1921". Ph.D. thesis. University of London, 1979.]
2. LINTOTT, W.H. "Progress of Dental Science in America". The Lancet, v.ii, 1841, pp. 596-597. Corresp.
3. Ibid.
4. ROACH, John P.C. Public Examinations in England, 1850-1900. Cambridge U.P., 1971.
5. LEVISON, J.L. "Suggestion for a Faculty of Surgeon-Dentists". The Lancet, v.i, 1841, p. 898. Corresp.
6. Ibid.
7. WAITE, George. "An Appeal to the Parliament, the Medical Profession, and the Public, on the Present State of Dental Surgery". 1841. (pamphlet)
8. HILL, Alfred. The History of the Reform Movement in the Dental Profession in Great Britain During the Last Twenty Years. London. Trubner & Co., 1877, pp. 17-19.
9. In 1843 The Royal College of Surgeons of London obtained a Royal Charter renaming it The Royal College of Surgeons of England.
10. HILL, A., 1977, p. 125.
11. HILLAM, Christine. The Development of Dental Practice in the Provinces From the Late Eighteenth Century to 1855. Ph.D. thesis. University of Liverpool, 1986, p. 260.
12. Although Hillam's research suggests that there is little evidence to suggest that medical men in the provinces actually practised dentistry to any great extent. [Ibid.]
13. See Appendix 10.3: Biographies and COPE, Sir Vincent Zachary. Sir John Tomes: a pioneer of British dentistry. London: Dawsons of Pall Mall,

- 1961.
14. COPE, Sir Vincent Zachary, 1961, pp. 12-14.
 15. LEE, Sidney (ed.) Dictionary of National Biography. Elder & Co., 1899, v.57, pp. 6-7.
 16. HILL, A., 1877, p. 35.
 17. LEE, Sidney (ed.), 1899, p. 7.
 18. "Sir John Tomes, F.R.S." JBDA, v.7, 1886, pp. 323-326. His obituary is a measure of his importance to the profession. [JBDA, v.16, 1895, pp. 462-492.]
 19. NASMYTH, Alexander. Researches on the Development, Structure and Diseases of the Teeth. London: Churchill, 1839; NASMYTH, Alexander. Three Memoirs on the Development and Structure of the Teeth and Epithelium, read at the 9th annual meeting of the British Association for the Encouragement of Science, 1839; with diagrams exhibited in illustration of them. 1st ed. London: Churchill, 1841; 2nd ed. London: Churchill, 1842; TOMES, John. A Course of Lecture Notes on Dental Physiology and Surgery Delivered at the Middlesex Hospital School of Medicine. London: John Parker, 1848.
 20. COPE, Sir Vincent Zachary, 1961, pp. 72-73.
 21. GABE, Jonathan, KELLEHER, David and WILLIAMS, Gareth. (eds). Challenging Medicine. London: Routledge, 1994, p. 25.
 22. ROBERTSON, William. Practical Treatise on the Diseases of the Teeth, in which the Origin and Nature of Decay are Explained. 1st ed. London: Longman, 1835; 2nd ed. London: Hayward & Moore, 1839; 3rd ed. London: Churchill, 1842; 4th ed. London: Churchill, 1846. The career of William Robertson is described by R.A. Cohen, E.A. Marsland and C. Hillam in "William Robertson of Birmingham, 1794-1870". BDJ, v.142, 1977, pp. 64-69 and pp. 99-102.
 23. SMART, Charles. "Poisoning by Dentists". The Lancet, v.ii, 1850, pp. 513-514. Corresp.
 24. KEENE, James. "The Necessity for a College of Dental Surgery". The Lancet, v.ii, 1851, p. 263. Corresp.
 25. Ibid.

26. RYMER, Samuel. "Necessity for a College of Dental Surgery". The Lancet, v.ii, 1855, p. 181. Corresp.
27. Ibid.
28. Ibid.
29. MACKENZIE, D. "On dental diplomas". The Lancet, v.ii, 1855, p. 239. Corresp.
30. HILL, A., 1877, p. 61.
31. HILL, A., 1877. Chapter 3; "Public Meeting of Dentists". The Lancet, v.ii, 1856, pp. 555 and 367.
32. For a description and list of office bearers see HILL, A., 1877, pp. 58-59.
33. HILL, A., 1877, p. 86.
34. RYMER, Samuel Lee. "The Association of Dentists". The Lancet, v.ii, 1856, p. 584. Corresp.
35. Office bearers included Alfred Hill, Francis Hay Thomson, Charles James Fox, Thomas Underwood and others. HILL, A., 1877, p. 67.
36. RICHARDS, N.D., 1979, pp. 101-102; HILL, A., 1877, pp. 73-74.
37. MACKENZIE, Donald. "Proposed British Institute of Dental Science". The Lancet, v.ii, 1856, p. 502. Corresp.
38. HILL, A., 1877, pp. 112-113. Hill also reports that at this meeting Rogers indicated that he had not previously made the acquaintance of Mr. Robinson. This emphasises the new opportunities for social and professional intercourse presented by association between members of the profession.
39. At first this journal advanced the views of Samuel Lee Rymer and the College of Dentists but later that year it was sold and, under new editorship, espoused the views of the Odontological Society. It ceased publication in 1935.
40. "Reviews and Notices of Books: The Quarterly Journal of Dental Surgery. No. III, October. London: Walton and Maberly". The Lancet, v.ii, 1857, p. 395.
41. HILL, A., 1877, p. 50.

42. Tomes returned to the theme of this memorial (which is reproduced in HILL, A., 1877, pp. 126-8), throughout the campaign for dental reform and restated it in "The Study of Dental Surgery and the Means Thereto": abstract of a paper read before Section XII of the International Medical Congress, August 5th, 1881. JBDA, v.2, 1881, pp. 434-449.
43. The Lancet, v.i, 1857, pp. 191-192. Edit.
44. Ibid.
45. Ibid.
46. The Lancet, v.i, 1857, p. 272. Edit.
47. Hill, A., 1877, p. 100.
48. Even the pharmacists, themselves newly established within the medical profession disparaged the intentions of the College of Dentists:
 the premises of the new college do not afford accommodation for entering into competition with the medical schools; and that if the college is to stand or fall according to its efficiency as an educating body, the privilege of an independent existence will be purchased by its members at the expense of professional status, and the occupation of a dentist will be reduced to a craft, instead of being an integral part of a profession.
 [The Pharmaceutical Journal, March 4, 1857, Cited by HILL, A., 1877, p. 84].
49. READER, W.J. Professional Men. London: Weidenfeld and Nicolson, 1966. p. 53ff. For a detailed account of the Memorialists's campaign for legislative recognition for dentists in the Medical Act, 1858 see RICHARDS, N.D., 1979. Chapter 3.
50. The Lancet, v.i, 1857, p. 272. Edit.
51. RICHARDS, N.D., 1979. Chapter 3, p. 120.
52. The Medical Act, 1858 (21 & 22 Vict.) c.90. Preamble. Clause 40 imposed a fine of up to £20 for unlawful use of titles and qualified practitioners were entitled to pursue claims for non-payment of fees through the law courts.

53. Of the Council's twenty-three members, nine were appointed by the medical corporations, eight by the universities and six by the Crown. [READER, W.J., 1966, p. 66.]
54. The Medical Act, 1858. Clauses 34 and 36.
55. "It shall, notwithstanding anything herein contained, be lawful for Her Majesty, by Charter, to grant to the Royal College of Surgeons of England Power to institute and hold Examinations for the Purpose of testing the Fitness of Persons to practise as Dentists who may be desirous of being so examined, and to grant Certificates of such Fitness." [The Medical Act, 1858. Clause 48.]
56. The Medical Act, 1858.
57. Clause 7 stated that "members of the General Medical Council ... must be qualified to be registered under this Act". [The Medical Act, 1858.]
58. RICHARDS, N. D. "Dentistry a Hundred Years Ago: Charles James Fox - the forgotten man". BDJ, v.132, 1972, pp. 235-242.
59. In 1800 the physicians had expressed similar apprehensions regarding the surgeons, "they will be calling themselves doctors next". COPLANS, S.H., LDS, RCS Eng., FDS. The Seven Ages of the BDA, 1856-1956: an historical sketch recorded graphically. London: BDA, 1973. Source not given.
60. Medical Times and Gazette, February 25, 1860, p.193. Edit. Cited by Richards, 1979. Fears that dentists would encroach on the surgeons' practice were not short-lived. Clause 2(2) of The Dentists Act, 1957 stated:

A degree or licence in dentistry granted by a dental authority shall not confer any right or title to be registered under the Medical Act, 1956, nor to assume any name, title or designation implying that the holder of the degree or licence is by law recognised as a practitioner or licentiate in medicine or general surgery.

[The Dentists Act, 1957. 5 & 6 Eliz. 2 Ch. 28. Part II. The dental profession: qualification for registration. The Dentists Register, 1958. p xvii].
61. Peterson, M. Jeanne. The Medical Profession in Mid-Victorian London. Berkeley: University of California Press, 1978, p. 279.

62. Whereas in the first half of the century only 20% of elected Fellows had university degrees, by 1850-1889 almost 50% had a medical degree. PETERSON, M. Jeanne, 1978, p. 51.
63. The Lancet, v.i, 1857, p. 123. Edit.
64. See HILL, A., 1877, p. 159 for the courses of lectures. The National is now part of University College, London.
65. The College's first President was James Robinson.
66. THOMSON, Francis Hay. "Remarks on Dental Reform, Suggested on Reading the New Medical Bill". BJDS, v.2, 1859, pp. 436-438.
67. Ibid.
68. Ibid. Thomson's curriculum included: two courses of dental physiology and operative dentistry; one course of chemistry and metallurgy; two courses of anatomy and physiology; one course of mechanical dentistry; one course of therapeutics and materia medica; one course of practical physics and two sessions at the dental hospital.
69. HILLAM, C., 1986.
70. "Non-Forceps". The Lancet, v.i, 1857, p. 389. Corresp.
71. Law 8 stated that no person combining any business with the practice of dentistry was eligible for membership and law 10 discouraged association with disreputable advertisements.
72. HILL, A., 1877, p. 158.
73. Ibid.
74. "The New Dental Diploma". The Lancet, v.i, 1860, p. 301. Medical annotations.
75. "The Dental Surgeons and the College of Dentists". The Lancet, v.i, 1860, pp. 253-254. Edit.
76. "The Recalcitrant Dentists". The Lancet, v.i, 1860, p. 329.
77. BDJ, v.26, 1905, p. 471. Obit.
78. COHEN, R.A. and SPENCER, E.M. (eds). The British Dental Association: the advance of the dental profession: a centenary history 1880-1980.

London: British Dental Association, 1979, p. 2.

CHAPTER 4: EDUCATION FOR THE DENTAL PROFESSION AND THE CAMPAIGN FOR REGISTRATION

The achievement of legislative recognition for the Licence in Dental Surgery in The Medical Act, 1858 was the first step towards raising standards in dental education and practice. To consolidate this achievement it was necessary to establish teaching facilities and encourage or compel those practising dentistry to undertake training and examination. This chapter will examine the way in which the establishment of dental hospitals and dispensaries, founded in response to the demand for dental treatment, created the clinical teaching facilities necessary to support the curriculum for the LDS. The chapter will then focus on the campaign to achieve the second requirement, namely registration for the professional qualification, which would establish the principle that the legitimate practice of dentistry required special dental qualifications.

The emphasis on education and qualification as a key element of the reform movement of the 1870s, a movement which might otherwise be represented as a self-interested campaign for professional monopoly, will also be examined. Contemporary accounts of the proceedings of the Dental Reform Committee, which reveal the aspirations of reformers and also the opposition from those with vested interests in the

status quo, will be examined in detail. The chapter will conclude with an assessment of the legislative outcome of the campaign for registration, The Dentists Act, 1878, will suggest factors which limited this achievement and will analyze the impact of the Act on demand for professional education and qualifications.

4.1. DENTAL EDUCATION ESTABLISHED

To increase demand for dental qualification there needed to be some incentive to qualify, some recognition for dentistry as a health-care specialty requiring a professional qualification. Professional appointments provided such an incentive. The appointment, in 1857, of H.J. Barrett, MRCS as the first dental surgeon to the London Hospital Medical College in 1857 was therefore an important milestone in terms of recognition for the specialty. However this appointment also highlights the fact that, prior to 1859, dental surgeons were not dentally qualified. Furthermore, the appointment of surgeons as dental specialists in general hospitals did not meet the need for specialised facilities or instruction to support the dental curriculum.

Demand for dental treatment from all classes in society, concern at the standard of treatment for dental patients in general hospitals - where teeth were extracted "wholesale" and dental extraction was

"generally a most barbarous proceeding" - and recognition of the need for a wider range of dental treatment led to the establishment of dental dispensaries. [1] The dispensaries and dental hospitals provided an invaluable service extending the range of dental treatment to those who would not otherwise have been able to afford expert dental care. [2] The establishment of charitable dispensaries was not welcomed by all dentists: some regarded them as a threat to their earnings. [3] However, the establishment of facilities for clinical training was an important step towards the provision of institutional dental education and the introduction of chloroform for dental extractions - an important advance which required training under medical supervision - coincided with the opening of the first dental hospital.

The Medical Act, 1858 provided a further impetus for the establishment of clinical facilities and supervision to support the LDS curriculum. This is reflected in the establishment of dental hospitals at this time. In London alone four schools were founded between 1858 and 1861. [4] An editorial in The British Journal of Dental Science (BJDS) pointed out that the opening of The Dental Hospital of London had come about:

not only to supply a want long felt by the public but as a result of the 1858 Medical Act which

while authorising the Royal College of Surgeons to examine and grant licences in dental surgery also required that students attend the practice of a recognised dental hospital as well as special lectures. [5]

Despite the absence of examining bodies outside London, the establishment of special dental hospitals in Birmingham, Edinburgh, Liverpool and Plymouth (between 1855 and 1861) provided facilities for formal professional education outside the capital. By 1880 schools had been founded in Birmingham, Dublin, Manchester, Liverpool, Plymouth and Exeter to support training for the LDS. [6] Following the establishment of the Victoria Dental Hospital in Manchester in 1880, an editorial in The Journal of the British Dental Association (JBDA) expressed the hope that:

doubtless it will not be long before the Victoria Dental Hospital is able to show a record of work done which will entitle it to confidently claim recognition as a school of dental surgery at the hands of the College of Surgeons. [7]

Thus, the demand for dental treatment and the establishment of facilities to improve the quality and delivery of dental treatment - which meant that the need to extend professional education became all the more pressing - contributed to the establishment of clinical teaching facilities.

Members of the Odontological Society were closely

involved in devising the dental curriculum and in establishing training facilities. [8] Following The Medical Act, 1858 Tomes's letter of thanks to the Council of the RCS, Eng. included a full curriculum which, with few alterations, was subsequently adopted by every qualifying body in the United Kingdom. It would remain substantially unaltered until 1921. [9] Tomes, whose textbook on dental surgery was published in 1859, was instrumental in founding the Dental Hospital of London in the same year. [10] Leading members of the dental reform movement were amongst the staff of the new dental hospital - Samuel Cartwright, George Ibbetson and Robert Hepburn were consulting dental surgeons and lecturers; Charles James Fox, Thomas Underwood and David Hepburn were dental surgeons and demonstrators. [11] When the first examinations for the LDS RCS, Eng. were held in London on March 13, 1860, forty-three distinguished members of the profession (including Cartwright, Bell, Tomes, and Rogers) were awarded the diploma and, by June of the same year, there were eighty-eight licentiates. [12]

In his inaugural address in 1860 Samuel Cartwright welcomed the establishment of the London School of Dental Surgery as "the first educational institution for dental purposes" in the United Kingdom. [13] He also observed that dentists were still "looked down upon" in society due to "... a want

of education among the majority - too great a tendency to carry on a practice more like a trade than a profession". [14] He stressed that dental education should not emphasise technique at the expense of medical science:

the necessity for mechanical appliance does not remove dental surgery from surgery proper, more than the necessary mechanical appliances remove orthopaedic surgery from general surgery. [15]

In this lay the nub of controversy concerning the appropriate education required for dental practitioners, a debate which continues to this day. If dentists required a substantial knowledge of medicine and surgery, how could they be regarded as fully qualified without medical or surgical qualifications? Tomes's objective was to make the dental diploma equal in standard but different in content to the MRCS. This would be achieved by establishing high standards encompassing the necessary grounding in medical and surgical theory and practice without entailing a full medical or surgical curriculum. [16]

Editorials in The British Journal of Dental Science advised those who aspired to professional status to undertake training and examination for the LDS without which they would remain "mere tradesmen" and emphasised that "time and expense" should not materially differ from that required of the medical

student. [17] The curriculum was described as "formidable [but] necessary to conform to the object of making dental education equal to medicine". [18] The curriculum was ambitious for a subject which had previously required no special training at a time when school education beyond the elementary level was not available to all. Yet, in 1861, an editorial which echoed Cartwright's views noted that dentists did not "command a social position equal to medical men ... due to the superior educational requirements of the latter ..." and that "inferiority of education involves inferiority of position and of professional usefulness" which "would permanently stamp the dental surgeon with the low status from which, under the existing regulations, he is gradually and surely rising". [19]

Many regarded the dental curriculum as an unsatisfactory compromise. Although the close involvement of eminent members of the profession established standards which exceeded the aspirations of the majority of dental practitioners, standards fell short of those required for medicine and surgery. The curriculum was and would remain for many years "a compromise between the infant science and the established craft". [20] The diploma was sought after by surgeons practising as dentists who wished to reinforce the status of their professional qualifications and by dentists who wished to become

licentiates of the prestigious Royal College of Surgeons of England. There was little demand for the diploma from the majority of dental practitioners who did not fall into either category, yet these were the very dentists whom dental reformers had hoped to recruit. From 1863 all candidates for the diploma were required to follow a curriculum prior to examination which could have been a disincentive reflected in the numbers examined. By 1865 only 280 had qualified LDS, of whom the majority (186) were London practitioners: in Liverpool only one in forty and in Manchester seven in fifty one held the qualification, and by 1870 only 300 had qualified. There was thus little demand for dental qualifications at this time. [21]

John Tomes's son Charles S. Tomes, who would also play an active role in promoting dental education, was aware that the sudden demand for dental treatment and the shortage of qualified dentists meant that it was difficult to enforce professional standards. The demand for dentists was "too sudden for the want to be supplied by men thoroughly suited to the work". [22] Without a register of practitioners, patients could not discriminate between trained and untrained practitioners:

As matters stand now they have no means of distinguishing between the legitimate, properly educated Dentist and the ignorant pretender, who

upon the strength of a brief instruction in the rudiments of vulcanite work sets up a large brass plate, emblematic of his own brazen impudence, and dubs himself Surgeon-Dentist. [23]

There was little incentive for practitioners to go to the expense of training to acquire knowledge and skills for which there was no demand. Therefore, recognition in The Medical Act, 1858 was merely the first chapter in the dentists' struggle to establish standards of training and qualification equivalent to the medical professions.

Leading dentists recognised the limitations of their achievement. Excluded from The Medical Register, dentistry remained on the fringe of the medical establishment in an anomalous position relative to medicine and surgery. Without a registered qualification and a distinguishing title such as "doctor", the public could not easily discriminate between trained and untrained, qualified or unqualified dentists and there was no monopoly to protect the livelihood of qualified dentists. [24] In short, the Diploma in Dental Surgery "afforded no privileges and gave no status". [25] In 1866 William Henderson Nicol observed that "until we obtain registration we cannot expect much to increase our numbers". [26] To be firmly established as a medical profession with an incentive to qualify, registration was essential. [27]

4.2. THE DENTAL REFORM COMMITTEE

The challenge facing dental reformers in the late nineteenth century was to persuade practitioners to become qualified and in so doing transform an unqualified occupation into a qualified profession, equal in education, reputation and status to the medical professions. In 1865 a memorial from dental licentiates requesting enrolment on The Medical Register stressed that it was "unnecessary and unjust" to require that dentists be qualified as surgeons and pointed out that surgical qualifications provided no measure of the competence of those so qualified to practise dentistry. [28] This was rejected by the General Medical Council (GMC) on the grounds that those entitled to register must hold general medical or surgical qualifications. [29]

The perceived inferiority of the dental qualification to other registrable qualifications undermined demand. Many took the examination sine curriculo, thus avoiding the expense and disruption to their practices of having to train in London at teaching hospitals recognised by the Royal College of Surgeons of England. This did little to raise standards in practice and meant that even the status of qualified dentists was doubtful. Even more damaging was the large number of unqualified practitioners.

Commenting in 1875 on the profession's "anomalous position with regard to education", John Dennant claimed that for every one who qualified, fifty entered practice without the diploma. [30] The extent and persistence of unqualified practice proved a millstone round the neck of the emergent profession and made it difficult to persuade the medical authorities or Parliament that the profession merited the protection and status afforded by registration.

In 1873, in an address congratulating Harvard University on becoming the first university to establish a Dental Department, Charles Tomes addressed the need to create:

a coherent body of men duly qualified by study and tested by examination, [to] convert the Dental profession into a body of highly educated men, commanding respect alike by their conduct and acquirements, from whose ranks the ignorant and incompetent shall be rigorously excluded.

[31]

Reformers wished to increase the numbers of qualified practitioners and at the same time raise the standard of training and examination for the profession: these objectives were incompatible. As Charles Tomes acknowledged, dental education was "hampered by the existence of a large body of unqualified men, styling themselves Dentists". [32] There was neither incentive nor legal compulsion to qualify, far less

raise the standard. Uniform and compulsory professional education needed to be established before standards could be raised. Thus dental reformers campaigned for legislation which would register the LDS, require dentists to register and establish qualifying bodies outside of London.

Led by Charles James Fox, editor of The British Journal of Dental Science, reformers embarked on a new campaign during the 1870s in which registration was regarded as the necessary prerequisite for compulsory education. [33] Fox used his position as editor to extend the appeal of the dental reform movement. [34] Sidney Wormald suggested that the profession's future depended on extending licensing powers beyond London. [35] Similarly, Dr J. Smith, a member of Council and member of the Board of Examiners of the RCS, Edin. drew attention to:

difficulties almost amounting to impossibilities in the way of assistants in Scotland, or even in distant parts of England, following out the curriculum required, or even in some cases travelling to London in order to obtain such a licence. [36]

Medical and surgical qualifications were available in Scotland and Ireland but dental qualifications were not. In order to maintain and extend the standards achieved by a narrow London elite it was necessary to establish examining facilities elsewhere. [37]

The year 1875 was a turning point. Sidney Wormald invited members of the profession to attend a meeting in Manchester. Its purpose was to form a committee to campaign for protection for the qualified against competition from unqualified practitioners without which there was no incentive to qualify. [38] The first resolution proposed at this meeting endorsed Wormald's theme and emphasised the need to raise professional standards by making education and training for a registrable qualification compulsory:

it is desirable that a committee be formed to see what steps can be taken to arrest the continual influx into the profession of illegitimate practitioners by the adoption of the principles of Registration and Compulsory Education. [39]

The Executive Council sought an amendment to The Medical Act, 1858 permitting the registration of dentists who held the LDS and restricting the improper use of the titles Dental Surgeon, Surgeon Dentist, Dental Practitioner, or Dentist on penalty of a fine.

[40] The Committee's objectives were to stamp out empiricism and raise the status of dentistry by "registration and compulsory education". Education was high on the agenda. [41]

The Dental Reform Committee was elected by subscribers to the Dental Reform Fund. This would ensure that the Committee was, as Fox intended, nationally representative. Although only a small

minority held the licence, the substantial contributions to the dental press and subscriptions to the Dental Reform Fund and the Saunders Scholarship Fund, from dentists throughout the United Kingdom, indicate the initial groundswell of support for the Committee's objectives. [42]

However, support from the medical establishment was also crucial. As early as 1865, in a letter published in both The Lancet and the BJDS, Fox had attempted to head off opposition by reassuring the medical professions that, in claiming the right to registration, dentists did not seek the right to practise any other branch of medicine or surgery. [43] Fox was also aware that registration could not be achieved without substantial concessions to those in practice. The pharmaceutical chemists had, in 1868, achieved their objectives "only by granting the most liberal terms to outsiders and respecting vested interests". [44] However, only qualified dental practitioners would be entitled to recover fees at law and a list of practitioners would be compiled.

The proposed terms of registration gave rise to fundamental differences. [45] Opposition based on the vested interests of, on the one hand, surgically qualified dentists and on the other hand, the unqualified majority, constituted in combination an obstacle which was to prove insurmountable. Ultra-conservatives responded to the Dental Reform

Committee's proposals by forming the Association of Surgeons Practising Dentistry in February 1876. The Association's position was that surgical qualifications were adequate for dental practice and should be required for dental appointments to schools and hospitals. This amounted to an attempt by some surgically qualified dentists to protect their livelihoods against competition from dentally qualified practitioners by challenging the competence of qualified dentists. [46] The Dental Reform Committee on the other hand, held that general qualifications did not provide the specialised training necessary to produce a competent dental practitioner. What was at issue was the need to establish appropriate and accessible standards for a hitherto substantially untrained and unqualified profession whilst at the same time establishing and maintaining standards equivalent to others registered in The Medical Register. [47]

John and Charles Tomes declined to join the Association of Surgeons Practising Dentistry which they regarded as a slight to those qualified LDS and "an offensive assumption of superiority for which there is no cause". [48] However Cartwright, who was chairman of the Odontological Society of Great Britain and of the Association of Surgeons Practising Dentistry resigned as chairman of the Dental Reform Committee. Opposition from others like him to the

aims of the Dental Reform Committee would undermine the campaign for registration for the LDS on The Medical Register.

In a letter published in both The Lancet and the BJDS Francis Fox, MRCS, LRCPE stressed the need for "a sound preliminary education in the principles of medicine and surgery ... in those who profess to treat diseases occurring in such important organs as the teeth" and claimed that the LDS did not "ensure even a fair acquaintance with the laws of disease". [49] Whereas John Tomes wanted to widen the scope and raise the standard of the dental curriculum to make it a valid qualification for a surgical specialty, Smith, Cartwright and others differed as to the necessary qualification for dentists. Although Smith favoured a special dental examination he maintained that those with medical or surgical qualifications should be entitled to register as dentists. Tomes, however, insisted on the principle of special education and qualification for dentists:

My purpose in speaking on this matter is to protest very strongly against any person being registered as a Dental surgeon unless he really is one by education and degree. I think if we waive that claim and let any medical man register himself as a Dental surgeon there is an end to our special education altogether. ... I urge upon you not to give registration as Dental

practitioners to any yet uneducated who do not undergo special education. [50]

To allow unqualified dentists or physicians and surgeons to register as dentists without dental qualifications would undermine the work of twenty years to advance the necessity of special professional education for dentists. [51] Tomes insisted on special dental training to ensure that:

Dentistry shall no longer be the refuge of men who, having failed in what they were originally brought up to, can enter its ranks without any training, as they can now... [52]

But his proposals would adversely affect the rights and interests of those permitted to practise dentistry under the terms of The Medical Act, 1858.

Some surgically qualified dental practitioners, who had acceded to limited recognition for the dental profession as long as it remained an inferior branch of surgery, now opposed the establishment of the LDS as the qualification necessary to practise dentistry. What was at issue was not merely the standard of the LDS and its suitability to be registered in The Medical Register but the defence of the rights of those with medical or surgical qualifications to practise dentistry.

The LDS had been a concession to a vocal and respected minority of medically qualified dentists who

posed no threat to the established medical professions. However, from October 1877 candidates for the LDS, as for full membership, had to pass a general preliminary examination before commencing their course. As the standard rose, the LDS was accepted as a sufficient qualification for appointments to lectureships in dental hospitals and schools. [53] More frequent announcements of public appointments in dentistry, for example lecturer on dental subjects in dental and medical schools, or dental surgeon to hospitals and schools, indicate that the LDS was beginning to open the door to worthwhile appointments. [54] Whilst on the one hand this endorsed the case for registration, on the other hand it caused resentment and led to confrontation with powerful forces in the medical world. Surgeon-dentists opposed special and exclusive standards of professional training and qualification for dentists which would adversely affect their fees and restrict the scope of their sons' practices. Thus, by claiming exclusive rights dentists were obliged to resume the battle for registration left unfinished in 1858.

Some reformers recognised that it would be tactically unsound to pursue an exclusive course:

The question is if the College will allow those men who already possess their diploma to be told they cannot practise as Dentists. I very much

question if you will get the College of Surgeons to do that under any consideration. [55]

Controversy raged. Tomes attempted to reassure the medical professions that their right to practise dentistry was not being challenged. The issue was whether those without dental qualifications should be allowed to register as dentists:

It is not in my mind at all to deprive the surgeons of the privilege of performing Dental, or any other surgical operation; all I contend is that he shall not hoist the flag of a speciality, that he shall not register himself as a Dental surgeon... [56]

The Dental Reform Committee's revised resolution that "those persons only who possess the Licentiatehip in Dental Surgery of the Royal College of Surgeons, shall be entitled to use the designation of Dental Surgeon, Surgeon Dentist, Dental Practitioner, or Dentist" resulted in a torrent of resignations from the Dental Reform Committee. [57] Samuel Cartwright, Edwin Saunders, James Smith Turner, Charles James Fox and John Smith published their letters of resignation in the medical press, thus disassociating themselves from the dental reform movement. [58]

Cartwright asserted that "the course proposed and accepted cannot lead to unity, and will scarcely tend to advance the status of the Dental branch of the profession". [59] Tomes replied by condemning his

"repudiation of special education" and reiterating that the Committee posed no threat to the interests of those already established in practice. [60] But many who had promised support at the outset withdrew and, of a promised £1,000, only £450 was paid to the Committee's fund. Comparisons were made with the short-lived College of Dentists and the letters of resignation expressed concern that specialisation would divorce dental surgery from surgery and weaken the status of the new profession. [61] Others pointed out that it was unrealistic to expect physicians or surgeons wishing to call themselves dentists to undertake a longer education than that required to practise as a surgeon. [62] Concern that specialisation might isolate dentistry from medicine and surgery was one reason for the division within the profession, the desire of physicians and surgeons to uphold their right to practise dentistry was another.

Charles Fox endeavoured to re-unite the opposing factions by focusing on the common enemy. All respectable dentists from apprentice to FRCS, were "injured and degraded" by the influx of untrained practitioners. [63] He counselled compromise:

by an obstinate adherence to one small point, viz. that medical men should not be allowed to assume the title of Surgeon-Dentist without possessing the Dental diploma, an utter disruption of the committee has been threatened

... the medical world has been raised into such active opposition against us that it is very questionable now if we shall be able to get anything like an Act of Parliament in our favour, and the whole profession is scandalized by seeing a ... sort of free fight in the medical press, between the hitherto honoured, and revered heads of our speciality, whilst the broad question of general Registration with a view to the gradual extinction of the present anomalous body called Dentists (not the medical Registration of qualified Dentists) has been practically ignored... [64]

By 1877 little progress had been made:

the profession, in one vital point, stood just where it did at the beginning - viz. that any tinker, or tailor, engine-fitter, or watchmaker, who failed to succeed in his employment, could, without any more preparation than he personally chose to obtain, set up as and call himself a Dentist, more frequently despising the simple appellation and dubbing himself Surgeon-Dentist or Dental Surgeon. [65]

This crisis in the reform movement and the defection of many influential members persuaded John Tomes, who had retired from dentistry, to assume leadership of a movement which he regarded as crucial to the advancement of professional education. Under

his leadership the Committee was resuscitated and new members elected. [66] Tomes emphasised throughout that "special training is, without exception, necessary to ensure professional competence in the Dental Practitioner" and that "all persons who for the future intend to practise Dental Surgery should receive such special training, to be tested by examination and attested by registration". [67] But Fox proved right. Instead of achieving a place on The Medical Register, dentists were advised to seek a separate Act of Parliament to establish their own register.

The campaign for registration had highlighted several obstacles to the advancement of standards of dental practice. Dental reformers sought to establish a dental qualification equal in status to those established for the medical professions and therefore worthy of registration in The Medical Register. However, on the one hand, the LDS standard was not sufficient to warrant registration on equal terms with medical and surgical qualifications and, on the other hand, the standard was too high for the aspirations and education of the majority practising dentistry. The desire of reformers to raise the standard would render the qualification more inaccessible and was therefore incompatible with the need to increase the number of trained and qualified dentists. Furthermore, the prospect that the LDS might be

required in order to practise dental surgery was opposed by surgically or medically qualified practitioners who wished to protect their right to practise dentistry without taking an additional dental qualification. Thus, reformers who sought to establish parity with other surgical specialties were defeated by the combined opposition of their professional peers and the limited aspirations of the majority of dental practitioners.

4.3. THE DENTISTS ACT, 1878

On January 30, 1878 Sir John Lubbock, M.P. introduced the Dental Bill. Petitions in favour, signed by 1,100 dental practitioners, were presented to Parliament as evidence of the "absolute necessity" of "special education in the opinion of the majority of Dental practitioners of all educational grades". [68] A small minority (67) of the petitioners held medical or surgical qualifications but an equivalent number (68), members of the Association of Surgeons Practising Dentistry, petitioned Parliament against the Bill on the grounds that the "possessor of the diploma or Fellowship or Membership of the College of Surgeons is entitled to practise the art of surgery on any part of the body". [69] The medical profession petitioned Parliament against the Bill on the grounds that dentistry was a business rather than a profession

and that the Bill "seriously interferes with the existing right of Medical Men". [70] The Royal College of Surgeons of Edinburgh also opposed the Bill on the grounds that it would be "injurious to the fully qualified licentiates of the different licensing bodies". [71] The Royal College of Surgeons in Ireland approved the Bill subject to the condition "that the existing rights of the Licentiates and Fellows of this College to practise Dental Surgery be preserved". [72] With remarkable foresight, the Faculty of Physicians and Surgeons of Glasgow approved the Bill subject to an amendment restricting the admission of unqualified dentists to those who had been in bona fide practice for at least six months before the passing of the Act. [73]

In view of the scale of opposition, the passing of the private member's Bill in August 1878 was a remarkable achievement. As in 1858, without leaders of Tomes's stature, it is questionable whether the dentists would have won a hearing in Parliament. [74] The Dentists Act, 1878 made provision for the registration of those with dental qualifications and Clause 3 sought to eliminate unqualified practice by prohibiting use of the titles "dentist", "dental practitioner", or

any name, title, addition, or description implying that he is registered under this Act or that he is a person specially qualified to

practise dentistry, unless he is registered under this Act. [75]

A fine of up to twenty pounds was imposed for false assumption of title and only registered dental practitioners were entitled to recover fees through the law courts. This meant that The Association of Surgeons Practising Dentistry had "utterly failed in their efforts to undermine the position of the Licentiates in Dental Surgery". [76] Indeed, a committee appointed by the Council of the Royal College of Surgeons unanimously recommended that the LDS was sufficient for appointments as lecturer on dental subjects, or as surgeons to dental hospital or dental departments of general hospitals and that "the severity of the test by which the said licence is obtained" should be gradually increased to give "greater importance and value to it". [77] The principle of dental registration, based on training and examination for a dental qualification, had been established.

The Act also ended the Royal College of Surgeons of England's monopoly, extended access to the qualification to those living in Scotland and Ireland and paved the way for universities to award dental qualifications. [78] Clauses 18 and 19 permitted the medical authorities - colleges and universities throughout the United Kingdom - to award the LDS. Clause 19 specified that, of the six-member Boards of

Examiners to be established by each of the examining bodies, three should be registered dentists. This would mean that dentists had some influence over standards in dental education, if only at a local level. The need for funds for professional education was also recognised. Monies raised by the registration fee of £2 during 1878 and £5 thereafter, could be used to promote:

museums, libraries, or lectureships ... or towards the promotion of learning and education in connexion with dentistry or dental surgery.

[79]

This reflected the commitment of those directing the campaign for dental reform to raise the standard of education for the profession. [80]

But the Act was by no means a total victory. Like The Medical Act, 1858, The Dentists Act, 1878 was very much a product of its time and reflected the laissez-faire spirit of the age in that the government bowed to vested interests. [81] The terms and exemptions under which registration was achieved did not enhance the status of the profession or promote demand for dental training and qualification. It was a case of one step forward and two steps back.

Qualified dentists would not be registered in The Medical Register. Instead, a separate Dentists Register was established. [82] Furthermore, Tomes's view that dentists should hold dental qualifications

had been rejected by the majority of medically or surgically qualified dentists. Although as Tomes had intended, henceforth only those with dental qualifications would be entitled to register as dental practitioners on The Dentists Register, the Act did not infringe the rights of those registered in The Medical Register to practise dentistry, as long as they did not use titles implying dental registration. Registered medical practitioners were also protected against any claim that those with only dental qualifications were entitled to practise medicine or surgery:

A certificate under this Act shall not confer any right or title to be registered under the Medical Act, 1858 ... nor to assume any title, or designation implying that the person mentioned in the certificate is by law recognised as a licentiate or practitioner in medicine or general surgery. [83]

Under the uncompromising leadership of John Tomes the Dental Reform Committee had failed to secure registration for the LDS on The Medical Register which might have generated demand for the LDS. The dental profession was at a further disadvantage in that, although denied the status of registration in The Medical Register, the profession continued to be governed by the General Medical Council, a custodial function which was justified by Sir Donald MacAlister

forty years later on the grounds that in 1878 "there was no dental profession". [84] The overall supervision of the GMC would ensure that standards for the LDS were consistent throughout the United Kingdom but, since the dental profession was not represented on the GMC, the profession would have little influence over what these standards should be. This exclusion was compounded in 1884 with the establishment of the conjoint examination board of physicians and surgeons, a development which integrated the professions of medicine and surgery and left dentistry all the more isolated. [85]

Most damaging in the short term was the registration of unqualified practitioners which undermined the status of The Dentists Register and also demand for dental qualifications. Without substantial concessions to those in practice there would have been too few dentists to meet the needs of the public and, as with The Apothecaries Act, the vested interests of those established in practice were protected. Large numbers of unqualified dental practitioners were admitted to The Dentists Register in the category "in practice before July 22, 1878". These included registered medical practitioners, chemists and druggists, students and apprentices who had commenced professional education prior to the passing of the Act and large numbers of untrained, unqualified practitioners who, on their own

declaration, had been engaged in the practice of dentistry on its own or in conjunction with other medical professions. [86] This compromised the status of The Dentists Register. Furthermore, unregistered dental practice was not illegal provided that practitioners did not use titles implying qualification or registration. [87]

The Dental Reform Committee had anticipated that, owing to demand for treatment, "perfectly uneducated persons" would declare themselves "Dental surgeons" after a period in a workroom only and that "many men will continue to make artificial teeth" whether or not they were entitled to call themselves dentists. [88] The Committee had therefore recommended that those whose practice was limited to making artificial teeth should be excluded from the protection of the Act. This they failed to achieve and demand for prosthetic dentistry would hold back the profession for the next forty years with devastating effects on dental education and dental health. Thus, in 1879, despite the new legislation matters stood very much as they had been after The Medical Act, 1858 and it remained to be seen whether registration in The Dentists Register would be a sufficient incentive to qualify.

The campaign to establish compulsory professional education and qualification, although agreed upon in principle by the majority of dental reformers, had foundered on opposing views of precisely what form

education and qualification should take - whether general medical qualifications were appropriate and whether dental qualifications were necessary - views which were represented by those with vested interests in maintaining both extremes of the professional spectrum.

The Dentists Act, 1878 left the profession and its qualification marginalised, consigned to a separate register whose status was compromised by the majority of unqualified dentists registered therein. The dental profession remained a vassal to the senior branches of the medical profession, with no say in determining standards at a national level. Dental education, examination and registration were supervised, not by a dental council but by the GMC and their future development lay in the hands of the medical establishment. Finally, since The Dentists Act, 1878 did not prohibit unqualified, unregistered dental practice, it would be difficult to increase demand for and raise standards of professional education, training and qualification.

4.4. ENDNOTES

1. FELCE, Stamford. "Dental Dispensaries and Medical Charities". The Lancet, v.ii, 1857, pp. 561-562. Corresp.
2. SPENCER, E.M. "Notes on the History of dental Dispensaries". Medical History, v.26, 1982, pp. 47-66. RICHARDS, N.D. "A Study of the Development of Dental Health Services in the UK - the Profession and Treatment Services 1840-1921". Ph.D. Thesis. University of London. 1979. Chapter 3, pp. 123-129. Previously extraction in out-patient departments of general hospitals and dental dispensaries, was often the only form of dental treatment provided by students or surgeons, some of whom had specialised in dental surgery after qualifying MRCS. [ELLIS, Sir John. LHMC, 1785-1985: the history of the London Hospital Medical College. London: London Hospital Medical Club, 1986, pp. 32-33.] By 1876 cases treated at the Dental Hospital of London for the period 1st to 31st December 1875 were as follows:

| | |
|---|-------|
| Extractions | |
| Children under 14 | 263 |
| Adults | 430 |
| Under nitrous oxide | 139 |
| Gold stoppings | 149 |
| White foil ditto | 36 |
| Plastic ditto | 186 |
| Irregularities of the teeth treated surgically and mechanically | 52 |
| Miscellaneous cases | 150 |
| Advice cases | 99 |
| Total | 1,494 |

["Report of cases treated at the Dental Hospital of London from December 1st to December 31st, 1875". BJDS, v.19, 1876, p. 16.] By May 1877 the total had risen to 2,719. All categories of treatment had more than doubled, except extractions under anaesthesia, irregularities of the teeth treated surgically and mechanically and advices cases which remained static (177, 45 and 89 respectively). The greatest increase was in plastic stoppings (490). ["Report of Cases Treated at the Dental Hospital of London from May 1st to May 31st, 1877". BJDS, v.20, 1877, p. 278.]
3. A Governor of a London Hospital and FELCE, Stamford. "Dental Dispensaries and Medical Charities". The Lancet, v.ii, 1857, pp. 561-562.

Corresp.

4. "The New Order of Dentists". The Lancet, v.i, 1860, p. 450. Edit. These were:- The Dental Hospital of London established in 1858 which incorporated the first British dental school, The London School of Dental Surgery, established in 1859, which subsequently became the Royal Dental Hospital and School; The College of Dentists's Metropolitan School of Dental Science, established in 1859; and the National Dental Hospital, established in 1861, later to become University College Dental Hospital and School. [RICHARDS, N.D., 1979, pp. 127-128.] The College of Dentists, the more radical group chose to emphasise the science of dentistry in the title of their dental school, whereas the conservatives emphasised surgery, indicating their allegiance to the surgical establishment.
5. BJDS, v.3, 1860, pp. 201-205. Edit.
6. SPENCER, E.M. 1982.
7. JBDA, v.5, 1884, pp. 133-134. Edit.
8. When the London Dental Dispensary, founded in 1855 by Charles James Fox, entirely at his own expense, became a public dispensary in 1857, Tomes was the consulting dentist. "Dental Dispensaries". The Lancet, v.ii, 1857, pp. 479-480. Edit.
9. Report of the Committee on Recruitment to the Dental Profession. London: HMSO, 1956. Appendix VIII, p. 60; The curriculum is contained in "The Dental Students' Supplement, September, 1876". BJDS, v.19, 1876, pp. 473-516.
10. TOMES, John. A System of Dental Surgery. London: Churchill, 1859.
11. "The New Order of Dentists". The Lancet, v.i, 1860, p. 450. Edit.
12. The examiners, W. Lawrence, Joseph Green, J.M. Arnott, T. Bell, J. Tomes, and A. Rogers were among the candidates but it is not clear whether they themselves were examined. RICHARDS, N.D. "A Study of the Development of Dental Health Services in the UK - the profession and treatment services 1840-1921". Ph.D. thesis. University of London, 1979. Chapter 3, p. 133.

13. CARTWRIGHT, Samuel. "Inauguration of the London School of Dental Surgery". BJDS, v.3, 1860, pp. 299-307.
14. Ibid.
15. Ibid.
16. TOMES, John. "The Study of Dental Surgery, and the Means Thereto: abstract of a paper read before Section XII of the International Medical Congress, August 5th, 1881". JBDA, v.2, 1881, pp. 434-449.
17. BJDS, v.3, 1860, pp. 415-416. Edit.
18. BJDS, v.2, 1859, pp. 410-411. Edit.
19. BJDS, v.4, 1861, pp. 145-147. Edit.
20. HENRY, C. Bowdler. "Dentistry or Stomatology?" The Lancet, v.i, 1945, pp. 26-27.
21. RICHARDS, N.D. 1979. Chapter 4, p. 148 and HILL, Alfred. History of the Reform Movement in the Dental Profession in Great Britain During the Last Twenty Years. London: Trubner Co., 1877. p. 229.
22. TOMES, Charles S. "Address delivered at the commencement exercises of the Dental School of Harvard University, Boston, Mass., February 12th, 1873". BJDS, v.16, 1873, pp. 162-170.
23. "Dental Reform. Registration and Compulsory Education". BJDS, v.18, 1875, p. 474.
24. Registration also brought certain privileges, for instance the right to recover fees at law.
25. BJDS, v.10, 1867, pp. 457-466.
26. NICOL, William Henderson. "The Dental Diploma". BJDS, v.9, 1866, pp. 164-165. Corresp.
27. Although Messrs Claudius Ash had maintained a careful, up-to-date list of all dentists, some of their assistants and pupils and of others who did some dentistry in conjunction with other businesses. Alfred Hill compiled a Dental Licentiates Directory and Local List but these had no official authority.
28. See Hill p. 211 for the Memorial.

29. Specialist qualifications, such as the L.M. in midwifery, were additional to general qualifications.
30. DENNANT, John. "Registration and Compulsory Education". BJDS, v.18, 1875, pp. 393-396. Corresp.
31. TOMES, Charles S., 1873.
32. Ibid.
33. Fox who had previously taken an active interest in both the Odontological Society and the College of Dentists had allied himself to no one dental faction. [ROSS, Rufus M. "The Development of Dentistry: a Scottish perspective circa 1800-1921". Ph.D. Thesis. University of Glasgow, 1994, p. 158.]
34. WAITE, W.H. in "Dental Reform. Registration and compulsory education". BJDS, v.18, 1875, pp. 467-494, p. 484.
35. Ibid.
36. SMITH, John. BJDS, v.20, 1877, pp. 219-220. Corresp.
37. John Smith, MD, LRCS played a leading role in dental education in Scotland and delivered a series of lectures on dental surgery in Glasgow prior to the establishment of the LDS in 1858. [The Lancet, v.ii, 1857, p. 316. See also ROSS, R.M., 1994, pp. 142 and 159ff.]
38. WORMALD, Sidney in "Registration and Compulsory Education". BJDS, v.18, 1875, pp. 467-494, p. 492.
39. DENNANT, John in "Dental Reform. Registration and Compulsory Education". BJDS, v.18, 1875, pp. 477 and 483.
40. "Dental Reform Committee". BJDS, v.19, 1876, pp. 217-225.
41. FOX, C. James. "Dental Reform. Registration and Compulsory Education". BJDS, 1875, v.18, pp. 469 and 479.
42. "Dental Reform Fund". BJDS, v.18, 1875, pp. 678-683.
43. FOX, Charles James. "Letter to the Editor of The Lancet". BJDS, v.8, 1865, p. 201. Miscellanea.

44. FOX, Charles James. BJDS, v.18, 1875, pp. 578-579. Corresp.
45. The resolutions were as follows:
"1. That those persons only who possess the Licentiateship in Dental Surgery of the Royal College of Surgeons, with the exception of those by law already permitted to do so, shall be entitled to use the designation of Dental Surgeon, Surgeon Dentist, Dental Practitioner, or Dentist.
2. That any person using either of the foregoing designations, unless entitled to do so, shall, on conviction before a Court of Justice, be fined in a sum not exceeding.....for the first offence, &c.
3. That a special schedule be added to the Medical Act for the registration of qualified Dental Surgeons as such only, subject to such general conditions as apply to the registration of qualified medical practitioners in respect to fees, conduct, &c.
4. That qualified Dental practitioners alone shall be capable of recovering fees for Dental operations.
5. That nothing in this Act shall apply to the prejudice or hindrance of persons in practice before the passing of the Act, but in case of the question being raised it will be for the individual to prove the date of his entrance on practice.
That as far as practicable a list of those practising as Dentists at the time of the passing of this Act be made and be deposited at ... for the convenience of reference. ["Dental Reform Committee". BJDS, v.20, 1877, pp. 217-218.]
46. See DONALDSON, J.A. "... Drawers of Teeth and Hewers of Jaw-bones ...". BDJ, v.120, 1966, pp. 569-573 for a more detailed exposition of this controversy and ROSS, R.M., 1994, pp. 160ff, for details of the Scottish opposition to an independent dental profession.
47. The medical profession was not totally opposed to the dental profession and cooperated with dentists by administering anaesthetics. This collaboration was based on recognition of the value of dental education and qualification. Anaesthetics were not administered for unqualified dentists.
48. TOMES, John. "Mr Tomes on the New Dental Society". BJDS, 1876, v.19, p. 281. Corresp.

49. FOX, Francis. "From Mr. Francis Fox to the Editor of the Lancet". BJDS, v.20, 1877, pp. 402-403. Corresp. Cases of death under anaesthesia used in dental treatment were occasionally reported in the dental press and were no doubt convenient fuel for the medical profession.
50. TOMES, John. BJDS, v.20, 1877, pp. 222-223. Corresp. See also Tomes's letter to The Lancet and BMJ regarding the lack of specialist training. BMJ, v.i, 1876, p. 772 and The Lancet, v.i, 1876, p. 906.
51. TOMES, John. "Dental Reform Committee". BJDS, v.20, 1877, p. 222.
52. BJDS, v.20, 1877, p. 285. Edit.
53. BMJ, v.1, 1876, p. 235. Cited by RICHARDS, N.D. 1979. Chapter 5.
54. e.g. "Appointment". BJDS, v.20, 1877, p. 406.
55. SIMS, Mr. BJDS, v.20, 1877, p. 225. Corresp.
56. TOMES, John. "Dental Reform Committee". BJDS, v.20, 1877, p. 226.
57. "Dental Reform Committee". BJDS, v.20, 1877, pp. 217-241.
58. "Mr Cartwright's Resignation of the Chairmanship of the Dental Reform Association". BJDS, v.20, 1877, pp. 253-261; "Dental Reform Committee. General Meeting on the 16th June 1877..." BJDS, v.20, 1877, pp. 386-409.
59. "Mr. Cartwright's Resignation of the Chairmanship of the Dental Reform Association". BJDS, v.20, 1877, pp. 253-261.
60. Ibid.
61. TOMES, John and HUET, F.A. "Dental Reform Committee". BJDS, v.20, 1877, p. 235.
62. "Mr. Cartwright's Resignation of the Chairmanship of the Dental Reform Association". BJDS, v.20, 1877, pp. 253-261.
63. BJDS, v.20, 1877, pp. 281-282. Edit.
64. Ibid.
65. FOX, Charles James. BJDS, v.20, 1877, pp. 278-285. Edit.

66. Underwood became vice-chairman and Charles S. Tomes and David Hepburn of Edinburgh joined the Committee. "Dental Reform Committee. General Meeting 16th June 1877..." BJDS, v.20, 1877, pp. 386-409.
67. TOMES, John, Chairman, "Dental Reform Committee. General Meeting". BJDS, v.21, 1878, p. 157.
68. Ibid.
69. "Dental Practitioner Bill". BJDS, v.21, 1878, pp. 184-190.
70. Rymer claimed that canvassers had been paid to obtain signatures against the bill. RYMER, Samuel. "The Dental Reform Committee. General Meeting". BJDS, v.21, 1878, p. 163; "The Dental Practitioner Bill". BJDS, v.21, 1878, pp. 185-186.
71. BELL, Joseph, Secretary, RCS, Edin. BJDS, v.21, 1878, p. 189. Corresp.
72. HUGHES, J. Stamms. Secretary, RCS in Ireland, Ibid, p. 188. Corresp.
73. DUNCAN, Alexander, Secretary, FPS, Gla. Resolution of the Faculty in Reference to the Draft Bill. Ibid, p. 188.
74. Both Sir John Lubbock and the Lord President, Lord Lansdowne, who took the Bill through the Lords, were patients of Tomes. [RICHARDS, N.D., 1979. Chapter 5.]
75. The Dentists Act, 1878. (41 & 42 Vict.) c. 33. Clause 3.
76. "The Royal College of Surgeons of England and the Dental Diploma". BJDS, v.20, 1877, p. 405. Edit.
77. Ibid.
78. "Notwithstanding anything in any Act of Parliament, charter, or other document, it shall be lawful for any of the medical authorities (herein-after referred to as colleges or bodies) who have power for the time being to grant surgical degrees, from time to time to hold examinations for the purpose of testing the fitness of persons to practise dentistry or dental surgery ... and to grant certificates of such fitness ..." [The Dentists Act, 1878. Clause 18.] "... with reference to a medical board, the council or other governing body of the Royal

College of Surgeons of Edinburgh, and of the Faculty of Physicians and Surgeons of Glasgow, and of the Royal College of Surgeons in Ireland, and of any university in the United Kingdom respectively, may from time to time appoint a board of examiners for the purpose of conducting the examinations and granting the certificates herein-before mentioned." [The Dentists Act, 1878. (41 & 42 Vict.) c. 33. Examinations. Clause 19.]

79. The Dentists Act, 1878. Clauses 16 and 32.
80. DONALDSON, J.A. Personal communication. May 1989.
81. DONALDSON, J.A. "... Drawers of Teeth and Hewers of Jaw-Bones ...". BDJ, v.120, 1966, pp. 569-573
82. The Dentists Act, 1878. Clause 11.
83. The Dentists Act, 1878. Clause 27.
84. Departmental Committee on the Dentists Act 1878. Report of the Committee appointed by the Lord President of the Council to Enquire into the Extent and Gravity of the Evils of Dental Practice by Persons not Qualified under the Dentists Act. London: HMSO, 1919, p. 43.
85. GOURVISH, T.R. and O'DAY, Alan (eds.). Later Victorian Britain, 1867-1900. London: Macmillan Educational, 1988, p. 26.
86. The Dentists Act, 1878. Clause 37.
87. Unqualified dentists continued to use other well-established titles such as "toothdrawer", "dental operator" and "operator for the teeth" without infringing the law.
88. TURNER, Mr. "Dental Reform Committee". BJDS, v.20, 1877, p. 236.

CHAPTER 5: THE CASE FOR HIGHER STANDARDS OF PROFESSIONAL EDUCATION, 1878-1900

To consolidate the achievements of The Dentists' Act, 1878 and overcome its shortcomings, the profession needed to establish and maintain integrity for The Dentists Register, increase demand for the services of qualified practitioners to stimulate recruitment and maintain appropriate standards of professional education and qualification. This chapter will focus on the measures taken to achieve these ends during the last quarter of the nineteenth century.

The formation of the first professional association of qualified dental practitioners and its role in promoting the interests of qualified dentists, dental care and dental services will be examined. The need to ensure uniform standards, following the extension of licensing to the colleges in Scotland and Ireland, will be followed with reference to contemporary journalism and the reports issued by the General Medical Council (GMC). Advances in dental science and technique and the need to accommodate the relatively new sciences of pathology and bacteriology, which necessitated change in the curriculum and contributed to the debate regarding higher qualifications, will also be described. A comparative analysis of the curriculum and of the reports and

recommendations issued by the GMC will show the way in which the curriculum evolved, under the overall supervision of the GMC, prior to the establishment of dental degrees. The chapter will conclude by summarising calls for higher standards of education and qualification expressed during this period in the dental press.

5.1. THE BRITISH DENTAL ASSOCIATION

Whereas the Colleges existed to provide qualifications and to protect the interests of their members, the success of the British Medical Association (BMA) had demonstrated the value of professional solidarity and corporate strategy in advancing standards and the interests of the medical profession on a national scale. The BMA's objectives also reflect the central role of professional education in professional advancement. [1] It was hoped that the formation of a professional association of dentists would promote uniform standards amongst those with disparate backgrounds and create a body invested with authority to negotiate, on the profession's behalf, with the medical profession and the government.

A national general meeting of the dental profession, called by advertisement in The Times, and held in March 1880, passed the resolution to form an

association which was subsequently registered on May 28, 1880 as the British Dental Association (BDA). [2] Its memorandum of association was signed by many of the key members of the reform movement and the first meeting, held on July 26, 1880 at the Dental Hospital, Leicester Square, London, was addressed by John Tomes who became the Association's president at the First Annual Meeting in 1881. [3]

The new Association assumed the Dental Reform Committee's role, advancing the interests of the profession and complementing the scientific preoccupations of the Odontological Society with a more political profile. The Association acquired The Monthly Review of Dental Surgery, renaming it The Journal of the British Dental Association (JBDA), under the joint editorship of Alfred Coleman and Joseph Walker, although control over selection of material to be published was vested in the Publishing Committee under the chairmanship of Charles Tomes. [4] The profession now had a national association with branches in the provinces and a journal to communicate within the profession. Its aims were "to watch over the general interests of the profession, especially with reference to carrying out the provisions and spirit of the Dentists Act", by co-ordinating the activities of qualified practitioners to protect, consolidate and advance standards in the profession. [5] However, only qualified dentists were

eligible for membership. Meanwhile, unqualified dentists grew in number and strength and formed their own societies, The Chemists Dental Society from 1910 and The Society of Extractors and Adaptors of Teeth, later to become the Incorporated Dental Society from 1911. The British Dental Association could not therefore claim to represent the vast majority of practising dentists. Whereas some professional associations formulated curricula and examinations, for instance the Royal Institute of Chartered Surveyors (RICS) and the Royal Institute of British Architects (RIBA), the BDA did not. The curricula and examinations for the LDS were set, not by the dental profession, but by the surgical colleges. The profession therefore had less control over standards.

The Dentists' Act, 1878 fell a long way short of eliminating unqualified practice or increasing the number of qualified dentists. In the first Dentists Register in 1879 only 9% were qualified. The remaining 91% were bona fide practitioners registered in the category "in practice in 1878" and subsequently referred to as "dentists, 1878". [6] The accuracy of The Dentists Register was questioned at the first annual meeting of the BDA. [7] In the rush to register, investigation was virtually impossible; by the end of 1878, 4,637 dentists had been registered and only 83 had been refused registration.

The GMC did little to pursue the BDA's

allegations of fraudulent registration and it was left to the profession to institute proceedings against unregistered practitioners. [8] Whereas The Dentists Register, 1881 shows 5,266 dentists, the Census for the same year, which classified occupations according to first named occupation, shows only 3,903. [9] Evidence presented to the Acland Committee in 1919 endorsed the Association's claims that the GMC had been less than scrupulous in investigating applications for registration; many pupils, students and apprentices were too young to have been apprenticed in any meaningful way at the time of their registration. [10] Furthermore, The Dentists' Act did not prevent unqualified persons extracting teeth as long as they did not call themselves dentists. As Tomes pointed out, unqualified practitioners could invent "a new form of words which is not the designation of a particular diploma" without infringing the law. [11] The efforts of the professional association were therefore directed towards eliminating the disreputable practices of unregistered dentists and with the struggle for representation on the GMC. [12]

The BDA also campaigned for dental health education and did much to promote public dental care, especially for children and the armed forces. [13] But it was difficult to promote dental health at a time when, owing to lack of professional training,

few were competent to provide conservative and preventive dental treatment. Indeed, a large number of practitioners, operating outside the profession, extracted teeth faster than reputable dentists could fill them. An occupational grouping composed of partly-trained, semi-professional practitioners and disreputable, unscrupulous tradesmen did not promote the benefits of dental care or dental treatment, nor did the adverse publicity generated by the BDA's unrewarding legal battle against unqualified practitioners recommend the profession to potential entrants or clients. It was acknowledged that:

dentistry can never be a learned profession in the eyes of the public so long as unprincipled and unqualified men are allowed to pilfer their pockets and prostitute an honourable calling.

[14]

Legislation had failed to establish a corps of competent practitioners and the gradual retirement of "bona fide" practitioners was not matched by a significant increase in the number of qualified practitioners. Professional education and training were vital to overcome the great variation in expertise and training and create a body of competent, qualified practitioners able to provide a comprehensive range of dental treatment which would demonstrate the benefits of professional dental care. Without compulsory, uniform professional education of

a high standard, the quality of dental care would remain poor.

5.2. PROFESSIONAL EDUCATION, 1878-1900

Despite the lack of demand for even the minimum training and qualification, it had been suggested in 1877 that "one of the first duties of the Dental Reform Committee is to take effectual steps to make the dental diploma something more than an inferior animal": the dental profession was "only a second-rate thing", a "kind of rubbish shoot and a home for incapables". [15] In 1878, an editorial which reminded the profession that universities elsewhere provided "the highest Dental education, and their degrees are valued accordingly", suggested that dental education should be "a priority now that registration has been secured". [16] Thus, notwithstanding the lack of demand for the existing qualification, some members of the profession were aware of the need for higher standards.

What then were the requirements for the LDS? The claims for and against the LDS curriculum may be evaluated by examining the requirements for the Royal College of Surgeons of England's Diploma in Dental Surgery. [17] Candidates were examined after four years of professional study and had to be at least twenty-one years of age. A written testimonial of

moral character was required and, from October 1, 1877 the Preliminary Examination in General Knowledge for the Membership Diploma, or an equivalent, was required. Entrance requirements were demanding at a time when unqualified dentists could practise in defiance of the law. The pre-clinical curriculum was based on the surgical diploma. This provided the grounding in sciences common to both professions - general anatomy, physiology, surgery, medicine, chemistry and materia medica - plus attendance at not less than twenty lectures on the anatomy of the head and neck. Candidates were also required to attend courses in dissection and chemical manipulation and both the practice of surgery and clinical lectures on surgery at a recognised hospital. [18]

The clinical dental curriculum included additional lectures on dental anatomy and physiology (human and comparative), dental surgery, dental mechanics and metallurgy, a three year pupillage in mechanical dentistry and two years clinical attendance in a recognised hospital. [19] Thus three years were spent on mechanical dentistry and two on dental surgery. Lectures on anatomy of the head and neck were acceptable as an alternative to lectures on general anatomy. [20] Bacteriology, anaesthesia, restorative dentistry and orthodontics were not mentioned and, although there were written papers in general anatomy, physiology, general pathology and

surgery, examination of the dental curriculum was substantially oral. [21] This indicates the deficiencies of a curriculum and examination set by a surgical college under the supervision of a medical council.

The scientific and medical foundations of the dental curriculum were assured, in keeping with Tomes's intention that the curriculum should be "three-fifths medical and two-fifths dental or special". [22] But a curriculum based on a surgical model was inappropriate in two respects. Firstly, standards equivalent to those expected of surgeons were too high for the majority of candidates whose school education did not prepare them for professional training and who did not appreciate the relevance of the curriculum. Secondly, colleges of surgeons were ill-equipped to initiate changes in the dental curriculum - particularly the clinical curriculum. Furthermore, the largest dental component in the curriculum, mechanical dentistry, was taught in private practice which meant that there was little control over standards.

One weakness of dental education in the second half of the nineteenth century lay in the timing of its establishment. The examination for the LDS was established before the machinery for providing education was in place. The charitable dental dispensaries established in cities throughout the

United Kingdom from the mid-nineteenth century onwards provided limited institutional facilities for dental education but their educational role was secondary to their prime role as providers of dental services to those who could not afford to pay private practitioners' fees. [23] Dental dispensaries did not provide the range of scientific and clinical education provided by the medical colleges and university medical schools. Just as the establishment of the LDS, RCS, Eng. led to the establishment of dental schools in London, so too The Dentists' Act, 1878 provided the impetus for the establishment of dental schools in Scotland and elsewhere. As the JBDA commented in 1883:

Up to the date of the passing of the Dentists Act, 1878 London had practically a monopoly of dental education. The Act, by making compulsory what had before been purely optional, at once created a demand for educational facilities; well-appointed hospitals and schools were quickly established in Edinburgh and Glasgow, and steps taken to render more readily available for teaching purposes some of the already existing hospitals, as at Liverpool and Birmingham. [24] The Glasgow Dental Hospital and School was congratulated for "the prompt energy with which our Glasgow friends have set to work", and in Edinburgh dental education was provided initially in the

Edinburgh Dental Dispensary until this body was reconstituted as The Edinburgh Dental Hospital and School in 1880. [25] However, at this time dental education had no formal association with or place in the universities. [26] Furthermore, The Dentists Act, 1878 permitted dentists established in practice to take the examinations without having undergone the curriculum (sine curriculo), an option which was preferred by many, since the science-based curriculum for the LDS was demanding. [27]

Whereas educational facilities were established in Edinburgh and Glasgow within six months of the 1878 Act, it was nearly six years before the Dental Hospital of Ireland was established in Dublin and many travelled to Ireland to take the LDS, RCSI sine curriculo. Between 1878 and 1884 the Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow together issued 120 diplomas. In the same period the Royal College of Surgeons in Ireland granted 316 diplomas, due to its greater leniency in regard to sine curriculo candidates. [28] This gave rise to concern to regulate standards in the regional colleges. For instance, The Dental Reform Committee expressed concern at "the low standard of professional education set forth in the Dental curriculum of the Royal College of Surgeons of Ireland" and emphasised that standards should be uniform. [29]

In addition to the more general concern at the numbers either not qualifying at all or qualifying sine curriculo, an elite of the profession was also aware of the need for higher standards. In 1880, in a presidential address to the Association of Surgeons Practising Dentistry, W.A.N. Cattlin, FRCS described the Dentists Act, 1878 as a "withering storm" which cut dentistry off from the parent tree of medicine and lamented the low standard of the LDS:

If a little learning be a dangerous thing, and if it be true of all professions that he who is only half-educated can only be half-trusted, then the dental licentiates will be most unwise if they remain in their present anomalous position.

[30]

Replying to this propaganda in favour of surgically qualified dentists, John Tomes described the LDS as "amply sufficient as a guarantee of professional position and competence". [31] Whereas previously dentistry had been "an outlying and uncontrolled branch of general surgery", the dental licentiate's education, examination and registration were now "governed by the General Medical Council and the surgical corporations". [32] Tomes regarded the LDS as a significant improvement on the previously unregulated state of the profession and a more realistic objective than surgical and dental qualification and one which was consistent with

"common sense, common justice and the interests of the public". [33] However, there was a dramatic fall in the number of registered dental students once candidates were required to have passed the pre-clinical scientific examinations and an equivalent fall in the number of candidates as entrance standards were raised.

One factor which may have contributed to the lack of applicants for the existing dental qualification was the anomalous position of the dental profession. The controversy concerning dentistry's position as a medical specialty for which full medical qualification was not required, had not been resolved. In 1882, Thomas Gaddes compared the relationship between dentistry and medicine and surgery to that between medicine and surgery where the limits were "somewhat arbitrary". [34] An editorial in the British Journal of Dental Science suggested that dentists must decide "as to the exact position they wish to take in relation to the medical profession". [35] So, although the dental curriculum and examination supervised by the GMC marked a significant improvement on the previously unregulated state of the profession, if dentists were to achieve status and standards equivalent to those established for medicine and surgery they would require equivalent standards of education and qualification.

The increasing importance of university degrees

in medicine and surgery meant that the LDS could not be regarded as the ultimate achievement and the establishment of university dental degrees in the United States fuelled the debate as to the status of the dental qualification. In the United States universities taught and examined dentistry and awarded dental degrees. [36] In the United Kingdom dental schools were not attached to universities. Instead, the curriculum was taught in pupillage, in general and dental hospitals and medical colleges and examined by the surgical Colleges.

The dental hospitals, which became centres for clinical dental education, had been founded to provide treatment for poorer sectors of the population and were financed by charitable benefaction and student fees. Dentistry was not a popular charity and, without compulsory professional training, fee revenue was poor. The schools were staffed by dental practitioners who gave their services free in return for the status of their honorary appointments and fees for clinical instruction. Private practices had first claim on their time. Chronically underfunded, the dental schools did not have the resources to establish the full range of clinical facilities and teaching establishment required to develop dental education. It would take time and resources to establish the infrastructure of staff, facilities, accommodation and equipment. In the short term there was little demand

for professional education and therefore, particularly outside London, there was neither the incentive nor the resources to develop dental schools equivalent to medical schools. However, in the longer term, advances in science and technique would alter the content of the curriculum, the standard of qualification, the way it was taught and by whom.

5.3. ADVANCES IN THE SCIENCE AND TECHNIQUE OF DENTISTRY, 1858-1900

Advances in dental science and technique broadened perceptions of the scope of dentistry, its relationship to medicine and the standard of education required. Technical developments, advances in dental anaesthesia and scientific discoveries contributed to the development of dental surgery, restorative and preventive dentistry and emphasised the need for sound training in the medical and biological sciences and clinical dentistry.

Prior to 1850 there had been little attention to the eradication of caries; the emphasis was on extraction of diseased teeth and dental prosthetics. [37] However, in the last quarter of the nineteenth century conservative dentistry underwent a technological transformation. The invention of mechanical drills, points, discs, wheels, hydraulically adjustable chairs, filament lamps, tiny

lamps that could go inside the mouth, efficient electric engines, electric mallets which made gold foil work simpler and quicker, gas and electric water heaters, improved shapes of porcelain teeth for denture work, jacket crowns and the first silicophosphate filling materials promised to transform dental practice. [38]

These technical advances were accompanied by scientific discoveries which would transform the scope and prognosis of dental practice. Willoughby Dayton Miller's Microorganisms of the Human Mouth, published in 1882, showed that acids formed by bacteria in the mouth were responsible for tooth decay. [39] Histological study of the hard tissues of teeth showed that the soft caries had to be removed and the cavity shaped to retain the filling material. Greene Vardiman Black's experimental work in the 1890s demonstrated that amalgam, which had been used empirically since 1834, could, when properly handled, be used effectively as a filling material thus ending the first "amalgam-war". [40] New understanding of the biology of dental caries, the development of filling materials, G.V Black's "epoch-making rules for cavity preparation" and local anaesthesia opened up a more effective range of dental treatment. [41] Knowledge of the biological sciences formed the foundations of conservative and preventive dentistry.

Dental surgery was also transformed by major

advances in anaesthesia and the development of antiseptic techniques which meant that, in the hands of a competent practitioner, oral surgery would become less painful and hazardous. [42] Cocaine, the first reliable local anaesthetic was introduced in 1884, liquid nitrous oxide became commercially available to the profession in England in 1872 and was used for the first time in analgesia for cavity preparation in 1889, although it was not until the early nineteenth century that these techniques was perfected and adopted in practice. [43] These developments, the more widespread use of general anaesthesia in dentistry by the end of the nineteenth century and, the dangers associated with chloroform, ether and cocaine as anaesthetic or analgesic agents meant that, more than ever before, competent dental practice required knowledge of science, medicine and supervised clinical experience with appropriate mechanisms and procedures for safeguarding the patient. As Ross points out, just as treatment improved as a result of dental anaesthesia, aseptic procedures and X-rays, so too did demand for dental treatment. [44] However, the potential abuses of some advances in dental technology in inexperienced hands (for instance, improved denture design and dental amalgam), meant that the safe and effective application of techniques, new and old, and depended on universal standards of professional education which would enable all dental

practitioners to win patients' confidence and trust.

The expanding scope of dental practice was based on technical and scientific advances and perceptions of the need for state dental services would also be informed by the relatively new science of epidemiology. Competent dental practice was based on technical skill plus scientific, medical and surgical knowledge. Controversy concerning the dental curriculum arose from the need to balance these requirements. And, since training was costly and a well-equipped surgery required a considerable capital investment, it was difficult to extend the curriculum without deterring candidates. This was a crucial issue at a time when the priority was to increase the number of qualified dentists. Although J.C. Oliver claimed that the dental diploma did "pay", the profession would not attract suitably qualified candidates as long as their fees could be undercut by the unqualified. [45]

5.4. GMC REPORTS AND RECOMMENDATIONS, 1879 and 1898

Those with medical and surgical qualifications alleged that the standard of the LDS was low. By the late nineteenth century, although there was room for improvement in clinical training, many of the previous deficiencies of medical education had been remedied:

The "systematic neglect" of scientific study both by students and examining bodies, which was complained of by a minority of teachers in the 1870s, gradually disappeared, and by 1900 the necessity for medical education to rest on a scientific basis was not only acknowledged in principle but was also recognized in fact. [46]

As the dental curriculum evolved to reflect scientific advances which had contributed to change in the medical curriculum (bacteriology, pathology and physiology for instance), there was discussion of raising the standard of the LDS. The introduction of a new higher qualification was also on the agenda at this time. The GMC's curricular reports and recommendations are an invaluable source on the substance of this debate, on the evolution of the dental curriculum and the role of the GMC in determining standards.

The GMC's function was to inspect schools, oversee examinations and make recommendations regarding the curriculum. The report issued in 1879 was compiled by a committee representing the four licensing authorities: the RCS Eng., the Royal College of Surgeons of Edinburgh (RCS, Edin.), the Faculty of Physicians and Surgeons of Glasgow, (FPS Gla.) and the Royal College of Surgeons in Ireland (RCS, Irel.).

[47] The dental profession was not represented.

[48] The GMC recommended that, although the

examinations were "adequate", they should be "so far as possible of a practical character, and should include actual operations and the preparation of specimens in Mechanical Dentistry" to test "ability and skill in operations". [49] The GMC was therefore aware of the need to test clinical skills.

The GMC reported that, despite remarkable uniformity, the colleges in Scotland and Ireland were more lenient. There, sine curriculo candidates were required to have been in practice prior to the institution of qualifications in 1878 rather than 1859 as in London, and courses were generally shorter. For instance, the RCS Edinburgh required six instead of twelve months of clinical instruction in surgery and one course, not two, in each of the special dental subjects. In Glasgow and Edinburgh dissections and demonstrations could be substituted for lectures in anatomy, and dental pathology was not required. [50] The colleges in Scotland and Ireland permitted re-examination after three months, whereas the RCS Eng. insisted on a period of six months between examinations. [51] The RCS in Ireland required only nine months attendance on dental surgery, instead of the two years required by the RCS Eng., and from 1881 would omit medicine, dental anatomy and physiology. The GMC regarded the Dublin curriculum as "distinctly inferior to that of the other three Colleges". The College was "strongly recommended" to:

extend the period of attendance on the practice of Dental Surgery at a hospital which is required, and to include, at least, the subjects of Medicine and Dental Anatomy and Physiology in the requirements for its Diploma. [52]

In some respects the standard in the Scottish Colleges was superior to the RCS Eng. For instance, whereas the RCS Eng. proposed to include a practical examination in the dental section in June 1880, Glasgow already examined manipulative skill and, the RCS, Edin. examined medicine, therapeutics and dental mechanics which are not mentioned in the equivalent examination in London. [53] Also, the RCS Eng. required that practitioners supervising pupils should be "competent", rather than registered, implying a reluctance to accept the value and necessity of dental registration; elsewhere the colleges stipulated "registered". Despite these variations, the role of the GMC and the colleges in regulating and maintaining standards ensured that there was relative uniformity in the requirements of the four colleges. [54]

Although diplomas and degrees were awarded by universities in the United States of America (USA) - (Harvard, Michigan, Pennsylvania, and Philadelphia) - Harvard's Doctor of Dental Medicine (DDM) and the University of Michigan's Doctor of Dental Science (DDS) were the only American qualifications accepted by the GMC as equivalent to the LDS. [55] There is

no mention of the degrees awarded by the Baltimore College of Dental Surgery which had pioneered specialist dental education. This may reflect the college influence within the GMC and the desire to protect college members and fellows from competition with foreign graduates using the more prestigious title "Doctor". [56] However, although the standard in some North American universities may have been higher than the LDS, there was no governing body equivalent to the GMC and the proliferation of competing colleges, which were not regulated in any way was, initially, detrimental to overall standards of professional education for dentists in the United States.

In the United Kingdom supervision by the GMC ensured that the dental curriculum did not focus on technique at the expense of science and medicine, a gain which may have been made at the expense of progress in clinical dentistry. GMC supervision ensured that the scientific foundations of the dental curriculum, which would underpin diagnostic, therapeutic and preventive skills were firmly in place. However, inadequate representation on the GMC may have delayed progress in establishing the specifically dental curriculum and higher standards of qualification.

The campaign for dental representation on the GMC, which was supported by Sir James Crichton Browne,

MD, FRS, James Smith Turner, Vice-President of the BDA, Charles S. Tomes, President of the BDA and Morton Smale, Dean of the Dental Hospital Of London, became increasingly vocal and was well-publicised during the 1890s. [57] Letters from distinguished members of both medical and dental professions which stressed the need and justification for dental representation and pointed out the substantial revenue derived by the GMC from dental registration fees, were published in the medical and dental press. [58]

This campaign achieved an albeit limited success when, on 19th January, 1898 the Queen granted the request of her Privy Council and Charles S. Tomes was appointed as dental representative on the General Medical Council. [59] This was a Crown not a statutory appointment and Tomes was medically qualified, which suggests a lingering reluctance, on the part of the medical establishment, to accept the status of the dental diploma. Furthermore, Tomes was not a member of the Dental Education and Examination Committee. Nevertheless, henceforth the GMC was well briefed in matters of dental education by Charles Tomes, a dental practitioner, eminent histologist and lecturer in the Dental Hospital of London.

The new recommendations issued by the General Medical Council in May 1898 were unanimously approved by all the dental schools. [60] Although the lack of applicants meant that it was unrealistic to impose

higher standards, attempts to reduce the scope of the curriculum and examinations were opposed by representatives from the Dental Schools and unanimously rejected on the grounds that it would be:

undesirable to reduce the present scope of the curriculum and examination in general subjects, which they regard as a minimum necessary for the satisfactory qualification of a Dental Practitioner. [61]

Although the curriculum was still heavily slanted towards the mechanical training, the scientific and medical curriculum was expanding. Recommendations regarding the "general subjects" stipulated practical work in chemistry, physics, anatomy, physiology and emphasised pathology and clinical teaching in surgery and medicine. Amendments, proposed by Thomas Bryant and seconded by Charles Tomes, extended the course in physiology, added a course on surgical and general pathology, and a twelve month course on clinical surgery and medicine at a general hospital. [62] An amendment proposed by medical practitioners to extend the courses in clinical surgery and clinical medicine was emphatically rejected. However, amendments which proposed firstly, that courses in medicine and clinical medicine should be deleted since medicine was not examined and secondly, that the duration of instruction in each subject should be deleted in line with the medical curriculum, were also defeated.

[63] At this time the GMC's priority was to maintain the medical foundations of the fledgling dental curriculum.

The revised dental curriculum emphasised the medical foundations of the dental curriculum namely, pathology, materia medica and therapeutics. The addition of dental histology, dental pathology, dental metallurgy, and the stipulation that practical instruction should be given by "registered" dentists, marked progress towards establishing a specifically dental curriculum. [64] The previous exemption for qualified surgeons from one year of practical instruction - "in the cases of qualified Surgeons evidence of a period of not less than two instead of three years of such instruction will be sufficient" - was omitted. [65] It was gradually becoming accepted that, in terms of dental competence, surgical qualifications were neither equivalent nor superior to the dental diploma. However, although the examinations included a practical component, there was still no clinical examination in "practical diagnosis and operations involving patients." [66]

Thus, by the end of the nineteenth century the curriculum for the LDS was based on the biological and medical sciences. Indeed, candidates were advised to register as medical students in order to take medical qualifications at a later date. As the curriculum expanded to embrace medical sciences, there was no

corresponding reduction in emphasis on mechanical dentistry. Demand for dental extractions and prosthetic dentistry meant that competence in both was still necessary and the lack of occupational subdivision meant that dentists required technical skills. Forty years of professional education for dentists under the overall supervision of the GMC had consolidated the scientific and medical curriculum. This would be a significant factor in the transition from diploma to degree. However, there was as yet little demand for a substantially medical curriculum from candidates for a profession which had been essentially skill-based.

5.5. THE CASE FOR A HIGHER QUALIFICATION OR DEGREE IN DENTISTRY

The dental curriculum became crowded as new subjects such as bacteriology, pathology and microbiology were added. The increasing emphasis on these new medical sciences fuelled the debate concerning the curriculum, the qualification and the possible establishment of higher college or university qualifications equivalent to those already established in medicine and surgery. By the late nineteenth century, medical education and training took place in medical schools and was examined by the colleges and by the universities. Dental students, who were taught

partly in apprenticeship and partly in general and dental hospitals and schools, were examined exclusively by the colleges. [67]

Dentists were aware of the deficiencies in the LDS and of the development of university education for the professions in the United Kingdom and elsewhere. [68] On the establishment of the Dental Department at Harvard University in 1872, Dr. Oliver Wendell Holmes, the Professor of Anatomy, commended the establishment of dental education in "a fully-organized educational institution" and assured the profession in the United Kingdom that "before our old University would take such a step, its governing boards had satisfied themselves that the time was fully ripe for it." [69] Charles Tomes congratulated the University of Harvard on having assumed "the true function of a university, as a pioneer in education and a promoter of knowledge". [70] Tomes pointed out that, although "a body of the highest standing", the Royal College of Surgeons played no part in teaching. [71]

An editorial in The Dental Record in 1886 called for a higher qualification in dentistry which might qualify for registration in The Medical Register and the profession was challenged to raise these issues with the Association for Promoting a Teaching University in London:

As it is claimed that a University Degree would

carry with it benefits to the students, the Practitioners, and the Profession of Medicine and Surgery, is it not reasonable to suppose that Dentists and the Dental Profession would likewise be benefited if embraced by the scheme? [72]

Qualified dentists recognised that this was an important issue. At the BDA's Annual General Meeting in 1890, amidst discussion of the need for dental services for the armed forces and for schoolchildren, and the need to educate the public in the importance of dental care, George G. Campion presented a paper in which he made a case for a higher qualification in dental surgery. [73] This was later described as "the first articulate utterance in the matter of dental degrees". [74]

In the Tomes tradition, Campion described dentistry as "a branch and specialty of surgical practice" which was nevertheless "an entirely separate and distinct profession". [75] Like Tomes before him Campion stressed:

the utter inadequacy of a medical education, such as we know it, to afford any instruction in the ordinary and every-day work of a dentist ...

[76]

He proposed a higher dental qualification which would emphasise medicine, surgery and dentistry with stricter testing of clinical dentistry in which medical qualifications were "conspicuously deficient".

[77] Campion envisaged that this would raise standards and enhance the profession's standing as a medical profession in its own right.

Campion returned to this theme in 1892, recommending the establishment of higher dental qualifications, equivalent to the Fellowships and university degrees available to physicians and surgeons:

it seems not unreasonable to suggest that a dentist who wishes to deepen and widen his course of study should find the means of doing so in the curriculum of a higher qualification in dentistry, and not be obliged of necessity to look to either a medical qualification or a surgical qualification, or a medical and a surgical qualification taken conjointly ... for those require of him no additional attainment in the work which must so largely occupy his mind and time in after life ... and they may admittedly, if attempted in too short a time, tempt men to neglect their practical dental work.

[78]

Echoing the objectives of John Tomes and the dental reform movement, Campion concluded that:

our education should equal a medical education in degree, though differing from it in kind. That is the object towards which we must strive ... which will only, if ever, be achieved when our

degrees in dentistry - Bachelor and Master of Dental Surgery - range at the universities side by side, and on a par with degrees in medicine and surgery. [79]

At this time dental degrees were regarded as higher qualifications, rather than the qualification required to practise. Higher qualifications were advanced by the elite for the elite in order to maintain standards in dental practice and also the status of the profession. Despite the shortcomings of the curriculum and the apprenticeship for the LDS, this standard, which was already too exacting for the majority of candidates, was regarded as adequate for general dental practitioners.

The need for a higher dental qualification was not generally accepted. J.C. Oliver, for instance, suggested that whereas in medicine "higher qualifications serve their true purpose in encouraging enterprise, research and learning" higher qualifications were not appropriate "in a branch of science so limited and circumscribed as Dental Surgery". [80] Instead, the status of the LDS should be raised by "putting a stop to the sine curriculo business" and obtaining "a uniform standard of examination and a Central Examining Board". [81] Others regarded the prospect of higher standards as a threat to the status of the LDS. An editorial in the BJDS in 1890 suggested that degrees would not be in

the best interests of the majority since they would create an elite, split the profession into a higher and lower grade of practitioner and devalue the LDS. [82] This highlights the way in which professional standards would be held back by the low aspirations of the majority of dental practitioners.

Nevertheless, by the end of the nineteenth century the deficiencies of the LDS and the absence of a higher qualification had been addressed. Some qualified dentists recognised that higher standards were necessary if the status of the profession and standards in practice were to be raised. However, the question whether general medical qualifications met the need for a higher standard had yet to be resolved and opposition to higher dental qualifications had been expressed. As in 1858 and 1878, those advocating higher standards were a minority and the majority had vested interests in maintaining the status quo. Although the BDA did much to promote demand for the services of qualified dentists, the Association did less to promote high standards of professional education which might adversely affect the status of the majority of its members. Furthermore, the priority was to increase the number of qualified dental practitioners, since the majority of those practising dentistry remained unpersuaded of the need for even the minimum standard of qualification.

APPENDIX 5.1: DATES OF ESTABLISHMENT OF UK DENTAL**SCHOOLS**

| | |
|---------------------------------------|------|
| Belfast (Queen's University) | 1920 |
| Birmingham | 1880 |
| Bristol | 1888 |
| Cardiff | 1964 |
| Dundee | 1915 |
| Edinburgh | 1879 |
| Glasgow | 1879 |
| Leeds | 1906 |
| Liverpool | 1876 |
| London: | |
| Dental Hospital of London | 1858 |
| London School of Dental Surgery | 1859 |
| Metropolitan School of Dental Science | 1859 |
| National Dental Hospital | 1861 |
| Guy's | 1889 |
| Manchester | 1905 |
| Newcastle-upon-Tyne | 1895 |
| Sheffield | 1898 |

Sources: Linda Docherty, Secretarial Assistant, Queen's University, Belfast; SPENCER, E.M. "Notes on the History of dental Dispensaries". Medical History, v.26, 1982, pp. 47-66; Lesley Barry, Secretary, University of Bristol; Brian Thomas, Assistant Registrar, Dental School, Cardiff; SOUTHGATE, D. University Education in Dundee: a centenary history. Published for the University of Dundee by Edinburgh University Press, 1982; HENDERSON, T. Brown. The History of the Glasgow Dental Hospital and School, 1879-1979. Glasgow: Printed by W.S. Bisset & Son Ltd, 1979; DONALDSON, J.A. "Early Years of Dental Education in Edinburgh". BDJ, v.146, 1979, pp. 357-361; ANNING, S.T. and WALLS, W.K.J. A History of the Leeds School

of Medicine: one hundred and a half centuries, 1831-1981. Leeds University Press, 1982; RICHARDS, N.D. "A Study of the Development of Dental Health Services in the UK - the Profession and Treatment Services 1840-1921", pp. 127-128; BDJ, v.26, 1905, pp. 104-109; MURRAY, J.J. MURRAY, I.D. and HILL, B. Newcastle Dental School and Hospital: an illustrated history, 1895-1995. University of Newcastle Upon Tyne: Medical Faculty, 1995, p. 7; CHAPMAN, Arthur W. The Story of a Modern University: a history of the University of Sheffield. Published for the University of Sheffield by Geoffrey Cumberlege, Oxford University Press, 1955.

APPENDIX 5.2: EDITORS OF THE BRITISH DENTAL JOURNAL,**1880-1996** [83]

1880 A. Coleman and J. Walker

1883 J.W. Langmore

1886 A.F. Underwood

1892 Sir F. Colyer

1889 R.H. Manning

1902 W.F. Coffin

1913 F.N. Doubleday

1919 W.H. Dolamore

1922 L. Matheson

1927 H.R.F. Brooks

1939 B.J. Wood

1950 L.J. Godden

1968 J.A. Donaldson

1979 M.H. Seward

1992 M. Grace

Sources: "Founders' and Benefactors' Lecture". BDJ, v.172, 1992, p. 27 and "Mike Grace Talks to Margaret Seward". BDJ, v.174, 1993, pp. 438-442. Interview with the Editor.

5.6. ENDNOTES

1. For a full account of the formation of the BMA see LITTLE, Ernest Muirhead. History of the British Medical Association, 1832-1932. London, BMA, n.d. Four out of five clauses were concerned with gathering and communicating information, and the fifth with "the maintenance of the honour and respectability of the profession". [Ibid., pp. 21-22.]
2. For information on the circumstances of the formation of the BDA I am indebted to J.A. Donaldson. August 1989. See also COHEN, R.A. and SPENCER, E.M. (eds.) The British Dental Association: the advance of the dental profession: a centenary history, 1880-1980. London: BDA, 1979.
3. George Augustus Ibbotson, James Parkinson, Thomas Arnold Rogers, Sir Edwin Saunders, Sir John Tomes, James Smith Turner, Thomas Underwood, Samuel Cartwright and George Cunningham were members.
4. From 1902 the Representative Board assumed greater control - electing its successor, the Editorial Committee and appointing the Editor. SEWARD, M.H. "Proper Words in Proper Places". BDJ, v. 172, 1992, pp. 24-30. It became the British Dental Journal (BDJ) in 1903. See Appendix 5.2. EDITORS OF THE BRITISH DENTAL JOURNAL.
5. "Dental Reform Committee". BJDS, v.22, 1879, pp. 124-127.
6. Of whom 51.18% practised dentistry as their sole occupation, 0.32% practised dentistry in conjunction with medicine, 0.21% in conjunction with surgery and 38.74% in conjunction with pharmacy. ["Table showing the number and qualifications, with percentage of the total, of persons registered in the Dentists Register up to August 1, 1879". The Dentists Register 1879.]
7. COHEN, R.A. and SPENCER, E.M. (eds.), 1979. p. 235.
8. RICHARDS, N.D. "A Study of the Development of Dental Health Services in the UK - the profession and treatment services 1840-1921". Ph.D. thesis. University of London. 1979, p. 213.
9. RICHARDS, N.D., 1979, p. 225.

10. Departmental Committee on the Dentists Act, 1879. Report of the Committee appointed by the Lord President of the Council to enquire into the extent and gravity of the evils of dental practice by persons not qualified under the Dentists Act; Chairman: F.D. Acland. London: HMSO, 1919. Cmd 33, p. 7.
11. Tomes, John. "To the President and Members of the General Council of Medical Education and Registration of the United Kingdom". BJDS, v.21, 1878, pp. 264-266.
12. For instance, in the first successful prosecution for illegal use of title William Robertson was fined twice in Edinburgh in 1884 for using the title "dentist" on a brass plate. ["The Scotch Prosecution". JBDA, v.5, 1884, pp. 645-646, 648-652] The medical profession was also concerned to protect itself against unqualified practice and felt that the GMC had done little to enable the public to recognise who was a properly qualified practitioner and was unhappy with its representation on the Council. The passage of the Medical Act, 1886 after twenty unsuccessful medical bills and a Royal Commission allowed for representation of the medical profession on the Council. [ELLIS, Sir John. LHMC, 1785-1985: the history of the London Hospital Medical College. London: London Hospital Medical Club, 1986.]
13. For a full account of the Association's initiatives in establishing dental services see RICHARDS, N.D., 1979. The BDA conducted several epidemiological studies of schoolchildren and its committee for investigation of school children's teeth issued regular reports between 1891 and 1898. In 1892 the BDA held a conference in Cambridge on the teeth of schoolchildren and in the same year the report by J. Denison Pedley and Sidney Spokes on the teeth of schoolchildren in London was accepted by the Local Government Board. In 1883 it was suggested that the Association should issue a pamphlet on the care of the teeth and the BDA's first publication, issued in 1893 was "A Popular Report ... on the Condition of School Children's Teeth". [COHEN, R.A. and SPENCER, E.M. (eds.), 1979, pp. 235-236.] George Cunningham, DMD, Harvard, (a founder-member of the International Dental Federation did much to promote the establishment of public dental services, particularly for school children). He suggested that dental services should be provided as an essential element of the medical services provided by the state, that there should be competent attention

to the teeth of members of the armed forces and compulsory attention to the teeth of school children. [CUNNINGHAM, George. "Dentistry and its Relationship to the State". JBDA, v.7, 1886, pp. 668-683, 726-730 and 800-805 and CUNNINGHAM, George. "On the Dental Aspect of Public Health". JBDA, v.8, 1887, pp. 774-790.]

14. FOSTER, George. "On the Administration of Nitrous Oxide". JBDA, v.16, 1895, pp. 61-62. Corresp.
15. FLETCHER, Thomas. "The Dental "Profession"". BJDS, v.20, 1877, pp. 134-136. Miscellanea.
16. BJDS, v.21, 1878, pp. 552-553. Edit.
17. "Dental Students' Supplement". BJDS, v.19, 1876, pp. 473-516.
18. Elsewhere, e.g. Glasgow, dissections and demonstrations could be substituted for the lectures.
19. The number of courses was specified but the length of courses and the number of lectures were not stated except in the case of head and neck anatomy (20 lectures) and dissections (9 months).
20. Courses in head and neck anatomy were still rare so it would have been difficult for regional or provincial candidates to meet such a requirement.
21. Since bacteriology was a relatively infant science at this time its omission is not surprising.
22. TOMES, John. "The Relations of Dentistry to Surgery". BMJ, v.i, 1880, pp. 463-464. Corresp.
23. For instance, Birmingham Dental Dispensary opened in 1858, became Birmingham Dental Hospital in 1871 and School in 1880; Liverpool Dental Dispensary opened in 1860 and Plymouth's in 1861 and these became schools in 1867 and 1877 respectively; Newcastle Dental Hospital and School opened in 1895. [ROSS, R.M., 1994, pp. 183-184.]
24. JBDA, v.4, 1883, pp. 363-366. Edit.
25. HENDERSON, T. Brown. The History of Glasgow Dental Hospital and School 1879-1979. Printed by W.S. Bisset & Son Ltd., Glasgow. 1980 and ROSS, R.M., 1994, p. 183.

26. In Glasgow for instance dental education for the LDS, FPS, Gla. was carried out in conjunction with Anderson's College and not with the University of Glasgow. Negotiations regarding affiliation with The University of Glasgow foundered on the fact that the dental hospital had insufficient endowments and did not qualify as a "college" according to the terms of The Universities (Scotland) Act, 1889. [ROSS, R.M., 1994, pp. 186 and 192.]
27. Candidates had to pass a preliminary examination of matriculation standard and, within a fortnight, register as a dental student, serve a three year apprenticeship to a dental practitioner, which provided him with his training in mechanics, followed by two years of hospital instruction, with one year spent concurrently at a specialised dental hospital.
28. JBDA, v.5, 1884, p. 262. Edit.
29. "Dental Reform Committee". BJDS, v.22, 1879, pp. 32-41.
30. CATTLIN, W.A.N. "Address on The Relation of Dentistry to Surgery: presidential address delivered at the Association of Surgeons Practising Dentistry". BMJ, v.i, 1880, pp. 360-361.
31. TOMES, John, 1880.
32. Ibid.
33. Ibid.
34. GADDES, Thomas. "The Limitations of Dental Surgery". JBDA, v.3, 1882, pp. 624-630.
35. BJDS, v.32, 1889, pp. 111-113. Edit.
36. For instance, the University of Pennsylvania and Harvard University.
37. Rufus Ross provides an analysis of the interrelated nutritional and socio-economic factors which contributed to the high incidence of dental caries during the nineteenth and twentieth centuries. [ROSS, R.M., 1994, pp 229-241.]
38. WRIGHT, David. Unpublished paper delivered at the Lindsay Club Centenary Meeting York, March 1988 and a lengthy written communication from J.A.Donaldson. May 1989.

39. MILLER, W.D. The Micro-Organisms of the Human Mouth: the local and general diseases which are caused by them. Philadelphia: S.S. White, D.M. Co., 1980.
40. MOLIN, C. "Amalgam - fact and fiction". Scandinavian Journal of Dental Research, v.100, 1992, pp. 66-73; BIRD, D.J. "The Amalgam War: an historical review". New York State Dental Journal, v.38, 1972, pp. 5-8.
41. CLENNETT, Margaret A. "The History and Scope of Dentistry" in Keyguide to Information Sources in Dentistry. London: Mansell, 1985; MOLIN, C., 1992, p. 67.
42. Rufus Ross provides an account of the development of dental anaesthesia at this time. [ROSS, R.M., 1994, pp. 258-279.]
43. MALAMED, Stanley F. Sedation: a guide to patient management. St. Louis: C.V. Mosby, 1985. Chapter 4, pp. 151-165.
44. ROSS, R.M., 1994, p. 279.
45. OLIVER, J.C. BJDS, v.16, 1873, pp. 286-288.
46. YOUNGSON, A.J. "Medical Education in the Later 19th Century: the science take-over". Medical Education, v.23, 1989, pp. 480-491.
47. GMC Minutes. 1879. Report by the Executive Committee on Qualifications for Regulation Under The Dentists Act, 1878. March 26, 1879, pp. 47-69, 116. President: Henry W. Acland.
48. For details of examiners, written examinations for the LDS, RCS Eng. and the marking system see GMC Minutes. 1879, pp. 47-69.
49. GMC Minutes. 1879, p. 45.
50. Except that in Glasgow practical chemistry, clinical surgery and metallurgy were treated as general rather than dental subjects, the special course on dental mechanics included metallurgy and, unlike other institutions, Glasgow specified the number of lectures required in each course.
51. Shorter courses meant fewer classes and fewer class fees. Although examination fees were similar, the London diploma cost twenty guineas and the Edinburgh equivalent cost only ten guineas or fifteen for candidates who had begun

their studies since 1896. In London the combined fee for hospital practice and tuition in mechanical dentistry amounted to 255 pounds. In Liverpool it was 186 pounds and 10 shillings. [GMC Minutes. 1879, pp. 47-69.]

52. GMC Minutes. 1879, p. 48.
53. For details of examiners, written examinations for the LDS, RCS Eng. and the marking system see GMC Minutes. 1879, pp. 47-69 and 116.
54. There was greater variation in the requirements for professional qualifications in dentistry abroad. [GMC Minutes. 1879. Appendix G. Tabular summary of requirements for foreign and colonial dental diplomas.]
55. Harvard University and the University of Michigan required the candidate to have devoted three years to professional study plus two years of lectures and courses at a dental college. Examinations were written and practical including actual operations and the preparation of specimens of mechanical dentistry. The Committee's view was that these "appear to furnish sufficient guarantees of the possession of the requisite knowledge and skill for the efficient practice of Dentistry or Dental Surgery." [GMC Minutes. 1879, pp. 47-69.] American doctorates were not registrable in their own states but did enable holders to sit the State Board examinations. [Personal communication Professor A.D. Hitchin. May 1989. For details of his career and status within the profession see Appendix 10.3: Biographies.]
56. The GMC's assessment that North American qualifications were inferior to the British college diploma may be questioned on two counts. Firstly, it is unlikely that curricula taught and examined in the universities were inferior to a college diploma based on rather haphazard teaching facilities. Secondly, although the DDS was not registrable in the UK, gifted or ambitious students subsequently went to the United States or Canada after qualifying in Britain to qualify DDS, which was regarded as superior to British qualifications in technical and clinical technique. Prior to the Second World War, general dental practitioners regarded this as the best way of improving on a basic qualification, Dr Menzies Campbell, who only treated private patients, being one such example. [Personal communication, Dr. H.W.Noble, Senior research Fellow, Dental Anatomy, University of

Glasgow. 1991.]

57. This campaign is well-documented and referenced by C. Bowdler Henry, MRCS, Eng., LDS. Hunterian Professor, Royal College of Surgeons of England, Dental Surgeon and Lecturer in Oral Surgery, Royal Dental Hospital, London, in Chapter XXI of the manuscript notes for his unfinished history of the London Hospital Medical College, held in the British Dental Association Museum, London.
58. For instance TOMES, Charles S. et al. "To the President of the General Medical Council of Great Britain". JBDA, v.15, 1894, p. 390. Corresp. and "Dental Representation on the General Medical Council". JBDA, v.19, 1898, pp. 41-45.
59. GMC Minutes. 1898. Minutes of Meeting, Tuesday May 24th, 1899, p. 45. Charles Tomes's father Sir John Tomes had died in 1895. His obituary in the Journal of the British Dental Association which ran to 30 pages, indicates the esteem with which he was regarded within the profession and is to a great extent an account of the history of the dental reform movement of the 19th century. [JBDA v.16, 1895, pp.462-492. Obit.]
60. GMC Minutes. 1898. Recommendations as to the Course of Study and Examinations to be Required of Candidates for Licences in Dentistry or Dental Surgery. May, 1898. pp. 107-110. The schools were: The Dental Hospital of London, the National Dental Hospital of London, the Dental School, Guy's Hospital, London, the Dental Hospital of Liverpool, the Dental Hospital of Birmingham, the Dental Hospital of Edinburgh, and the Dental Hospital of Glasgow. Manchester and Dublin had not replied at the time of the Report. [GMC Minutes. 1898. Appendix I, pp. 9-10.] Although the Dental Hospital for Newcastle was opened in 1895 it is not mentioned in the GMC's list. It was recognised by the RCS Eng. in 1896. [MURRAY, J.J. MURRAY, I.D. and HILL, B. Newcastle Dental School and Hospital: an illustrated history, 1895-1995. University of Newcastle Upon Tyne: Medical Faculty, 1995, pp. 4 and 8.]
61. GMC Minutes. 1898, pp. 107-110.
62. Courses varied from six to twelve months.
63. The proposal that the courses in clinical surgery and clinical medicine be extended was outvoted by 18 to 2 with 10 abstentions. [GMC Minutes. 1898, pp. 102-104] The voting on the proposal to delete the duration of instruction in each subject, in

line with the medical curriculum was as follows: 15 for, 3 against, 12 abstentions. The voting on the amendment in favour of deleting courses in medicine was 15 against, 11 for and 4 abstentions. [GMC Minutes. 1898, p. 101.]

64. GMC Minutes. 1898, pp. 102-104.
65. Ibid.
66. Practical examples of "preparations, casts, drawings etc."
67. For instance, in Leeds plans to start a dental course in 1882 were abandoned owing to inadequate facilities for practical chemistry. [ANNING, S.T. and WALLS, W.K.J. A History of the Leeds School of Medicine: one and a half centuries, 1831-1981. Leeds University Press, 1982.]
68. In 1885 Richard White's request that the University of Cambridge, which had just opened its medical school, should grant degrees in dentistry was unsuccessful. [BRADLAW, Sir Robert. "Milestones". BDJ, v.123, 1967, pp. 340-345] Although never formally abolished, apprenticeship ceased to be a significant feature of English medical education. From 1840 medical education in London was based on teaching in the hospital medical schools and examined by the Colleges or by the University of London. [ELLIS, Sir John. LHMC, 1785-1985: the history of the London Hospital Medical College. London: London Hospital Medical Club, 1986.] When a post-graduate dental school was established in Chicago in 1888, the nearest British equivalent was a post-graduate course at the London Dental Hospital in Leicester Square, London. [BJDS, v.31, 1888, pp. 220-221. Edit.]
69. HOLMES, Oliver Wendell. "The Claims of Dentistry". Monthly Review of Dental Surgery, v.1, 1872, pp. 105-107.
70. TOMES, Charles S. "Address delivered at the commencement exercises of the Dental School of Harvard University, Boston, Mass., February 12th, 1873". BJDS, 1873, v.16, pp. 162-170.
71. Ibid.
72. The Dental Record, v.6, 1886, pp. 42-44. Edit.
73. See Appendix 10.3: Biographies for details of his qualifications and professional achievements.

74. BDJ, v.3, 1922, pp. 161-164. Edit.
75. After the Medical Act, 1886 the Royal College of Physicians and the Royal College of Surgeons introduced a conjoint examination, the LRCP, RCS. The conjoint examination required a minimum of seven years and the course could not be completed in less "without serious detriment" and the loss of some practical work at the hospital. Campion suggested that the conjoint examination was as relevant to dentistry as a degree in pure science was to medicine. [CAMPION, George G. "The Need of a Higher Qualification in Dental Surgery". JBDA, v.11, 1890, pp. 565-578.]
76. Ibid, p. 566.
77. Ibid.
78. CAMPION, George G. "The Higher Dental Qualification Question". JBDA, v.13, 1892, pp. 52-57. Corresp.
79. Ibid.
80. OLIVER, J.C. "The L.D.S. Diploma". JBDA, v.11, 1890, pp. 638-639. Corresp.
81. Ibid.
82. BJDS, v.33, 1890, pp. 947-949. Edit.
83. Although this thesis covers the period 1858-1957, I have listed the editors to date to show the role of those cited in the thesis, for instance, Archie Donaldson and Margaret Seward.

CHAPTER 6: THE FIRST DENTAL DEGREE AND THE LONDON OPPOSITION, 1900-1913

This chapter will examine the changes in school and university education which created new opportunities for professional education and qualification. During this period the first dental degrees in the United Kingdom were established in the universities which were founded at this time in the Midlands and north of England. The establishment of dental degrees aroused considerable controversy within the dental profession. With reference to the contemporary dental press and the Report of the Royal Commission on University Education in London, this chapter will examine the debate concerning the necessary and appropriate training for dentists and the opposition to the dental degree from the BDA, the Royal Colleges of Surgeons and the University of London. These sources will also shed light on other factors which delayed demand for the LDS and for the degree. These factors will be examined in relation to the feasibility of raising the standard of dental education.

6.1. IMPROVEMENTS IN SCHOOL EDUCATION AND OPPORTUNITIES FOR DEVELOPING PROFESSIONAL EDUCATION IN THE NEW UNIVERSITIES

From the beginning of the twentieth century improvements in secondary and university education widened access to education at all levels and underpinned the development of professional education. The Balfour Education Act in 1902 was the first step towards establishing an articulated system of school education from elementary to university level. The previous deficiencies of and limited access to school education, particularly at secondary level, had delayed progress in professional education, especially for science-based professions such as dentistry. Since basic science had to be taught in the professional curriculum to compensate for deficiencies in school education, the professional curriculum could not be extended without creating a prohibitively long course of study. Improvements in and wider access to school education prepared more candidates for professional training in the new universities which would be a major force in directing future standards of professional education. Professions such as dentistry were beneficiaries of these changes. Once candidates embarked on professional education with a better grounding in science, the professional curriculum could be extended.

At the same time the new universities built up the "apparatus and techniques of laboratory-based teaching" and brought "advanced research out of private laboratories and workshops and into the universities". [1] In 1885, Lyon Playfair described their role in providing education for new professions which, in the period 1841-1911, outnumbered the established professions:

new professions are arising and for these our old universities make no provisions; old professions have completely changed their aspects, yet the schools and colleges remain as of old. [2]

At the same time the development of laboratory-based university education in science and medicine and the decline of private medical schools (which had poor departments of basic sciences) led to the establishment of an integrated system of university education for the medical professions. Initially the University of London's Bachelor of Medicine (MB), one of the first degrees to be established by the University of London on its foundation in 1836, was not popular owing to the more exacting standard and the preference of teaching staff in the medical schools for the Conjoint College Diploma. Those whose status and income were derived from medical education based on pupillage and college qualifications opposed change which would lead to new qualifications to practise. [3] But, by the 1870s, apprenticeship was

being replaced by full-time studentship, training in the basic sciences, instruction in medicine and practical hospital experience. The need for full-time teachers, a teaching university for London and State-endowed professorships was also recognised at this time. [4]

Whereas universities integrated the functions of teaching and examination, the Colleges examined candidates for medical and dental qualifications but had no authority over the schools or teaching. Since "there was no organic connection between the teaching and the examination" this system fostered cramming rather than developing critical and inquiring minds. [5] Alfred Barry, Principal of Kings College London, held that "Examining is an inherent part of teaching and the two should not be divorced." [6] By 1884 there was disquiet at the lack of a teaching university in London:

London does not possess any University at all ...

A University is essentially a teaching and a learning body, and its function of examination is purely secondary. [7]

Walter Rivington, Dean of London Hospital Medical College, favoured the establishment of a teaching university in London to promote research in which, at this time, Britain was perceived to be falling behind countries such as Germany. [8]

The University of London Act, 1898 was a landmark

in university education in Britain. Despite opposition from the universities of Oxford and Cambridge, from the London medical schools, and from the RCS, Eng., whose diplomas might be diminished in status, the University of London would henceforth train and qualify candidates for the medical and other professions. [9] The integration of the functions of teaching and examination, the establishment of facilities to teach a broader curriculum and to develop research meant that university education gradually replaced pupillage, college examination and licence. The need to integrate the functions of teaching and examining, the lack of facilities to teach non-clinical subjects in dental schools and the university's role in promoting research, were important for the subsequent development of training for the dental profession.

New universities were established outside London from 1900 onwards. Birmingham University was founded in 1900 and the Victoria University, Manchester was divided to form the Universities of Manchester, Liverpool and Leeds in 1903-04. [10] The new universities offered professional training and qualification in the provinces to those who could afford university fees and aspired to professional status. The new universities were private foundations and, to be financially viable they needed to identify new demands and offer attractive courses which would

appeal to the widest audience. This was important for "new" professions such as dentistry.

6.2. THE FIRST DENTAL DEGREES IN BRITAIN

The establishment of a teaching university in London was noted by dental teachers and examiners. In 1898 Professor Gotch, Professor of Physiology at Oxford, described the examinations for the dental diploma as a "sham": the preliminary examination was too elementary, the final was too miscellaneous; the curriculum was too general, too superficial and paid insufficient attention to advances in science and theory and to practical skills. Gotch's conclusion was that if degrees were awarded in medicine and surgery then dental surgery should also have a "first-class diploma, such as a University Degree in Dentistry". [11]

The following year a Special Meeting of the Medical Committee of the London School of Dental Surgery was called to discuss "the desirability of a Dental Degree in connection with the new University of London" and a majority of the Board of Studies in Dentistry petitioned the University of London Commissioners to establish either a Faculty of Dental Surgery or a Dental department within the Medical Faculty or recognition of the dental schools as colleges of the University of London and for the

establishment of a Bachelor of Surgery (BS) in dental surgery, which would be registrable only on The Dentists Register. [12] This petition, which was endorsed by the National Dental Hospital, its Dean, Sidney Spokes and Morton Smale, Dean of the London School of Dental Surgery, made the case that without a specialist degree, dentistry was disadvantaged compared to medicine and surgery for which the principle of special qualification by university degree was well-established. The petitioners suggested that:

an equal privilege should be granted to Dental Students of obtaining a University Degree in the special subject of their profession, which is recognised by the State, by provisions equivalent to those required of the Medical and Surgical Professions. [13]

Since there were "separate and distinct" diplomas in dentistry, the dental profession should also have the "privilege" and "advantage" of university examinations and qualifications. [14] The status of a university degree was stressed.

The petitioners proposed the establishment of a dental department within the Medical Faculty. It was regarded as undesirable for dentistry, which was "merely a branch of the medical profession", to separate from the Medical Faculty and it was also felt that there was insufficient demand for dental

qualifications to justify the establishment of a dental faculty. [15] Subjects not germane to dentistry would be replaced by dental subjects and the MB degree, normally required for entrance to the Bachelor of Surgery (BS), would not be required of candidates for the BS in Dental Surgery. The petitioners stressed that the proposed degree would not entitle holders to registration on the Medical Register or to use the title "doctor". Unlike the United States, where the early establishment of dental degrees which entitled holders to use the prestigious title "doctor" was accompanied by high status for the dental profession, in the United Kingdom deference to the medical professions delayed the establishment of equivalent qualifications for the dental profession. The limited aspirations of the petitioners suggests recognition of the need to accommodate their objectives to the vested interests of the medical establishment. Although it was decided in 1899 that the University of London would have a Board of Dental Studies, it was left to the provincial universities to award dental degrees. [16]

The first dental diplomas had been established in London in response to demand from a dental elite. The first dental degrees were established, not in London, but in the universities in the Midlands and north of England. On their establishment these new universities identified the need and the potential

demand for university dental education. However, as the experience of the College of Dentists in the mid-nineteenth century had shown, such initiatives were at a considerable disadvantage if they lacked the firm endorsement of the London-based medical establishment.

The establishment of the first dental degree in the University of Birmingham owed much to the realisation that, without the power to award degrees, its medical college was doomed to failure. [17] By 1897, such was the demand for medical degrees that the Medical Faculty of Queen's College, Birmingham could not survive by teaching for Royal College examinations. [18] The influence of John Humphreys, Frank Huxley and John Windle, who felt that university degrees could not fail to enhance the prestige of dentistry, ensured that when the Birmingham University Act was passed in 1900 and Mason's College became the University of Birmingham, its Medical Faculty incorporated a Dental Faculty which was empowered to examine and confer the degrees of Master of Dental Surgery (MDS) and Bachelor of Dental Surgery (BDS). [19] The Bill to establish The University of Birmingham went through Parliament without arousing controversy or debate and received the Royal Assent on 25th May, 1900. [20] In July 1901 the honorary degree of Master of Dental Surgery (MDS) was conferred on John Humphreys and Frank Huxley, two senior members of the staff of the Dental School; Harold Round and J.

Dencer Whittles passed the examination for the degree of BDS. After a further year of clinical study and the presentation of an original thesis "Interdental wiring for jaw fractures" Harold Round obtained the first non-honorary MDS in 1902. [21]

However, an editorial in the British Journal of Dental Science commented on the new degrees in less than enthusiastic terms:

whether the new degree will attract many candidates for higher degrees than the L.D.S. - which will still of course constitute the qualifying and registrable diploma - remains to be seen. [22]

This would adversely affect demand for the degree. The college LDS was the established registrable qualification and the BDS was, initially, a higher qualification. Although universities anticipated demand from able local candidates, who might otherwise prefer medical training, only a minority of exceptional students who intended to pursue careers in teaching or research, were expected to qualify in this way. [23] Nevertheless, a university degree would help to establish parity with the medical professions, improve standards of teaching and promote research. However, the cost of providing education was high and dentistry, which required clinical and laboratory facilities, had to compete for funds and facilities with other well-established professions.

6.3. CONTROVERSY CONCERNING THE CURRICULUM AND HIGHER QUALIFICATIONS

The University of Birmingham's initiative refuelled controversy and debate within the profession as to the necessary, appropriate and ideal education for dental practitioners and, irrespective of the need for higher qualifications, the standard of education and training was in some respects deficient. [24]

Shortly after the introduction of the Birmingham BDS, Frederick Rose, LDS, RCS Eng., suggested that education rather than legislation was essential to the advancement of the profession. [25]

Discussion focused on the deficiencies of the LDS and the need to accommodate new subjects in an already overloaded curriculum. The question whether higher qualifications, if any, should be medical or dental had yet to be resolved. The new qualification had revived earlier controversy between the medically qualified, who regarded the conjoint medical and surgical qualification instituted by the Royal Colleges in 1886 as the appropriate qualification for dentists, and others who, following the Tomes tradition, advocated special dental qualifications. The views of both sides were published in articles, addresses and correspondence in the dental press. For instance, in 1901 Thomas Gaddes, LDS, RCS Eng, LDS, RCS Edin., (who had supported university recognition

for dentistry in 1886) pointed to the advances in anaesthetics and bacteriology and the profession's increasing specialisation with the development of orthodontic and conservative dentistry. [26] Gaddes stressed that dentistry was "scientifically related to, and yet scientifically distinct from, the practice of medicine and surgery". [27] Although based on the biological sciences and allied to medicine and surgery, "the science and art of surgical and mechanical dentistry" required additional knowledge of physical sciences not required in medicine and surgery. [28] Medical or surgical qualifications were not sufficiently specialised, were too long, demanding and expensive for a specialty struggling to shed a rather dubious status and reputation and there was little incentive to remain in dental practice after taking a medical qualification.

Gaddes also pointed out that better secondary education would permit higher standards in professional education and that since degrees had not been detrimental to the advancement of surgery, "universities ought to meet the higher educational necessities of the age". [29] Reiterating the appeal he had issued in 1886 he continued:

The university being representative, typical of that which is highest, I now again plead for dentistry to be included among the professions which the universities embrace. [30]

Although dentistry had attained university recognition in the United Kingdom, in Europe, and in the United States, where the subject was becoming increasingly specialised, Gaddes observed that in the United Kingdom there was "a disinclination, a tardiness, of our institutions to adapt themselves to the requirements of the age". [31]

Many teachers acknowledged that the LDS curriculum was less than adequate and that "the weakness of the present qualifying examinations lies in the low standard of knowledge required". [32] Surgical intervention and the need for diagnostic skills in dental practice meant that knowledge of anatomy, biology, physiology, bacteriology and pathology were required, subjects which were taught and examined in the universities. Furthermore, as Tomes had argued throughout the nineteenth century, some medical practitioners were now drawing attention to the medical curriculum's lack of dental content.

[33] In 1902 the Journal of the British Dental Association published a lengthy correspondence on dental education from Norman G. Bennett, LDS, RCS Eng, MB, Bch. Cantab., B.Surg., MD, University of Cambridge, MRCS, Eng., LRCP, Lond., "one of the most intellectually distinguished alumni of the London School of Dental Surgery". [34] The ensuing debate drew contributions from a wide range of members of the BDA.

Bennett emphasised the deficiencies of the LDS, the inevitability of degrees and the unsuitability of medical or surgical qualifications. Despite the "many excellencies" of the LDS and the "incalculable good that it has done", examination requirements (especially in pathology) fell short of a minimum standard and students' knowledge of "the fundamental subject of inflammation" was often "very rudimentary". [35] Although the examinations in operative dental surgery, dental anatomy and surgery needed improvement, Bennett stressed deficiencies in the sciences - particularly physiology and pathology:

these subjects should be so securely grasped that they form an essential factor in the development of the trained professional judgement. I think at the present time they are usually not so grasped. [36]

Students' knowledge of pathology was "hopelessly inadequate and miserable in the extreme". [37]

Bennett also warned of:

the impossibility of gaining a reasonable knowledge of specialised structures and their functions founded upon an inadequate knowledge of the organisms of which they are an important part. [38]

Although the LDS curriculum was too general, too shallow and lacked sufficient dental emphasis, general medical qualifications were not an appropriate

alternative:

The study of the mechanism of labour, for instance,... is extremely remote from the destination of the dental student [whereas] the subject of pathology in its widest sense, and in all its details, cannot be too thoroughly mastered. [39]

Bennett also criticised the "fundamentally erroneous view" that a professional training should "thoroughly equip a man for the practice of his profession from the time he obtains his diploma". [40] Throughout this correspondence Bennett emphasised that professional education was a continuing process. [41]

George Cunningham, MA, Cantab., LDS, RCS, Eng., DMD, Harvard, a lecturer in dental surgery at the National Dental Hospital and dental surgeon to the London Hospital, had in 1899 proposed that the BDA should petition the University of London Commissioners with a view to establishing a registrable dental degree with a curriculum including biology, practical physics, mechanics, pathology and bacteriology. [42] He too emphasised the inadequacies of medical and surgical qualifications:

The only possible distinction for the aspiring dentist is the taking of a medical qualification, which does not make him a better dentist ... by withdrawing him at the critical period in his

professional training from ... practical work.

[43]

Similarly, George V. Smallwood of Birmingham, LDS, RCS, Eng., suggested that general qualifications "spoiled the dentist in making the surgeon". [44]

W.H. Dolamore FRCS, LRCP, LDS, RCS, Eng., Dean of the Dental Hospital of London and an examiner for the RCS, Eng., described the LDS as an attempt to fit a quart measure in a pint pot: even the mechanical and clinical curriculum was inadequate. [45] Dolamore also favoured the degree on the grounds of status:

A degree would be a very desirable social advantage to the profession, and it would be a very great thing if the public saw that they were associated with the university. [46]

George Champion, LDS, RCS, Eng., an honorary and consulting dental surgeon to the Manchester Dental Hospital, who had been one of the first to recommend their establishment, believed that now degrees were "absolutely inevitable". [47] He favoured dental degrees on the grounds that, since higher degrees and fellowships were available in medicine and surgery, standards in dental practice and the status of the dental profession were demeaned by the standard of the LDS. Champion also pointed out that, despite general indignation at "the minimum amount of anatomy and physiology which dental students knew", proposals to extend the curriculum by one year, which had been

supported in 1901 by an overwhelming majority of teachers and examiners, had subsequently been unanimously rejected because this would lengthen and increase the cost of the diploma. [48] As W.J. Law of Glasgow pointed out, changes which would lengthen the period of full-time study and make the course more expensive would deter "the already diminishing number of students and add to the rapidly increasing army of quacks". [49] Therefore, degrees should not be the required standard for the majority of candidates but rather a higher qualification for exceptional students. The bread-and-butter qualification, the diploma, would remain "sufficient to enable a man to earn his own bread and butter and to help the public in eating theirs". [50]

Some, for instance Dr. John Smith of Edinburgh, FRCS, Edin., MD, Univ. Edin., an examiner to the RCS, Eng., doubted whether higher degrees were appropriate since dentistry was not "big enough for a degree". [51] Smith saw dentistry as, "in comparison with general medicine or surgery, not a very extensive subject ... easily defined". [52] A higher qualification "would require to be more wide and very different from ... the ordinary dental diploma...". [53] He therefore recommended higher medical qualifications which offered:

a far wider and more comprehensive curriculum ...
not circumscribed within the limits of dentistry

... a more satisfactory acquaintance with, and capacity for, combating those constitutional conditions which may yet be found to be the ultimate cause of dental disease; a deficiency in such knowledge being often the most apparent failing in the otherwise excellent ... examination for the LDS. [54]

Smith's reluctance to consider either the advantages of a dental degree or the disadvantages of general qualifications, may reflect his concern to uphold the prestige of college qualifications. Similarly, E.B. Dowsett, LDS, RCS Eng., MRCS, LRCP, suggested that if a higher qualification was necessary what was needed was a Fellowship of the RCS, Eng. [55]

Others were more concerned to uphold the status of the LDS. Arthur S. Underwood, LDS, RCS, Eng., MRCS, Eng., lamented the fact that the provincial universities, such as Manchester, were proceeding with dental degrees "though every LDS will be the sufferer" and Morton Smale's support for university recognition for dentistry fell short of endorsing a qualification which might threaten the status of the LDS. [56] Thus, once again the vested interests of college members and licentiates and the "privilege and premiums" of apprenticeship proved to be an obstacle to change. [57]

Some suggested that the profession's credibility might be damaged by a proliferation of new

qualifications at a time when the LDS was only gradually becoming established as the mark of a qualified dental practitioner. Some teachers in the London dental schools for instance, Sidney Spokes, LDS, RCS, Edin., LDS, MRCS, RCS, Eng., expressed concern that competition for students might lead to lower standards in the universities. [58] However, in the United Kingdom, university standards were monitored by the GMC and Spokes's concern as to the integrity of university standards may have been yet another veiled attempt to maintain the status quo. Indeed, C. H. Preston of Manchester, MD, BS, Lond., FRCS, LRCP, LDS, RCS, Eng., took issue with "the cool assumption that the London standard is higher than obtains elsewhere". [59]

Others suggested that specialisation might tend to emphasise technique rather than medical science and theory. Although American dental education had earned a reputation for specialisation in clinical technique, K.W. Goadby, LDS, RCS, Eng., MRCS, LRCP, DPH, who was subsequently knighted, regarded the end product as:

admirable teeth plumbers and carpenters ... whose general knowledge of dental surgery and physiology was infinitely inferior to that gained by the student in England. [60]

Goadby stressed the importance of the medical foundations of the dental curriculum:

for a dentist to work at one end of the

alimentary canal without having any idea of what was happening at the other was ludicrous. [61]

Amid the wide spectrum of opinions regarding dental education, there were some common themes. The diploma was deficient in the medical sciences (anatomy, physiology, medicine, pathology and bacteriology), training by apprenticeship was flawed, a higher standard of training and qualification was needed to keep dentistry in line with other medical and surgical professions and general medical or surgical qualifications did not meet this need. [62]

However the University of London remained resolutely opposed to degrees. In 1902, a meeting of the Medical Faculty, called to consider a resolution in favour of a dental degree, rejected Norman Bennett's proposal that:

the institution of degrees by other Universities renders it particularly desirable that the University of London should create a Degree in Dental Surgery in the Medical Faculty. [63]

The Medical Faculty concluded that it was "not desirable at present to establish special degrees in the Department of Surgery". [64] In 1904 Morton Smale, Dean of London School of Dental Surgery, who had, in 1899, signed the petition requesting a dental degree in the University of London, proposed a resolution to the effect that "the establishment of University Degrees in Dental Surgery is undesirable".

[65] Smale's concern to protect the status of the diploma is revealed in his comments on the University of Birmingham's degree which he described as a "cock-a-doodle-doo-I-am-a-better-man-than-you-degree" which "casts a slur upon his LDS". [66] For many this was a powerful objection to university degrees in dentistry.

To summarise, the factors which worked against the establishment of a dental degree in the University of London included opposition from the Colleges, which were reluctant to lose their monopoly of dental qualifications and from those who feared that dental degrees would challenge the right of those with general medical or surgical qualifications to practise dentistry. Many dental licentiates, apprehensive that the degree would diminish the status of the LDS and create a two-tiered profession consisting of a basic grade general practitioner and a higher graduate grade, also opposed the establishment of dental degrees. And, since the majority of dental practitioners in the United Kingdom were operating at a level closer to Goadby's tooth-plumbers, it was recognised that there would be little demand for the higher standards advanced by those who favoured dental degrees.

6.4. THE BDA VOTE ON THE DEGREE

Although the BDA had no official role in regulating dental education, its endorsement of the dental degree would promote demand for the degree, whereas its opposition would not recommend the degree to potential candidates. George Cunningham, for instance, recognised that endorsement by the University of London and by the BDA would be important in terms of recognition for the BDS. Cunningham therefore advised the University of London to appoint a new Board of Studies rather than "leave the details of the future curriculum to an already prejudiced majority ... pledged to a policy characteristic of the extinct Association of Surgeons Practising Dentistry". [67] He also recommended that:

it is of the highest importance that a definite decision should be arrived at by so responsible a body as the British Dental Association. [68]

Some members of the dental elite favoured change which would enable the profession to maintain high standards and status. In 1904, J.H. Badcock, RCS, Eng., and MRCS, Eng., LRCP, Lond., a Harley Street dentist, brought a motion before the BDA recommending the establishment of a dental degree in the University of London for candidates who did not hold a degree in medicine or surgery. [69]

The BDA deemed this issue of sufficient

importance to obtain the necessary 250 signatures needed to hold an Extraordinary General Meeting to consider "the expediency of a degree in dentistry".

[70] The BDJ published the extensive series of letters, notices of motion and amendment and debate on the subject. Badcock commended the degree on the grounds that:

the definition of a higher diploma or degree is to give him the maximum knowledge bearing upon the subject, and to ever push forward the bounds of knowledge by means of original research ... the great aim is to be efficient in dental surgery, and energies should not be dissipated in other directions... [71]

Badcock specifically recommended that the LDS should remain the license to practice. In his view higher qualifications which were appropriate for an elite should not impede access to the profession for the majority:

a very, very large percentage of the teeming population of these islands is more or less in need of dental aid and is poor, who is to minister to them, not the man who is asked to spend five years in obtaining a license to practise. [72]

Although the case for the degree had been advanced by several of the most eminent members of the profession, the vote went against university dental

degrees by a majority of two to one and sustained David Hepburn's motion against the degree. [73] Hepburn, LDS, RCS, Eng. produced 493 signatures against the proposal as evidence that:

it is not the voice of the profession which is asking for this change ... many hard-working dentists would see this change as an insult to their excellent diploma, and an uncalled for injury to themselves. [74]

Thus, the Association's opposition was based on fears that degrees would adversely affect the status of the LDS. Even Montagu Hopson, LDS, RCS, Eng., of Guy's Hospital, London, seconded Hepburn's amendment on the grounds that the LDS, the "little dental surgeon" and his practice would be adversely affected by BDS or "big dental surgeon". [75] Despite Campion's attempt to counter this with the argument that a BDS would make the aspiring dentist a "Better Dentist Still", the majority were more concerned to protect the status of the LDS and, thanks largely to the vociferous London opposition, the Association voted against the establishment of dental degrees in London. [76] The BDA was not indifferent to the advance of professional education, and had in 1901 awarded the first grant in aid of scientific research. [77] However, the Association's first duty was to protect the interests of its members.

Following the BDA's vote on the establishment of

a dental degree in the University of London, an editorial in the BJDS summarised the case for and against the degree in the following terms:

The main contentions of those who supported the motion in favour of dental degrees were that it would encourage dental science, it would attract men of high capacity to the profession, the public would correspondingly benefit, and the status of the profession would be raised ... the establishment of a degree would obviate the tendency of making the LDS examination too severe for the ordinary student. [78]

The emphasis on research and the degree's appeal to able candidates, who might otherwise prefer the scope and status of the medical professions, indicate the importance of higher standards if only for a minority. Similarly, William Rushton, LDS, RCS, Eng. who, with Morton Smale, had petitioned the National Dental Hospital in 1899 for recognition for the dental profession in the newly reconstituted University of London, favoured degrees on the grounds that university dental education would promote research. [79] During Rushton's tenure as secretary of the Odontological Society the sole application for a research grant had come from Birmingham University and even that had been refused. [80]

The case against the degree was based in part on the concern that "such degrees would create confusion

in the mind of the public, and pave the way for the assumption of bogus titles" and that "the creation of various degrees by many universities would eventually lead to unworthy competition amongst these bodies and the cheapening of dental degrees". [81] The main thrust of opposition was that "the prestige and position of the LDS would be disparaged" and that "it would create a breach between dentistry and the Royal Colleges of Surgeons which so far had been its best friend." [82] Thus the profession's first loyalty was to the RCS, Eng. and the preference was for the LDS, RCS, Eng. The BJDS endorsed the BDA's decision on the grounds that "the present state of things fulfils the actual requirements of the Public and the Profession". [83]

The Lancet endorsed the BDA's decision in similar terms:

we fail to see any advantages can possibly be gained by the institution of dental degrees unless granted to holders of medical qualifications ... dental degrees will certainly not be for the welfare of the public ... the public will be bewildered with innumerable letters; it will be excessively difficult for them to discriminate between genuine and spurious appellations. [84]

The Lancet saw no advantage for the profession or dental research from the establishment of dental

degrees:

to the large body of dental practitioners and in the interests of dental science the step would be disastrous. [85]

The Lancet also pointed out that, were dental degrees to be established, the dental profession would still be in an anomalous position relative to other medical specialties:

If degrees were granted in such specialties as diseases of the eye, throat and nose they would only be granted to medical practitioners. Dentistry, then, is to stand alone as not requiring any medical qualification ... [86]

The opposition was not confined to London. The Colleges in Scotland and Ireland also stood to lose by the establishment of university degrees. In Edinburgh, for instance, William Guy, LRCP, FRCS, LDS, RCS, Edin., favoured degrees in science or medicine rather than a "pinchbeck imitation in the department of dentistry" although Guy anticipated that all universities would introduce degrees "as soon as they are convinced that there is money in it". [87]

Thus, although several leading members of the dental profession recognised the need for dental degrees on educational grounds and, although a more demanding curriculum leading to a university qualification was needed to advance teaching and research and maintain the status of the profession,

the degree was not a priority at a time when the need to increase the number of qualified dental practitioners was great. [88] Whereas degrees assumed greater importance in the medical professions from the late nineteenth century, in dentistry the status of college qualifications remained unchallenged as the standard required for dental practitioners. [89] However, despite the vote taken at the Association's Extraordinary General Meeting the matter was not closed. George Champion returned to this theme in 1905, re-emphasising the "increasing prominence of science" within the universities and reminding the profession that universities were increasingly "taking up and expanding the work which in the last century was performed by the different chartered Royal Colleges". [90] Champion compared the BDA to "Mrs Partington who, at the height of a great gale, tried with her mop to sweep back the rising Atlantic Ocean" and asked whether dentists should or could stand apart from this influence. [91]

6.5. THE ROYAL COMMISSION ON UNIVERSITY EDUCATION IN LONDON, 1912

Following the establishment of dental degrees in the new universities in the north of England, the University of London adopted a policy of compromise. In 1909, the Board of Studies (J.F. Colyer, K.W.

Goadby, S. Spokes, A.S. Underwood) recommended that the establishment of a Master of Surgery (MS) in Dental Surgery "would naturally add to the honour and prestige of the dental profession" and the University of London's degree of MS in Dental Surgery was instituted in 1910. [92] However, since candidates were required to hold the university's MB, BS degrees, there was no London equivalent to the BDS. The MS in Dental Surgery was withdrawn in 1948, a few months after the first and last candidate W.G. Cross, BDS, MB BS, MS Lond. graduated. [93]

Notwithstanding the establishment of the University of London's MS in dental surgery, one of the tasks allotted to the Royal Commission on University Education in London was to consider how the university could "most effectively promote scientific study and training in the subject of dental surgery, regarded as a branch of medical science", factors which were to prove important in determining the future role of universities in dental education. [94] The Commission's purpose was to ascertain whether university education was appropriate or necessary for dentistry.

The information requested from the London dental schools covered the key issues - the relationship between dental and medical education in London, whether there was a need for a dental degree, in view of the existence of the college LDS, and the

suitability of training by apprenticeship compared with training carried out in a "public educational institute". Comparisons were made with other professions such as veterinary medicine, engineering and the medical professions.

Evidence was submitted by the four London dental schools and the Royal College of Surgeons whose diploma was still, several years after the first degrees had been established in the provinces, the only registrable dental qualification available in London. [95] Minutes of Evidence submitted to the Commission reveal the extent of opposition to university degrees in dentistry in London from the Royal College of Surgeons of England and from influential members of the University of London, many of whom held RCS, Eng. qualifications.

The Commissioners acknowledged the diminishing importance of training by apprenticeship and the superiority of university degrees over college qualifications in medicine and surgery. However, the RCS, Eng. dismissed dentistry as "not a subject of such depth of scope as to justify the award of a university degree" and claimed that "the multiplication of registrable degrees and licences in dental surgery" was not "to the advantage of the public or of the profession". [96] Yet the RCS, Eng. endorsed the decision to grant the MS to those who already held the Bachelor of Medicine, Bachelor of

Surgery (MB,BS) as "the best course that can be pursued". [97] The Royal College of Surgeons's endorsement of a post-graduate degree in dental surgery, for those qualified in medicine and surgery, for a subject which was regarded as of such little depth that it did not require a university degree appears somewhat inconsistent. The College anticipated little demand for a degree which would leave the dentist "only a dentist instead of a doctor, with a less good social position", and dismissed the Commissioners' suggestion that, without a degree, the University of London might lose students to the provinces on the grounds that "teaching in London will probably always be better than teaching in the provinces". [98]

The Commissioners however, suggested that the College had no grounds for complacency. If, as had been suggested, examinations at provincial universities did not match the standard set by the curriculum, this would not be a phenomenon peculiar to the provinces. Furthermore, supervision and enforcement of standards was a matter for the GMC rather than the College.

The need to protect the status of its qualifications was, for the College and its members, more important than the need to improve standards in dentistry. Those representing the RCS Eng. were not dentally qualified. [99] The RCS Eng. regarded it as

"undesirable that a University distinction should carry with it the right to practise". [100] The RCS, Eng. was reluctant to entertain comparisons with university dental education in Europe, the United States or even the provinces. The Royal College of Surgeons's disregard for the value of university teaching in the sciences, which were crucial to the research which would improve standards in clinical dentistry, highlights the way in which their influence would be diminished once universities assumed the role of training and examining the medical professions.

The Royal College of Surgeons was in favour of degrees for dentists but was not in favour of dental degrees and especially not in London since this might threaten its monopoly of professional qualifications there. The colleges had no intention of promoting higher standards if this meant that they would lose the power to grant the registrable qualification. However, as an examining rather than a teaching institution, the RCS, Eng. was out of step with advances in higher education.

Whereas the College claimed that there was no distinction between the examination for the degree and the LDS, RCS, Eng., the schools held the view that the dental degrees which had been established in the Midlands were of a higher standard than the LDS, RCS, Eng. The London Hospital Medical College and Dental School and Guy's Hospital Medical and Dental School,

London favoured degrees to "advance the science and practice of the profession". [101] Although the College diploma was "entirely satisfactory and sufficient" and "adequate as a qualification to practise", a "wider and more scientific education under the auspices of a university than that produced by a simple license to practise" was needed "if progress in Dental Science is to be maintained". [102] A university degree would broaden "the general scientific basis of dental surgery" and stimulate research. [103] And, whereas the MS in Dental Surgery would deter the majority of candidates, a BDS would attract students to London who might otherwise be lost to the provinces. The London Hospital Medical College and Dental School (LHMC) also pointed out that in the United States qualifications to practise would shortly be awarded only by universities. [104] But whereas the LHMC favoured the establishment of university degrees and diplomas, Guy's in deference perhaps to the RCS, Eng., suggested that it would be inappropriate for the university to grant licences. [105]

A major factor working against higher standards in education and qualification was the inadequate protection for the qualified and the consequent lack of incentive to qualify. In "observations, though, perhaps, lying outside the terms of reference of the Commission" representatives of Guy's Hospital Medical

and Dental School pointed out that existing legislation did not prohibit practice by unregistered dentists and that the unregistered outnumbered the qualified ten to one. [106] Since there was nothing to prevent unqualified persons practising dentistry, as long as they did not call themselves dentists (or otherwise claim to be registered), it was as if a person were to set up a business under the sign "grocery stores" without calling himself a grocer. [107] The RCS, Eng. also argued that unless the profession could be better protected against unregistered practice:

the present provision for teaching dentistry in London is sufficient for the existing number of students, or for any number that can be anticipated. [108]

Similarly, Sidney Spokes, speaking on behalf of the National Dental Hospital and College, qualified his support for the degree with reservations as to the feasibility of raising standards. Since there was "no inducement at the present time for young men to take a dental qualification of any kind", inadequate protection for qualified dentists was "the real crux of the whole matter why we do not get on with dental education in this country". [109] Therefore the role of the university in dental education had to be considered in relation to the legal protection offered to qualified dentists.

Although this did not rule out the need for a higher standard of qualification than the LDS, the inadequate protection for qualified dentists led the Commission to conclude "reluctantly" that:

it is probably impossible to require a higher standard of qualification than at present, so long as the law remains unchanged [and that] for the great majority of dental students, dental education cannot be raised to a real university standard and therefore ought not to be marked by a university degree. [110]

Furthermore, far from advancing the dental degree as the appropriate standard for a first qualification in dentistry, the Royal Commission suggested that, if registration were made compulsory, a lowering of standards might be necessary to increase the numbers entering the profession.

Nevertheless the Commission was outspoken in its criticism of the policy of the University of London. The MS in dental surgery was described as:

an illusory concession to the demand for a degree in Dentistry ... the whole range of instruction in medicine and surgery ... cannot, we believe, be shown to be the necessary scientific foundation for dental surgery. [111]

The "elementary courses" in dental mechanics and dental metallurgy were not of a post-graduate degree standard and the university's policy of granting the

degree only to those who had already qualified in medicine was regarded as "a matter which requires further consideration". [112]

Thus the Commission had endorsed the view that, although the scientific basis of dental education merited university recognition, full medical training for dentists was both impractical and inappropriate. Indeed, the Commission commended the universities of Manchester, Liverpool, Leeds, Birmingham, and Bristol, whose degrees would create "as large a class as possible of scientifically trained dentists":

If, as is now admitted, dental surgery is a profession or calling which ought to be guided and controlled throughout its practice by the application of scientific knowledge ... then the University should undertake the responsibility for this training, and may fitly confer its degree upon those who have undergone it. [113]

However, in the final analysis, the RCS, Eng.'s influence on university policy in London may be detected in the Commissioners' recommendation that in London the university should not compete with the RCS, Eng. by awarding a licence:

we do not think it is desirable that in London the University should compete with the diploma of the Royal College of Surgeons. [114]

The "News and Comments" section of the BDJ described the Royal Commission's recommendations as

"disappointing". [115] Indeed, nine years later the BDJ would refer to the Royal Commission's "merciless analysis" which had shown the MS degree to be "no incentive to teaching of a university standard."

[116] In 1921 the University of London conceded that the MS in Dental Surgery was "not adapted to the requirements of students" and established a BDS for which the degree in medicine and surgery was not required. [117] The new degree of BDS was unanimously accepted by the Standing Committee of Convocation of the University of London on the grounds that it "would encourage a more systematic study of dentistry within the university" and the first examinations for the University of London BDS were held in 1924. [118] However, the delay in endorsing the dental degrees established elsewhere by establishing a University of London equivalent, adversely affected demand for the dental degree.

The RCS, Eng. also delayed the establishment of higher college qualifications for dentists. Although Higher Dental Diplomas were instituted in Glasgow and Edinburgh in 1920, it was not until 1948 that a Supplementary Charter empowered the RCS, Eng. to grant a Fellowship in Dental Surgery, (FDS, RCS, Eng.) which offered dentists a higher college qualification comparable to those available to surgeons. Thus, for many years, the RCS, Eng. effectively blocked the establishment of dentistry as a profession equal in

status to medicine and surgery by denying it the status and recognition of university and higher qualifications.

At a time when universities elsewhere in England were establishing dental degrees, the University of London had shown no enthusiasm for degrees in dentistry. Many members and fellows of the Royal College taught in the University of London, examined at the colleges and some were members of the profession's governing body the GMC. It was in their interests to maintain the status quo. The establishment of a University of London BDS had been effectively blocked by those with vested interests in maintaining the status quo - the medical establishment and dental licentiates.

This combination of influence and number effectively blocked change. Despite the gradual decentralisation of training and licensing for the profession, the Royal College of Surgeons of England and the University of London, whose medical degrees had assumed some prestige, were very influential. Whereas the establishment of a prestigious University of London degree would have endorsed the status of the degree, students were reluctant to embark on a longer more costly course for a qualification whose status was not endorsed by a London equivalent and which was perceived to be less prestigious than the LDS, RCS, Eng. [119] Many in London hoped that, without the

advantage of the status attached to the Royal College of Surgeons and the University of London, the new degrees would fail. [120]

The Royal Commission's analysis confirmed that, in the absence of an effective monopoly for qualified practitioners, there would be little demand for either a higher standard of qualification to practise or for a university qualification. Both were perceived to be inappropriate to the substantially technical nature of dental practice and to career prospects at that time. Thus, although only forty years elapsed between the establishment of the first dental qualification and the institution of the first dental degree, it would take longer for university degrees to become established as the standard qualification in dentistry.

6.6. ENDNOTES

1. THOMPSON, F.M.L. (ed.) The University of London and the World of Learning, 1836-1986. London: Hambledon Press, 1990. pp. xiv-xv.
2. READER, W.J. Professional Men: the rise of the professional classes in nineteenth century England. London, Weidenfeld and Nicholson, 1966, p. 156. and PLAYFAIR, Lyon cited by ESCOTT, H.S. England: its people, polity and pursuits. New. ed. Oxford. 1885, p. 332, cited by W.J. Reader, 1966, p. 133.
3. For example:
"The Humble Petition of the Physicians and Surgeons of St. Bartholomew's Hospital and of the Lecturers in its Medical School to the Honourable House of Commons against granting a Charter to the London University with the Power of Conferring Medical Degrees." Cited by ELLIS, Sir John. LHMC, 1785-1985: the history of the London Hospital Medical College. London: London Hospital Medical Club, 1986. p. 21.
4. ELLIS, Sir John, 1986. Chapter 4.
5. THOMPSON, F.M.L. (ed.), 1990, p. 127.
6. BARRY, Alfred. "The Good and Evil of Examination". Nineteenth Century, v.III, 1878, pp. 647-666.
7. PEARSON, Karl. Extract from letter of 1884. Cited by DUNSHEATH, P. and MILLER, M. Convocation in the University of London. London: Athlone Press, 1958, p. 69 and by ROACH, J.P.C. Public Examinations in England, 1850-1900. Cambridge: Cambridge U.P., 1971. p. 263.
8. ELLIS, Sir John, 1986.
9. YOUNG, G.M. (ed.) Early Victorian England, 1830-1865. Oxford: Oxford U.P., 1934, p. 465. Previously this had been a lucrative source of income and status for the Royal Colleges whose members resisted the loss of status for their college qualifications. [Interview. Professor A.D. Hitchin, May 1990.]
10. Owen's College, Manchester which had federated with the Yorkshire Scientific College, Leeds and University College, Liverpool to form the Victoria University, Manchester in 1880.

11. BJDS, v.41, 1898, pp. 1073-1075. Edit.
12. A copy of this petition forms part of C. Bowdler Henry's mss notes for his unfinished history of the London Hospital Medical College, held in the British Dental Association Museum, London. Chapter XXI.
13. C. Bowdler Henry, mss.
14. Ibid.
15. Ibid.
16. Medical Committee Minutes. July 27, 1899, p. 88. C. Bowdler Henry mss.
17. VINCENT, E.W. and HINTON, P. The University of Birmingham: its history and significance. Birmingham: Cornish Brothers Ltd, 1947.
18. Ibid.
19. In Birmingham the new university could build on a well-established tradition in professional dental education. The Birmingham and Midland Dispensary for Diseases of the Teeth, established in 1858, became The Birmingham Dental Hospital in 1871. [COHEN, R.A. "The History of Birmingham Dental Hospital and Dental School, 1858-1958". Birmingham: Board of Governors of the United Birmingham Hospitals, 1958.] In 1880 Mason's College established a School of Dental Medicine and Surgery. By 1882 Birmingham Dental Hospital was recognised by the RCS, Eng. as a school of dental surgery, the first Birmingham student Frederick W. Richards qualified LDS, RCS, Eng. in 1883. In 1886 John Humphreys was appointed to an honorary chair in Dental Anatomy and Physiology established at Queen's College and a year later a dental board was formed there. [VINCENT, E.W. and HINTON, P., 1947.]
20. The Parliamentary Debates (Authorised Version), 4th Series, 7th Session of the 26th Parliament of the United Kingdom of Great Britain and Ireland. 63 Victoriae. Vols. LXXIV-LXXXIII, 1900. 6th Volume of Session, 1221. Birmingham University Act, 1900 (63 & 64 Vict.) c.19. The Local Acts Passed in the Sixty-Third and Sixty-Fourth Years of the Reign of Her Majesty Queen Victoria. Printed by Eyre and Spottiswoode for T. Digby Piggott, the Queen's Printer of Acts of Parliament, 1900.
21. Interview. Professor A.D. Hitchin. May 1990.

22. "Degrees in Dentistry". BJDS, v.43, 1900, p. 592. Edit.
23. RUSHTON, M.A. "Dentistry and the Universities". BDJ, v.108, 1960, pp. 64-69. For instance R.A.Cohen whose parents lacked the means to support him during the more expensive medical training and Professor A.D. Hitchin who, for health reasons, decided against a more demanding medical course. [Interviews. R.A. Cohen, March 1988 and Professor A.D. Hitchin, May 1988.]
24. Many students who had served apprenticeships or pupillage were useless when they arrived as students at the dental schools. Gaddes had, with the support of his Branch of the BDA, taken a rudimentary opinion poll of the schools and though the results did not mean much they did support that observation. [Personal communication J.A. Donaldson. April 1989.]
25. ROSE, Frederick. "A Suggested New Departure in Dental Reform". JBDA, v.22, 1901, pp. 394-399 and Discussion. pp. 399-400.
26. The Dental Record, v.6, 1886, pp. 42-44. Edit. and GADDES, Thomas. "A Plea for the Speciality of Dentistry and for University Recognition". JBDA, v.22, 1901, pp. 323-329. Gaddes was well qualified to speak on dental education. He held an American medical degree (M.D., Denver) as well as the LDS, RCS, Eng. & Edin. and was Dean of the National Dental Hospital and President of the BDA in 1905. [COHEN, R.A. and SPENCE, E.M. Spence (eds.) The British Dental Association: the advance of the dental profession: a centenary history, 1880-1980. London BDA, 1979, p. 242.]
27. GADDES, Thomas, 1901.
28. Ibid.
29. Ibid.
30. Ibid.
31. GADDES, Thomas, 1901. The specialisation to which he referred was reflected in the ten sections of the Third International Dental Congress held in Paris in 1900. Specialisation in dentistry advanced faster and earlier in the United States. Orthodontics was one such specialty and dentists who had completed a course at the Angle School of Orthodontia in the United States on return to the UK first said of themselves "practice limited to orthodontics". Gaddes who had studied dentistry

- in the United States had first-hand experience. [Personal communication. J.A. Donaldson. April 1989.]
32. "The University of London and Dental Surgery". BJDS, v.46, 1903, pp. 614-617.
 33. PEDLEY, R. Denison. "Dental Disease and the Medical profession". The Lancet, v.ii, 1904, pp. 1207-1208.
 34. C. Bowdler Henry mss. BENNETT, Norman G. "Dental Education". JBDA, v.23, 1902, pp. 162-168; "Problems in Dental Education II: an Imperial degree in dentistry". BDJ, v.24, 1903 pp. 737-741; "The University of London and Dental Education". BDJ, v.24, 1903, pp. 781-787 and Discussion, pp. 787-796. See Appendix 10.3: Biographies for details of Bennett's career and status within the profession.
 35. BENNETT, Norman G., 1902.
 36. Ibid.
 37. BENNETT, Norman G. "The University of London and Dental Education". BDJ, v.24, 1903, pp. 781-787 and Discussion, pp. 787-796.
 38. BENNETT, Norman G., 1903, p. 785.
 39. BENNETT, Norman G., 1903.
 40. Ibid.
 41. Ibid, p. 783 and BENNETT, Norman G., 1902, p. 164.
 42. C. Bowdler Henry mss.
 43. CUNNINGHAM, George. "A Retrospect" read at the AGM, Brighton, June, 1903. BDJ, v.25, 1904, pp. 65-73. See Appendix 10.3: Biographies for details of his career and status within the profession.
 44. SMALLWOOD, G.V. "The Difficulties of the Curriculum for the Double Qualification". JBDA, v.22, 1901, pp. 381-388 and Discussion, pp. 388-393.
 45. See Appendix 10.3: Biographies.
 46. DOLAMORE, W.H. in MATHESON, L. "University Degrees in Dental Surgery: the question of a university degree in dental surgery". BDJ, v.23, 1902, pp. 289-301 and Discussion pp. 294-301.

47. CAMPION, George, LDS, Lecturer in dental surgery in Queen's College Manchester. "The Need for a Higher Qualification in Dental Surgery". JBDA, v.11, 1890, pp. 565-575 and CAMPION, G.G. in "University Degrees in Dental Surgery: the question of a University Degree in Dental Surgery". BDJ, v.23, 1902, pp. 289-301, p. 295. See Appendix 10.3: Biographies.
48. CAMPION, G.G., 1902, p. 295.
49. LAW, W.J. "A Scheme of Dental Education". BDJ, v.24, 1903, pp. 741-742.
50. CAMPION, G.G., 1902, p. 295.
51. MATHESON, L., President of the Metropolitan Branch of the BDA in "The Question of a University Degree in Dental Surgery". JBDA, v.23, 1902, pp. 289-294 and Discussion, pp. 294-301, p. 292 and SMITH, John in "The Special General Meeting". BDJ, v.25, 1904 pp. 25-35. Correspondence. See Appendix 10.3: Biographies.
52. SMITH, John, 1904. Corresp., pp. 31-33.
53. Ibid.
54. Ibid.
55. "The University of London and Dental Education". BDJ, v.24, 1903, Disc. p. 793. Dowsett had previously suggested a post-graduate or post-apprenticeship course at the hospital and an extension of one year to the student's hospital career since the mechanical work done in the hospital, while adequate for the examination, was not sufficient in terms of experience.
56. UNDERWOOD, Arthur S. "Degrees in Dentistry". BDJ, v.25, 1904, pp. 346-347. Corresp. His qualifications indicate where his allegiance lay. SMALE, Morton. "Dental Education". JBDA, v.20, 1899, p. 319. Corresp.
57. LAW, W.J., 1903.
58. "The University of London and Dental Education". BDJ, v.24, 1903, p. 795. See Appendix 10.3: Biographies.
59. PRESTON, C.H. "University Degrees". BDJ, v.25, 1904, pp. 271-272. Corresp. See Appendix 10.3: Biographies.

60. "The University of London and Dental Education". BDJ, v.24, 1903, Discussion, pp. 787-9. See Appendix 10.3: Biographies.
61. GOADBY, W.H. "The University of London and Dental Education". BDJ, v.24, 1903, Discussion, pp. 787-9.
62. Pathology and physiology, often cited in justification of the expanded university dental curriculum, were late in becoming established in the medical curriculum. [Personal communication, David Hamilton. November 1987 and YOUNGSON, A.J. "Medical Education in the Later 19th Century: the science take-over". Medical Education, v.23, 1989, pp. 480-491.]
63. "The B.D.S. of the University of London". BDJ, v.43, 1922, pp. 161-164 and University of London. Medical Committee Minutes, 1902. p. 154. Cited by C. Bowdler Henry in his mss notes.
64. C. Bowdler Henry mss.
65. Medical Committee Minutes, 1904, p. 154. C. Bowdler Henry mss.
66. "Extraordinary General Meeting of Members". BDJ, v.25, 1904 pp. 94-131.
67. CUNNINGHAM, George. "A Retrospect", read at the A.G.M., Brighton, June 1903. BDJ, v.25, 1904, pp. 65-73 and CUNNINGHAM, George. "The Special General Meeting". BDJ, v.25, 1904, pp. 28-30. Correspondence. He was renowned for his epidemiological research which supported his campaign for dental treatment for schoolchildren. See Appendix 10.3: Biographies for details of his education and career.
68. CUNNINGHAM, George. "A Retrospect", 1904, p. 67.
69. See Appendix 10.3 Biographies.
70. "Extraordinary General Meeting of Members". BDJ, v.25, 1904, pp. 94-131 and "The Special General Meeting". BDJ, v.25, 1904, pp. 25-35. Corresp.
71. "Extraordinary General Meeting of Members", 1904.
72. Ibid, p. 99.
73. See Appendix 10.3: Biographies.

74. Ibid, p. 110. 175 favoured Mr. Hepburn's amendment and 87 voted in favour of the degree. ["Extraordinary General Meeting of Members", 1904, p. 130.]
75. "Extraordinary General Meeting of Members", 1904, p. 111. See Appendix 10.3: Biographies.
76. "Extraordinary General Meeting of Members", 1904, p. 113.
77. COHEN, R.A. and SPENCER, E.M. (eds.)., 1979, p. 236.
78. "University Degrees in Dentistry". BJDS, v.47, 1904, pp. 111-112. Edit.
79. See Appendix 10.3: Biographies.
80. "Extraordinary General Meeting of Members", 1904, pp. 91-131.
81. "University Degrees in Dentistry". BJDS, v.47, 1904, pp. 111-112. Edit.
82. Ibid.
83. Ibid.
84. "The Future Position of the Dental Profession". The Lancet, v.i, 1904, pp. 518-519. Edit.
85. Ibid.
86. Ibid.
87. GUY, William. "University Degrees for the Dental Profession". BDJ, v.25, 1904, pp. 80-81 and GUY, William. "The Function of the British Dental Association in its Relation to Dental Education". BDJ, v.25, 1904, pp. 653-659. Guy's qualifications indicate that he was first and foremost a college man. He was also however Dean of Edinburgh Dental Hospital & School, vice-president of the FDI and a member of the GMC - a measure of the influence of the college within the medical and dental establishment. [COHEN, R.A. and SPENCE, E.M. (eds), 1979, p. 249.] See Appendix 10.3: Biographies.
88. BALDING, Leonard M., LDS, RCS, Eng. "Degrees in Dentistry". BDJ, v.25, 1904, pp. 409-413 and Discussion, pp. 413-414.

89. PETERSON, M. Jeanne. The Medical Profession in Mid-Victorian London. Berkeley: University of California Press, 1978, pp. 51 and 67-68.
90. CAMPION, George. "University Teaching and Degrees". BDJ, v.26, 1905, pp. 103-104.
91. Ibid.
92. C. Bowdler Henry mss. Chapter XXI includes the 1909 curriculum.
93. C. Bowdler Henry mss. Chapter XXI.
94. Royal Commission on University Education in London. Final Report of the Commissioners. London: HMSO, 1913. Cd. 6717 and Appendix to the Final Report of the Commissioners. Minutes of Evidence. February-December 1912. London: HMSO, 1913. Cd. 6718.
95. Dates of establishment are shown in Appendix 7.1.
96. Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence. February-December 1912. London: HMSO, 1913. Cd. 6718, p. 15.
97. The Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence, February 1912-December 1912. London: HMSO, 1913. Cd. 6718, p. 15.
98. The Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence, February 1912-December 1912. London: HMSO, 1913. Cd. 6718, pp. 21 and 19.
99. They were R.J. Godlee, MB MS, Lond. and Sir Alfred P. Gould, MB MS, Lond.
100. The Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence, February 1912-December 1912. London: HMSO, 1913. Cd. 6718, p. 15.
101. The Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence, February 1912-December 1912. London: HMSO, 1913. Cd. 6718, p. 22. Evidence from the London Hospital Medical College and the London Hospital Dental School.

102. The Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence, February 1912-December 1912. London: HMSO, 1913. Cd. 6718, p. 26. Evidence from Guy's Hospital, London.
103. Ibid.
104. Although in the USA a dentist had to pass a State Board examination in addition to his DDS in order to practice, the respective standards of these qualifications were not equivalent and could even be confusing. [Interview. Professor A.D. Hitchin. May, 1989.]
105. Ibid.
106. The Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence, February 1912-December 1912. London: HMSO, 1913. Cd. 6718, p. 27. It was estimated that there were 3,150 qualified and probably 25,000 to 35,000 unqualified practitioners. Guy's was represented by Dr H.L. Easton and Montagu F. Hopson.
107. The Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence, February 1912-December 1912. London: HMSO, 1913. Cd. 6718, p. 30. Evidence submitted by Montagu Hopson. The judgement in the Bellerby v. Heyworth case in 1910, which became known as the "charter of the unregistered dental practitioner", illustrated just how ineffectual was the "protection" offered to the qualified. As interpreted by the courts, the Act did nothing to prohibit practice by the unqualified using titles such as "dental expert", "dental consultant", and "dental operator". This left plenty of scope for the unqualified majority recognised by the public as practising dentistry. [Bellerby v. Heyworth ([1910] A.C. 377).]
108. The Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence, February 1912-December 1912. London: HMSO, 1913. Cd. 6718, p. 15.
109. The Royal Commission on University Education in London. Appendix to the Final Report of the Commissioners. Minutes of Evidence, February 1912-December 1912. London: HMSO, 1913. Cd. 6718, p. 32. and SPOKES, Sidney. Evidence to the Royal Commission on University Education in London. BJDS, v.58, 1915, pp. 244-246.

110. The Royal Commission on University Education in London: Final Report of the Commissioners. London: HMSO, 1913. Cd. 6717, pp. 141 and 143.
111. The Royal Commission on University Education in London: Final Report of the Commissioners. London: HMSO, 1913. Cd. 6717, p. 143.
112. The Royal Commission on University Education in London: Final Report of the Commissioners. London: HMSO, 1913. Cd. 6717, pp. 142-143.
113. The Royal Commission on University Education in London: Final Report of the Commissioners. London: HMSO, 1913. Cd. 6717, pp. 143-144.
114. The Royal Commission on University Education in London: Final Report of the Commissioners. London: HMSO, 1913. Cd. 6717, p. 145.
115. "The Royal Commission on University Education in London". BDJ, v.34, 1913, p. 422. News and comments.
116. "The B.D.S. of the University of London". BDJ, v.43, 1922, pp. 161-164. Edit.
117. "New Dental Degree of B.D.S. at the University of London". BDJ, v.42, 1921, pp. 474-475. General News.
118. The four examinations for the new degree were:
 First examination: dental surgery: inorganic chemistry, physics and biology (organic chemistry was omitted).
 Second examination: anatomy of the head and neck, physiology, Dental Anatomy and Histology; and Pharmacology.
 Third examination. Part 1: Pathology and Bacteriology, general and special; Medicine (a 3 month course of practical medicine in a recognised hospital and a practical course in anaesthetics were required; Surgery (requirements including 3 months course in the surgical out-patients' department of a recognised hospital. Part 2: Prosthetic Dentistry, including Dental Metallurgy (requirements including a course of not less than 1,200 hours of instruction).
 Fourth examination: Dental Surgery, including Operative Surgery and Orthodontics. ["The B.D.S. of the University of London". BDJ, v.43, 1922, pp. 161-164. Edit.] The five year curriculum for the London degree omitted general anatomy and histology but included subjects such as general bacteriology and pharmacology thereby giving more emphasis to medical aspects. The clinical dental

curriculum was also extended with the inclusion of orthodontics. Compared with provincial university curricula at this time, the structure of the London BDS appears more concise and closer to the dental curriculum of today. [C. Bowdler Henry mss.]

119. The existing university dental qualifications were:
London (Master of Surgery, which required the candidate to already have qualified Bachelor of Medicine and Bachelor of Surgery);
Birmingham (BDS, MDS and the LDS of the university);
Bristol (BDS, MDS and LDS);
Leeds (B.Ch.D., M.Ch.D. and a LDS);
Liverpool (BDS, MDS and LDS);
Manchester (BDS, LDS Manch. and LDS Eng.);
Newcastle (LDS of the University of Durham).
["Educational Supplement". BDJ, v.34, 1913, pp. 865-916.]
120. Interview. Professor A.D. Hitchin. May 1990.

CHAPTER 7: THE IMPACT OF UNIVERSITY DENTAL EDUCATION, 1900-1917

This chapter will show that the precedent set by the University of Birmingham in 1900 was quickly followed by other provincial universities which established dental degrees and also diplomas. A comparative study of university dental curricula and reports issued by the General Medical Council (GMC) will demonstrate the initial impact of university education on the evolution of the dental curriculum. Analysis of data supplied by the universities and entry-by-entry analysis of The Dentists Register will show that initially university dental degrees and diplomas made little impact on the way in which dentists qualified. The chapter's concluding section will focus on the factors which contributed to the lack of demand for university dental qualifications and to continuity in methods of teaching clinical dentistry prior to the end of the First World War.

7.1. THE ESTABLISHMENT OF UNIVERSITY DENTAL QUALIFICATIONS IN THE PROVINCES

When universities were established at Liverpool, Manchester and Leeds degrees in dental surgery were among the first to be introduced in 1905-06. [1] It

was a logical step for these universities to institute dental degrees. Firstly, the experience of Mason's College, Birmingham had shown that institutions which could not award degrees were disadvantaged in terms of their appeal to students. [2] Secondly, the new civic universities were in cities where dental hospitals and schools prepared candidates for the examinations of the surgical colleges, under the supervision of committees appointed by the faculty of medicine in the provincial colleges which preceded the universities. [3] Thirdly, it was anticipated that there would be a demand for university qualifications from candidates who did not live near the existing examination centres in London, Edinburgh, Glasgow, and Dublin, from women who were eligible for university qualifications and appointments and from those seeking a standard of training and qualification higher than a college diploma. [4] The new universities saw dentistry as:

an independent or sister profession working hand in hand with medicine but under a separate organisation and having an educational curriculum planned to meet its own special needs. [5]

In London, dentistry was regarded as a medical specialty similar to ophthalmology or laryngology and in the University of London there was no degree in dentistry, for those who did not hold university degrees in medicine and surgery, until 1921. The universities in Glasgow and Edinburgh followed

London's lead. Thus in London, Edinburgh and Glasgow the colleges offering the LDS maintained their local monopoly over dental qualifications.

In Glasgow and Edinburgh the extra-mural schools, to which the dental schools were affiliated, prepared students for college examinations and, as in London, university dental degrees were not established until much later. When the Dental School was established in Dundee in 1916 the school offered courses which were examined for the dental diploma of the University of St. Andrews, but there was no attempt to establish a degree at this time. [6] The one exception to the regional college hegemony was Dublin where Trinity College, Dublin instituted the MDSc. in 1904 and the BDSc. in 1911. [7] There, the degree's title emphasised science rather than surgery, thus distinguishing it from the diploma in dental surgery awarded by the RCS, Irel., which was also in Dublin. As in London, Edinburgh and Glasgow, the University did not compete with the college by offering a rival LDS. [8]

Fee revenue was an important factor in the financial viability of the new universities. Therefore, in addition to the BDS, the majority of universities offered courses and examination for the LDS, which would appeal to the majority of candidates. [9] For instance, following the establishment of the degrees BDS and MDS in the University of Liverpool in

1903, the University's LDS diploma was introduced in 1905-6. [10] In some universities demand for the LDS was built into the degree structure. [11] The Victoria University of Manchester, the University of Liverpool and the University of Leeds offered the degree as an alternative first qualification. Elsewhere, (Birmingham and Dublin for example) universities required candidates for the BDS to hold the LDS. Initially, some universities (Durham, Belfast and St. Andrews, for instance) only offered the LDS. [12] This meant that in the short term, although universities had no difficulty in attracting students, the majority were not preparing for dental degrees or even university qualifications. [13] For instance, of one hundred Liverpool dental students in the session 1913-14 only ten were taking the degree course. [14] Although it was intended that sub-degree and part-time instruction would be phased out, the intention to promote degree work was not matched by demand. [15] Thus, in effect BDS courses were subsidised by fees from candidates for the LDS. [16]

By providing training and qualification for university diplomas the universities had adopted a pragmatic approach to generate fee revenue. However, this undermined the demand for the BDS and, by providing training for college diplomas, universities also undermined the demand for the university LDS.

7.2. THE DENTAL CURRICULUM, 1900-1917

The debate on dental education had focused on two related but separate issues: the need for a higher or degree standard to advance dental science and research and the need to improve the curriculum for the LDS which remained the qualification to practise. Analysis of university dental curricula and examinations shows the extent to which these goals were achieved and the impact of university standards on those who trained in the universities for either qualification. [17]

Detailed comparison of university curricula suggests that in the sciences the degree was superior to the LDS. For instance, Manchester's degree course included more science, medicine and clinical dentistry than the LDS and the Universities of Leeds, Liverpool and Bristol examined medicine for the BDS and not for the LDS. The University of Leeds also required more time to be spent on theoretical and practical physics and chemistry, with lectures in anatomy and physiology in addition to the practical required for the LDS. This suggests that the degree extended the scientific and medical curriculum while the LDS was intended as a basic vocational standard. However, regulations varied considerably and the core curriculum was by no means firmly established. The University of Leeds, for instance, unlike Manchester, Liverpool and

Bristol, did not examine histology, orthodontia, general pathology and dental histology. [18] And, in some universities, Liverpool for instance, instruction in mechanical dentistry for the BDS took place over three years compared with the two years required for the LDS. [19] Thus, although in some respects degrees offered a higher standard than the diploma, initially courses varied considerably and it was not universally true that the BDS offered a higher standard in science and medicine.

There was also great diversity in LDS courses. For instance, general and dental histology and dental prosthetics were examined in the Universities of Manchester, Liverpool and Bristol but not in the University of Leeds. The latter emphasised dental materia medica, pathology and bacteriology which were not required for the University of Manchester LDS. Some subjects included in the curriculum were not examined. For instance, practical pathology was mentioned in the curriculum but not listed among the examinations for the University of Manchester LDS. Some subjects were not specified in the curriculum and yet appear in the list of examinations. For instance, materia medica was examined in Manchester but there was no prescribed course. And, although exponents of university dental education claimed that university teaching would promote science, medicine, bacteriology and dental materia medica, which were required by the

RCS, Eng., these subjects did not form part of the Manchester curriculum. This suggests that although new universities were strong in the sciences, the RCS, Eng. benefitted from close links with the London medical schools in the teaching of medical sciences.

However, in some universities, the LDS requirements were higher than the standard set by the RCS, Eng. and the GMC. For instance organic and inorganic chemistry, physics, histology and dental pathology were required by the University of Manchester but not by the RCS Eng. Similarly, the University of Liverpool required laboratory work in physiology, histology, general hospital practice, surgical dressing, dental bacteriology, operative dental surgery and orthodontia which was more than was required by the GMC recommendations in 1913. [20]

One weakness of university dental education at this time was that, initially, the universities did not integrate teaching and qualification. All universities offered examinations to those who had taken "approved" courses elsewhere. For example, in Manchester, Leeds, Liverpool and Bristol courses for the first examination need not have been taken in the university as long as the teaching institution was recognised by the university. Similarly, when the University of Bristol introduced dental qualifications in 1910-11, although certificates of attendance at lectures and laboratory work and "approved" courses of

practical instruction in chemistry and physics, dental mechanics, dental metallurgy and dental materia medica were required, these did not have to be taken in the university. [21] Universities also permitted those holding medical or dental qualifications to take the dental degree sine curriculo. [22] Indeed in Liverpool sine curriculo BDS candidates had to serve a two year pupillage in mechanical dentistry which almost suggests that mechanical training and the two years of hospital practice distinguished dental degrees from the diploma and also from medical qualifications. And, although the deficiencies of private pupillage had been recognised for some time, the extension of the biological and medical curriculum was achieved by allowing dental mechanics to be taught in private pupillage. [23] This isolated mechanical dentistry from clinical subjects and from the scientific and medical curriculum. Students preparing for the University of Liverpool's degree were advised to spend their third year of mechanical instruction in the dental hospital in order to complete the curriculum in five years. [24] Once facilities for teaching clinical dentistry were integrated into the university structure, teaching would be more efficient and therefore shorter.

Reports of the GMC visitations are a valuable source on standards in dental education. The GMC inspection of dental schools and examinations in 1911

was primarily concerned with the LDS, which remained the qualification to practice. It was reported that standards were "satisfactory" and "sufficient" and that in scope the examinations were similar. [25] However, although the Report concluded that "general uniformity and adequacy is striking" there were some deficiencies, particularly in the examinations in clinical dentistry and students could compensate for poor results in clinical examinations with good oral and written papers. This suggests that development of the scientific curriculum had not been matched by equivalent improvements in clinical teaching. The preclinical curriculum was established: more emphasis on clinical training was needed.

However, university degree standards were higher. The GMC described the examination for the University of Liverpool's BDS as "exhaustive and conclusive" and "more exacting" than the LDS, the Birmingham BDS examination was "excellent", Manchester's "thorough" and the examination in practical dental surgery "very thorough". [26] Although the RCS, Eng. standard in clinical dentistry was higher than the GMC recommendations and higher than the standard in the colleges in Scotland and Ireland, in other respects the RCS, Eng. curriculum was inferior. [27] Subjects recommended by the GMC (dental physiology and pathology, materia medica, therapeutics, surgery and medicine) were omitted and the period of attendance at

a dental hospital was shorter than required by the GMC. Standards in the colleges in Scotland and Ireland were generally lower than the RCS Eng. For instance in Glasgow operative dentistry was "slow and mediocre" and microscopical pathology, "very poor". [28] University dental curricula elsewhere suggest that the scientific curriculum might have been better established in Glasgow had there been closer links with the university. [29]

To summarise, what was the initial impact of university education on the dental curriculum? Whereas college curricula had been described in the GMC inspection of 1879 as "uniform in character", the increase in the number of institutions offering dental qualifications led to greater diversity in dental curricula. There was no uniformity in curricular requirements. Universities had individual strengths and weaknesses. The sequence of classes and examinations varied with no consistent formula for developing theoretical, technical and clinical competence grounded in the scientific and medical principles which underpinned clinical dentistry. [30] In general however, university dental education benefitted from the existing strengths of university teaching particularly in the sciences. Set against this were the deficiencies in the technical and clinical curricula which were new to the universities and which required considerable expenditure.

Initially universities did not establish equivalent facilities for teaching clinical dentistry and, in many cases, mechanical dentistry continued to be taught in private practice which undermined one of the alleged strengths of university education namely the integration of teaching and examination. Therefore, initially in university dental education there was more continuity than change. However, whereas previously the dental curriculum had been based on, and to some extent limited by, the syllabus for the examinations set by the Royal Colleges, university education based on the established strengths of the faculties of science and medicine would extend the dental curriculum, particularly in the medical sciences.

7.3. THE DENTISTS REGISTER 1910 AND 1913

Analysis of The Dentists Register reveals the uptake of dental and medical qualifications of those registered as dentists. "The Table Showing the Numbers and Qualifications, with Percentage of the Total, of Persons Registered in The Dentists Register 1910" (Table 7.1), shows that initially there was little demand for university dental degrees as first qualifications. [31]

TABLE 7.1: FIRST QUALIFICATIONS, 1910

LDS

| | | |
|---------------------------|---------------------|----------------------|
| College LDS | 3,030 | (60.16%) |
| University LDS | 15 | (0.29%) |
| <u>TOTAL LDS</u> | <u>3,045</u> | (60.45%) |
| <u>TOTAL BDS</u> | <u>2</u> | (0.04%) |
| <u>UNQUALIFIED</u> | <u>1,964</u> | (38.99%) |
| <u>U.K. TOTAL</u> | <u>5,011</u> | <u>(100%)</u> |

Source: "Table showing the numbers and qualifications, with percentage of the total, of persons registered in The Dentists Register 1910", p. xxiii.

Table 7.1 shows that only two (0.04%) had taken a BDS as their first qualification. The Dentists Register's table of qualifications only lists first qualifications and dental graduates often qualified LDS prior to taking the BDS. However, detailed entry-by-entry analysis (Table 7.2) shows that in 1910 there was little demand for the BDS as either a first or an additional qualification. In total only nine held the BDS. Owing to delay in registering additional qualifications these figures may not be complete. For instance, Harold Round, who qualified MDS from the University of Birmingham in 1903, is not recorded in The Dentists Register 1910, although the Birmingham MDS was a registrable qualification from 1906. Nevertheless, it may be safely assumed from the

analysis of the Register that the number holding dental degrees was small.

Detailed analysis of the entries for those who had qualified since 1901, when the first university dental qualifications were established, (Table 7.2) shows that the number taking university dental qualifications (24) is insignificant compared with the number qualified LDS RCS, Eng. (741).

TABLE 7.2: UNIVERSITY QUALIFICATIONS, 1910

| | |
|--|-------------|
| UNIVERSITY LDS | : 15 |
| UNIVERSITY LDS and BDS | : 7 |
| BDS | : 2 |
| <u>TOTAL BDS</u> | <u>: 9</u> |
| <u>TOTAL UNIVERSITY QUALIFICATIONS</u> | <u>: 24</u> |

Source: Entry-by-entry analysis of The Dentists Register 1910.

Although it had been anticipated that university dental qualifications would widen access to dental qualifications, they were not popular even with local candidates. For instance, of 36 dentists practising in the Birmingham area who had qualified since 1901, only one had qualified BDS at the University of Birmingham. [32] Birmingham was not an exception. One hundred and nine qualified dentists registered in 1910 at addresses near a university which had

instituted dental qualifications prior to their date of qualification had taken a college LDS rather than a university LDS or BDS. [33] At the other extreme, in 1910 there were more medically qualified dentists than dental graduates (Table 7.3).

TABLE 7.3: LDS AND MEDICAL QUALIFICATIONS, 1910

| | |
|--|---------------------|
| LDS and medical degrees | : 32 |
| LDS and college medical qualifications | : 152 |
| <u>TOTAL LDS AND MEDICAL QUALIFICATIONS</u> | <u>: 184</u> |

[34]

Source: Entry-by-entry analysis of The Dentists Register 1910.

Although it had been anticipated that the dental degree would render a medical degree unnecessary and even irrelevant for dental practice, the number of qualified dentists with medical qualifications (32) was higher than the number who had qualified BDS (9) (Tables 7.2 and 7.3). The largest single group holding qualifications other than the LDS, held RCS, Eng. medical qualifications (Table 7.3). Of these, the majority had taken medical qualifications after qualifying in dentistry. This indicates some demand, albeit small, for a more scientific and more medical curriculum, as had been recommended by the profession's elite from the mid-eighteenth century.

[35] Some of those who subsequently qualified in

medicine had qualified LDS in order to supplement their student income. However, some had qualified in medicine prior to taking the LDS, which suggests subsequent specialisation in dentistry. [36]

These figures indicate two things about demand for dental qualifications in the first decade of the twentieth century. Firstly, there was very little demand for a standard higher than the LDS. Secondly, the dental degree was not yet perceived by aspiring dentists as meeting the need for a higher standard of training and qualification than the LDS. In 1913 the situation was similar (Table 7.4). Of those who had qualified since 1910 (391), the majority (343) had taken college diplomas rather than university qualifications, and the largest number (222) had qualified LDS, RCS, Eng. (Table 7.4). [37]

TABLE 7.4: THE DENTISTS REGISTER, 1913

| | | | |
|--------------------|--------------|----------|------|
| <u>LDS</u> | | | |
| College LDS | 3,373 | (65.63%) | |
| RCS, Eng. LDS | 2,076 | (40.39%) | |
| University LDS | 55 | (1.05%) | |
| <u>LDS TOTAL</u> | <u>3,428</u> | (66.68%) | |
| <u>BDS TOTAL</u> | <u>10</u> | (0.2%) | |
| <u>UNQUALIFIED</u> | <u>1,669</u> | (32.47) | |
| <u>U.K. TOTAL</u> | <u>5,118</u> | (100%) | [38] |

Source: "Table showing the numbers and qualifications, with percentage of the total, of persons registered in The Dentists Register 1913", p. xxiv.

The number qualifying by university LDS had increased from 15 in 1910 to 55 in 1913, but was only a small proportion of the total. Only 10 had qualified by degree, compared with 2 in 1910. The strengths of the BDS were as yet unclear or irrelevant to the aspirations of the majority of those prepared to qualify as dentists.

7.4. FACTORS WHICH DELAYED CHANGE IN CONTENT AND UPTAKE OF UNIVERSITY DENTAL QUALIFICATIONS

Several factors delayed change in the university dental curriculum and contributed to the lack of demand for university dental qualifications. Arguably

the most significant of these was the status of the LDS which remained the minimum standard required for registration. The appeal of qualifications with the imprimatur of a Royal College compared with those of the newly founded universities initially exercised a powerful influence upon the uptake of university qualifications. [39] Demand for dental degrees was further undermined and continuing demand for the LDS sustained by the establishment of university dental diplomas, by the requirement of some universities that BDS candidates should hold the LDS and by the practice of most universities of providing teaching for the college LDS. Although the GMC's Dental Education and Examination Committee reported in 1916 that the RCS, Eng. curriculum was inferior to university curricula for both LDS and BDS, to the majority of candidates the advantages of the BDS were not clear, or were secondary to matters of expediency at a time when qualification was not yet mandatory. [40]

Stiffer entrance qualifications, higher standards, the length of time taken to qualify and the cost and inconvenience of full-time institutional training meant that university training compared unfavourably with private pupillage and qualification by examination for a college LDS, especially at a time when fees could be undercut by unqualified practitioners who made a good living without dental qualifications of any sort. [41] For the majority,

university dental qualifications were not a worthwhile investment.

Recognising that only exceptional students would choose to qualify BDS, and bowing to the demand for the less demanding LDS which entitled dentists to register and did not require full-time university training, universities had resorted to compromise which damaged the status of and adversely affected the demand for university qualifications. Universities offered dental diplomas as well as degrees, provided training for college examinations and examined candidates who had not been taught in the university. These measures reflect the lack of demand for university dental education, deficiencies in university teaching establishment and the need to keep down the cost of training. However, compromise on this scale initially undermined the alleged superiority of university education derived from the integration of teaching and examination within an institution specifically designed for higher education and compromised the status of the new qualifications.

[42]

The lack of consensus regarding the appropriate or necessary training for dental practitioners also affected demand for university dental qualifications. In 1915 the GMC proposed to modify the LDS curriculum to promote demand for dental qualifications. This was however opposed by the BDA on the grounds that the

time devoted to medical sciences was already "scarcely sufficient" and that it would be wrong to allow the dentist to become "merely a sort of highly skilled mechanic working upon the teeth rather than upon the body itself". [43] However, the BDA continued to lend but faint support to the dental degree, did not recommend the degree to new candidates and regarded a medical qualification as "in certain cases, the waste of valuable time, during which the student is not acquiring the technical finger skill less easily attained later on". [44] Yet, paradoxically, the reduction of time allocated to mechanical dentistry, from three years to two, was "a change adversely regarded by the British Dental Association" and only justified if it made it easier to acquire medical qualifications. [45] Status was an important factor. Qualifications entitling registration in The Medical Register were preferable to dental degrees:

a special Degree, however academically distinguished and desirable, cannot be as popular and likely to be undertaken as a separate additional one entitling to medical registration.

[46]

The lack of demand for the dental degree and the demand, albeit small, from qualified dentists for medical qualifications, suggests that the dental degree was an unhappy compromise. Deficient in clinical dentistry it was also perceived to be

inferior to medical qualifications.

Standards in dental practice also influenced demand for training. The attitude that "municipal dentistry is not more urgently called for than municipal hair-cutting and head-cleansing", may have contributed to the delay in establishing higher standards of professional training and qualification for the majority of dentists. [47] Although dental practice comprising oral surgery, oral medicine, restorative, prosthodontic and preventive dentistry required comprehensive professional education, demand for dental treatment did not warrant standards of education, training and qualification equivalent to the medical professions. A large proportion of the treatment provided by dentists required predominantly technical skills which were not ideally suited to a university curriculum and the substantially technical nature of dental practice at this time meant that it was difficult to persuade the average candidate of the need for a substantially medical curriculum. Conversely, the high proportion of technical training meant that the dental degree was unattractive to aspiring specialists whose interests lay in oral medicine, oral surgery or clinical dentistry. [48]

Had universities offered only the BDS this might have established the degree as a qualification which offered something distinctly different from a college LDS. However, it took time and money to establish the

infrastructure to provide scientific and clinical training of a higher standard than that provided by the previous system based on teaching in medical schools, in dental schools and in private pupillage.

Prior to state assistance administered by the University Grants Committee (UGC) universities were financed by endowment and by fee revenue. In the new universities dentistry had to compete for funds with well-established and more prestigious disciplines. The resources needed to establish an integrated university curriculum were beyond the means of the fund-raising bazaars, pageants and public appeals which had financed the dispensaries. Fee revenue was used to support teaching in the basic sciences in the medical schools which had preceded the universities and was seldom adequate to develop specifically dental courses in, for instance, dental anatomy, dental physiology and dental pathology far less to establish facilities for clinical and mechanical dentistry which had not previously been taught in universities. Therefore, clinical dentistry continued to be taught in dental hospitals and schools which themselves faced financial difficulties. [49]

As independent charitable institutions, dental schools did not benefit from university endowments; their finances were insecure and students' fees were often required to finance the hospital rather than the school. [50] There was also a shortage of suitable

teachers. Teaching positions in dental hospitals and schools were unsalaried and, since honorary teachers could charge a handsome premium for teaching mechanical dentistry privately, many were unwilling to give their time in exchange for the status of their honorary teaching positions and had vested interests in maintaining the pupillage system. Thus, initially mechanical dentistry continued to be taught in private pupillage. [51]

Although the universities extended the scope of dental education, particularly in the biosciences, universities had not established equivalent teaching facilities in the clinical subjects for which there was most demand. As an unfashionable subject for which endowments and fee revenue were low, university dental education lagged behind medical equivalents in terms of facilities, resources and teaching establishment.

The dental curriculum was monitored by a medical council. [52] Had the process of inspection and recommendation been the responsibility of a dental elite, the reports might have been more critical of existing standards and placed more emphasis on the degree. Some dentists felt that the GMC's Report did not go far enough. For instance, Dr. J. Menzies Campbell, who favoured the adoption of several features of American dental education, felt that the profession should be governed by a controlling body

distinct from the GMC. [53]

The limited demand for qualifications, the established pattern of qualification by college LDS and inadequate funding imposed constraints on university endeavours to establish themselves as qualifying bodies for the dental profession. Many did not see the need for dental qualifications; those who sought affiliation to the profession had a well-established and prestigious route through the colleges with which the new civic universities could not compete in terms of status. Finally, those who might prefer the status of university qualifications did not have a well-established precedent in the University of London to endorse the status of and need for a university degree. [54] The degree had not been endorsed by the BDA and the BDS had been emphatically rejected by the University of London. Thus initially the new universities were at a considerable disadvantage in their attempt to challenge the prestige of college qualifications, particularly the LDS RCS, Eng., and at the same time raise the standard of training and examination. Therefore, in the short term university dental education made little impact on the pattern of qualification.

Nevertheless, one of the goals of dental reform from the late-nineteenth century had been achieved. Dentistry was established as a university discipline, dental degrees were registered in The Dentists

Register and the superior bioscience curriculum taught in the universities had shown the potential for enhancement of standards in clinical dental education, once the necessary facilities were in place. As it became increasingly impractical to provide separate courses for the two qualifications, those training in universities for the LDS would benefit by the higher standards provided there.

**APPENDIX 7.1: DATES OF ESTABLISHMENT AND REGISTRATION
OF UK DENTAL QUALIFICATIONS [55]**

**INSTIT. QUALIF. YEAR EST. YEAR REG. FIRST
GRADUATES**

COLLEGES

| | | | | |
|------------------|--------|-------|------|------|
| RCS, Eng. | LDS | 1859 | 1879 | 1860 |
| | FDS | 1947 | 1948 | |
| | DDPH | 1969 | 1967 | |
| | DGDP | 1992 | 1994 | |
| | DOrth. | 1954* | 1958 | |
| | MCCD | 1988 | 1989 | |
| | MGDS | 1977 | 1979 | |
| | MOrth. | 1986 | 1988 | |
| | MRD | 1992 | 1994 | |

*replaced by MOrth. 1986

| | | | | |
|-----------------------|--------|---------|------|------|
| RCS, Edin. | LDS | 1879 | 1879 | 1879 |
| | HDD | 1919* | | |
| | FDS | 1949 | 1952 | |
| | DOrth. | 1987** | 1987 | |
| | DRD | 1978*** | 1982 | |
| | MGDS | 1982 | 1982 | |
| | MOrth. | 1989 | 1990 | |
| MRD | 1993 | 1993 | | |

* withdrawn 1949

** ditto 1994

*** ditto 1992

| | | | | |
|----------------------------|------|------|------|------|
| RCPS, Gla. [56] | LDS | 1879 | 1879 | 1879 |
| | HDD | 1920 | 1921 | |
| | DDO | 1949 | 1958 | |
| | FDS | 1967 | 1967 | |
| | MGDS | 1982 | 1982 | |
| | MCCD | | 1989 | |
| | MDO | | 1989 | |

| | | | | |
|-----------------------|------|------|------|------|
| RCS, Irel. | LDS | 1878 | 1879 | 1881 |
| | FFD | 1964 | 1965 | |
| | MGDS | 1984 | 1984 | |
| | DDR | | 1985 | |

UNIVERSITIES:

| | | | | |
|-------------------------|-----|------|------|------|
| Birming- ham | LDS | 1900 | 1906 | 1901 |
| | BDS | 1900 | 1903 | |
| | MDS | 1900 | 1906 | |
| | DDS | | 1975 | |
| | DDH | | 1969 | |

| | | | | |
|----------------|-----|------|------|------|
| Bristol | LDS | 1909 | 1913 | 1911 |
| | BDS | 1909 | 1913 | |
| | MDS | 1909 | 1926 | |

| <u>INSTIT.</u> | <u>QUALIF.</u> | <u>YEAR EST.</u> | <u>YEAR REG.</u> | <u>FIRST GRADUATES</u> |
|--|-----------------------------|------------------|------------------|------------------------|
| Dublin [57] | LDS. | 1906 | 1906 | 1909 |
| | BDS. | 1911 | 1911 | 1913 |
| | MDS. | 1904 | 1906 | 1911 |
| Dundee | See under St. Andrews. [58] | | | |
| Durham [59] | LDS | 1910 | 1913 | 1914 |
| | BDS | 1925 | 1928 | 1932 |
| | MDS | 1924 | 1928 | 1935 |
| | DDSc. | 1954 | 1958 | |
| Edinburgh | BDS | 1949 | 1951 | 1954 |
| | MDS | 1951 | 1951 | |
| | DDS | | 1967 | |
| Glasgow | BDS | 1948 | 1950 | 1953 |
| | MDS | 1948 | 1950 | 1962 |
| | DDSc. | | 1968 | |
| Leeds | LDS | 1906 | 1910 | 1909 |
| | BChD | 1906 | 1910 | 1914 |
| | MChD | 1906 | 1910 | |
| | MDS. | | 1972 | |
| | DDSc. | | 1972 | |
| Liverpool | LDS | 1905 | 1907 | 1909 |
| | BDS | 1905 | 1907 | 1906 |
| | MDS | 1905 | 1907 | 1907 |
| London | BDS | 1921 | 1923 | 1927 |
| | MS | 1910 | 1913 | 1948 |
| | MDS | | 1953 | |
| Manch- ester | LDS | 1904 | 1906 | 1907 |
| | BDS | 1904 | 1906 | 1909 |
| | MDS | 1904 | 1906 | |
| | DDS | | 1946 | |
| Nat. Univ. Irel. | BDS | 1915 | 1916 | |
| | MDS | 1915 | 1916 | |
| Newcastle Upon Tyne [60] | BDS | 1910 | 1913 | |
| | MDS | 1924 | 1928 | |
| | DDSc. | 1954 | 1958 | |
| Queen's Univ. Belfast | LDS | 1920 | 1922 | 1923 |
| | BDS | 1922 | 1926 | 1927 |
| | MDS | 1926 | 1926 | |

| <u>INSTIT.</u> | <u>QUALIF.</u> | <u>YEAR EST.</u> | <u>YEAR REG.</u> | <u>FIRST GRADUATES</u> |
|--------------------|----------------|------------------|------------------|------------------------|
| St. Andrews | LDS | 1916 | 1917 | 1918 |
| | BDS | 1937 | 1938 | 1939 |
| | MDS | 1937 | 1938 | |
| | DDSc. | | 1958 | |
| | DPD | | 1958 | |
| Sheffield | LDS | 1922 | 1923 | 1923 |
| | BDS | 1922 | 1923 | 1934 |
| | MDS | 1922 | 1923 | |
| Wales | BDS | 1968 | 1969 | 1969 |
| | MChD | 1968 | 1969 | |
| | MScD | | 1974 | |
| | DChD | | 1974 | |

Sources: The Library, RCS Eng.; RCPS, Glasgow. Unpublished mss; Written communication. Mrs A. Forrest, Library, RCPS, Gla. October, 1995; HENDERSON, T. Brown Henderson. The History of Glasgow Dental Hospital and School, 1879-1979. Privately printed, 1980; "Register of Licentiates in dental Surgery, 1879-1990"; RFPS, Glasgow; "Register of Higher Dental Diplomates, 1926-1966", RCPS, Glasgow; "Register of Fellows in Dental Surgery, 1967-date", RCPS, Glasgow; Written communication. Miss A.S. Stevenson, Archivist, Royal College of Surgeons of Edinburgh. October 1995; Written communication. Ms M. O'Doherty. Archives Section. The Library, Royal College of Surgeons in Ireland. March 1989; Written communication. Professor T.D.Foster. University of Birmingham. February 1987, COHEN, R.A. "The History of the Birmingham Dental Hospital and Dental School, 1858-1958". Birmingham: Board of Governors of the United Birmingham Hospitals, 1958; "Birmingham University". BDJ, v.22, 1901, p. 367. Miscellanea; Written communication. A. A. James. Examinations Office. University of Bristol. February, 1989; Written communication. Mrs V.E. Jeal, Executive Assistant to the Librarian. University Library. University of Bristol. January 1989 and The University of Bristol Dental School and Hospital. Published by The Board of Governors of the United Bristol Hospitals in association with the University of Bristol, 1964. p. 15; BDJ, v.26, 1905, p.784. Educational Supplement; MCDOWELL, R.B. and WEBB, D.A. Trinity College Dublin 1592-1952: an academic history. Cambridge: Cambridge University Press. 1982; SOUTHGATE, Donald. University Education in Dundee: a centenary history. Published for the University of Dundee by Edinburgh University Press. 1982, p. 188; Written communication Robert N. Smart. Keeper of the Muniments. University Muniments. University of St Andrews. November, 1988; COLTMAN, James. "Notes on the history of the Newcastle upon

Tyne Dental Hospital and School". 1955. Unpublished mss held in the Library of the BDA; Personal communication. Professor A.D. Hitchin. May 1989 (for Durham); Written Communication. Mrs M. Mack, Secretary to the Dean. School of Dental Surgery. University of Edinburgh. February, 1989; Glasgow University Calendar, 1952-53; Glasgow University Calendars, 1952-53, 1953-54, 1954-55, 1955-56 and 1961-62; Glasgow University Calendar, 1948-49, p. 319; BDJ, v.27, 1906, p. 663. Miscellanea. University of Leeds; BDJ, v.26, 1905, p. 795. Educational supplement; ANNING, S.T. and WALLS, W.K.J. give the date as 1910 but, according to the University of Leeds Calendar 1929-30, 2 candidates qualified LDS in the University of Leeds in 1909; University of Leeds Calendar 1923-24; The University of Liverpool. Calendar 1924-25, pp. 597-598 and pp. 621-623; Written communications. S. Bailey, Archivist. May, 1989 and Mrs B.C. Weeden, Archivist. University of London Library. March, April, May, 1990; Unpublished Bowdler Henry Mss. BDA Museum; Written communication. Mrs V.A.Ferguson; "The Victoria University of Manchester". BDJ, v.26, 1905, pp. 104-109 and The Lancet, v.i, 1905, p. 461 which reported the meeting of the Court of the University of Manchester on 18th January, 1905 which resolved to institute the degrees of BDS and MDS; "Educational Supplement". BDJ, v.36, 1915, p. 813; University of Manchester Calendar, 1939-40. Manchester University Press. pp. 250 and 288; Written communication. Thomas A. Twomey, Senior Administrative Officer, The National University of Ireland; University of Newcastle-Upon-Tyne Calendar 1964-65; Written communication. Mrs D. McCrea. Executive Officer. School of Dentistry. The Queen's University of Belfast. February 1989; Written communication Robert N. Smart. Keeper of the Muniments. University Muniments. University of St Andrews. November, 1988 and The Dentists Register 1919; Written communication. Mr G. Sykes, on behalf of the University of Sheffield School of Clinical Dentistry. January 1989 and Arthur W. Chapman. The Story of a Modern University: a history of the University of Sheffield. Published for the University of Sheffield by George Cumberlege Oxford University Press, 1955; The Dentists Register (for dates qualifications were first registered).

7.5. ENDNOTES

1. The University of Leeds received its charter in April 1904. In 1906, the University set up a school of dentistry within the Faculty of Medicine and courses and examinations for the B.Ch.D. and M.Ch.D. were introduced. In the same year the RCS Eng. recognised the teaching in clinical practice and dental mechanics provided in Leeds for students taking the LDS. [ANNING, S.T. Anning and WALLS, W.K.J. A History of the Leeds School of Medicine: one and a half centuries, 1831-1981. Leeds University Press, 1982; "Educational supplement". BDJ, v.27, 1906, pp. 781-816 and SHIMMIN, A.N. The University of Leeds: the first half-century. Published for the University of Leeds at the University Press Cambridge, 1954.] The University of Liverpool was established in 1903. [DUMBELL, S. The University of Liverpool, 1903-1953. Published by the University in 1953 and KELLY, T. For Advancement of Learning: the University of Liverpool 1881-1981. Liverpool: Liverpool University Press, 1981.] The BDS and MDS were introduced in session 1905-06. [Written communication. Adrian Allan, Assistant Archivist. University of Liverpool. February, 1989.] The BDS degree and LDS (Manchester) both appear for the first time in the University Calendar for 1905-06. [Written communication. Mrs V.A. Ferguson. Medical Librarian. The John Rylands University Library of Manchester. January 1989.] In the University of St Andrews dental degrees were not established until 1937 although the LDS was approved in 1916. [Written communication Robert N. Smart. Keeper of the Muniments. University Muniments. University of St Andrews. November, 1988.] The year of institution and registration of U.K. dental qualifications is given in Appendix 7.1.
2. VINCENT, E.W. and HINTON, P. The University of Birmingham: its history and significance. Birmingham, Cornish Brothers Ltd, 1947, p. 12.
3. The dental hospitals and schools had evolved from the dental departments of public dispensaries which provided a public dental service for people of limited means. They were founded on philanthropy and financed by charity and student fees. For instance, in Liverpool the Dental Hospital, founded in 1860 as the Liverpool Dispensary for Diseases of the Teeth owed its existence to the philanthropy of a Liverpool dental surgeon, W.J. Newman. In 1876 the dispensary was recognised as a centre for the

practical instruction required for the RCS, Eng. LDS diploma and in 1880 steps were taken to develop a school of dental surgery in connection with the Faculty of Medicine which appointed a Dental Committee, on which the Dental Hospital was represented, to supervise the curriculum. [KELLY, T., 1981 and DUMBELL, S., 1953.] Similarly, in Newcastle the Dental Hospital and School was founded in 1895 on the philanthropy of Robert Lacey Markham (LDS, Irel.), its first Dean, and other Newcastle practitioners. [Personal communication, Professor A.D. Hitchin. May, 1989.]

4. Although at least 8 women had become members of the BDA between 1895 and 1913, having qualified LDS in the colleges in Edinburgh and Glasgow, the RCS, Eng. did not admit women to the LDS diploma examination until 1908, Lily Pain being the first woman to qualify LDS, RCS, Eng in 1913. In the same year Kate Latarche became the first woman to graduate BDS, having taken the LDS earlier the same year. The admission of women to the profession was disparaged with a chauvinism similar to that expressed at the same time in regard to dental degrees as "a new institution - very few are well qualified". Nevertheless, their admission would increase the potential dental workforce. [Dental Record, v.33, 1913, p. 465. Cited by N.D. Richards. 1979, p. 460 and "Women in dentistry" BDJ, v.34, 1913, pp. 35-38. Special article.]
5. "The Universities and the Future of Dentistry". BDJ, v.27, 1906, pp. 774-776. Edit.
6. Classes for the Diploma were taken partly in the University, partly in Dundee Royal Infirmary, and partly in the Dental Hospital.
7. As in the English provincial universities Trinity College Dublin offered university qualifications for other new professions such as engineering (1872) and specialisations - obstetrics (1877) and gynaecology (1887. [MCDOWELL, R.B. and WEBB, D.A. Trinity College Dublin 1592-1952: an academic history. Cambridge: Cambridge University Press, 1982.]
8. The BDS was a four year first dental qualification for which the University's BA was an entrance requirement. ["Educational Supplement". BDJ, v.34, 1913, p. 889.] This was a rather archaic requirement, similar to the entrance requirements for medicine in Oxford or Cambridge more than a century before and similar

to the University of London's requirements for dental candidates.

9. Joint UNESCO-IAU Research Programme in Higher Education. "The Effects of the Costs of Education on Educational Opportunity" in Access to Higher Education: national studies, Vol. 2. Paris: UNESCO and the International Association of Universities. 1965, pp. 549-553.
10. GOSDEN, P.H. and TAYLOR, A.J. Studies in the History of a University 1874-1974, to commemorate the centenary of the University of Leeds. E.J. Arnold & Son Ltd, 1975.
11. Although some universities encouraged students to take the more demanding and longer curriculum by awarding the LDS to failed BDS candidates thus guaranteeing a qualification to practise. [Interview. Professor A.D.Hitchin, May 1989.]
12. In 1910 the LDS, Dunelm became the first and only dental qualification introduced by the University of Durham: the University's BDS and MDS were not introduced until 1924. [Interview. Professor A.D.Hitchin. May, 1989.] The BDS was not instituted in St Andrews until 1937 although the LDS was approved in 1916. [Written communication Robert N. Smart. November, 1988.] In Queen's University of Belfast the BDS was first instituted in 1922 two years after the LDS. [Written communication Mrs D. McCrea. February, 1989.]
13. University of Leeds. Annual Report, 1913-15, p. 60. Cited by GOSDEN, P.H.J.H and TAYLOR, A.J., 1975.
14. Harold R. Bentley was the first to qualify LDS, University of Liverpool 1910. Kelly does not distinguish between students preparing for university or college diplomas. See HENDERSON, T. Brown. The History of the Glasgow Dental Hospital and School 1879-1979. Glasgow: Printed by W.S. Bisset & Son Ltd, [1980], pp. 5 and 10 for abuses of the teaching facilities in Glasgow.
15. GOSDEN, P.H.J.H. and TAYLOR, A.J., 1975.
16. Personal communication. Professor A.D. Hitchin. May 1989.
17. This section is based on detailed analysis of university and college curricula: University of Bristol Calendar, 1910-11; Durham College of Medicine Calendar 1909-10; University of Leeds.

Calendar 1906-07; University of Liverpool Calendar, 1910; Victoria University of Manchester Calendar 1905-06; St Andrews University Calendar 1924/25 - the first calendar in which a syllabus for dentistry appears. Prior to this session there was a separate leaflet for dentistry which is not held in the University of St Andrews University Muniments. [Written communication. Robert N. Smart. November, 1988.]

18. Similarly, unlike Liverpool and Leeds, Manchester did not examine bacteriology.
19. The Bristol and Liverpool BDS degrees required three years in the University and Dental Hospital, one year more than for the LDS.
20. Candidates for the LDS were also required to attend at least one course recognised by the University in each of the subjects examined.
21. An exception to this was the University of Bristol where candidates for the third and final examinations had to follow Bristol university courses and, although the two years pupillage in dental mechanics and metallurgy could be studied in the university or in private pupillage, one year of courses and practical instruction, approved by the university, were required in these subjects.
22. For instance, in Bristol and Liverpool, registered medical practitioners wishing to take the LDS were required to sit examinations in the specifically dental subjects without following the full curriculum. [University of Bristol Calendar 1910/1911, pp. 152-161.] The practice of awarding sine curriculo degrees, which was a valuable source of income, was not peculiar to dentistry. From 1876-1932 the University of Durham awarded the controversial "M.D. Practitioner". The examination was open to registered practitioners aged 40 and with 15 years experience and no residence was required. [BETTENSON, E.M. The University of Newcastle-Upon-Tyne: a historical introduction. The University of Newcastle-Upon-Tyne, 1971.]
23. In 1989 those who had completed an apprenticeship as a dental mechanic were exempted from dental mechanics in the university. [Personal communication. Professor A.D. Hitchin. May 1989.]
24. In 1906 the length of apprenticeship varied: the Royal College of Surgeons of England required two years and the Edinburgh college three.

["Educational Supplement". BDJ, v.27, 1906, pp. 781-816.]

25. Report by the Dental Education and Examination Committee on the Inspection of the Qualifying Examinations in Dentistry held during the year 1911. GMC Minutes. 1911. Appendix XXXV, pp. 791-800.
26. Ibid.
27. For instance, the RCS Eng. specified lectures on the abnormalities and diseases of children's teeth requiring a certificate stating that the candidate had treated cases. Orthodontia had not been included in the previous curricular recommendations of 1898.
28. GMC Minutes. 1911. Appendix XXXV, pp. 791-800.
29. However, the Faculty of Physicians and Surgeons of Glasgow strongly recommended students to attend a course of dental bacteriology which would be compulsory from 1st October, 1906. ["Educational Supplement". BDJ, v.27, 1906, pp. 781-816.]
30. The timing of courses and examinations varied. Dental mechanics and metallurgy which, with dental materia medica formed part of the second examination at Liverpool, were part of the first examination at Leeds. The second examination in Leeds was more like the third examination elsewhere including Physiology (but not Histology, unlike Manchester, Liverpool and Bristol) and dental materia medica which was part of the final at Manchester. Manchester, unlike Liverpool and Leeds, did not examine bacteriology and medicine in the final. Leeds did not examine Orthodontia, General Pathology and Dental Histology which were examined in Manchester nor dental prosthetics which was examined in the final in Liverpool Bristol and Manchester.
31. Table Showing the Numbers and Qualifications, with Percentage of the Total, of Persons Registered in The Dentists Register 1910, p. xxiii. 1910 was the last pre-First World War Register available for detailed analysis. Table 7.5. shows the 1913 figures for that year from the Table Showing the Numbers and Qualifications, with Percentage of the Total, of Persons Registered in The Dentists Register 1913, p. xxiv.

32. In the University of Birmingham the LDS was a necessary entrance requirement for the BDS. Three out of four University of Birmingham dental graduates in 1910, had qualified LDS, RCS, Eng. and one had qualified LDS, RCS Edin. prior to taking the University of Birmingham degree.
33. Source: Entry-by-entry analysis of The Dentists Register 1910.
34. Of this total 127 held the LDS, MRCS/LRCP.
35. For example: T.E. Constant, LDS, RCS Eng, 1888, MRCS Eng., 1891, LRCP Lond., 1891; A.S. Hayman LDS RCS Eng., 1888, LRCP Irel., 1897, LRCS Irel., 1897; C.A.Hayman LDS RCS Eng., 1878, LRCP Irel., 1893, LRCS Irel., 1893, M.D. Univ. of St. Andrews 1896. [Entry-by-entry analysis of The Dentists Register 1910.]
36. For example: C. E. Moore LDS, 1907 MB BS 1904, Univ. Dubl.; G.P. Moore LDS RCS Eng., 1894 MB BS 1893, Univ. Dubl.; E.E. Cassaday LDS RCS Edin., 1905 MB BS 1903, Univ. Edin. [Entry-by-entry analysis of The Dentists Register 1910.]
37. Figures derived from comparison with the Table for 1910 - Table 7.1.
38. Of those registered as unqualified, 10 (0.20%) had registered without the LDS but in the category " with surg. qualifications".
39. The prestige of college qualifications was such that more than 50% of dentists registered by virtue of a college LDS held the LDS RCS Eng. (1,854 of a total of 3,030). ["Table showing the numbers and qualifications, with percentage of the total, of persons registered". The Dentists Register 1910, p. xxiii.] Many took both university and college qualifications and in London many still do: Royal College of Surgeons accreditation looked impressive on a nameplate. [Interview. Professor A. Hitchin. May 1989.]
40. Report by the Dental Education and Examination Committee on Various Matters (May 1916). GMC Minutes 1916, Appendix VI. Dental education and examination: Comparison between the Council's recommendations and the new scheme of the Royal College of Surgeons of England. GMC Minutes 1916, Appendix II, pp. 371-374.
41. It was traditionally common in dentistry for sons or nephews to train by apprenticeship in a family dental practice, more stringent requirements and

university fees discouraged such candidates. Fees for the Dublin BDS were £286:18s, compared with approximately £100 for the Edinburgh LDS and £200 for courses at the London Hospital Schools. In Bristol the BDS cost 190 guineas and the LDS 168 guineas, in Liverpool the BDS cost approximately £200 and the LDS £160. In Manchester the BDS cost approx. £250. ["Educational supplement". BDJ, v.34, 1913, pp. 865-916.] Students in Bristol were advised to take the degree "if he can afford the time and money". [University of Bristol. Faculty of Medicine. Provisional Prospectus 1910/1911, p. 35.] Higher standards would remain irrelevant if candidates could not afford the cost of training. In 1879 John Dennant had recommended that the British Dental Association, should establish a benevolent fund, from "a large number of small annual subscriptions", to fund scholarships and teaching facilities highlighting the difficulty of advancing standards of education and training for a newly established profession. [DENNANT, John. "Benevolence and its Application to the Present Needs of the Dental Profession". BJDS, v.22, 1879, pp. 224-227.]

42. In the universities of Manchester, Leeds and Bristol.
43. "The General Medical Council and the Dental Curriculum". BDJ, v.36, 1915, pp. 31-33. Edit.
44. "Educational Supplement". BDJ, v.34, 1913, pp. 865-916, p. 875.
45. Ibid.
46. "Educational Supplement". BDJ, v.34, 1913, pp. 865-916.
47. SEWILL, Henry. Dental Surgeon, v.1, 1904-1905, p. 20. Cited by N.D. Richards, 1979, p. 327. The low priority attached to dental care in this period is covered by N.D. Richards, 1979. Chapter 8.
48. Professor Hitchin is an example of one of those who qualified LDS in 1931 to supplement his income while continuing his studies, qualifying BDS in 1932 and MDS in 1935. He is also an example of one for whom dentistry was a second choice. Well qualified for medicine his choice of dentistry was influenced by ill-health. [Personal communication Professor A.D. Hitchin. May 1989.] This indicates the way in which, but for exceptional circumstances, potential candidates of his calibre would not normally have

chosen dentistry, owing to the poor prospects and its status relative to medicine.

49. For instance, following the establishment of university qualifications in Liverpool, courses in dental surgery, dental mechanics, dental anatomy and physiology, dental metallurgy and practical instruction in dentistry were taken at the dental hospital. [University of Liverpool. Annual Report 1894-95.] In Glasgow "the claims of the Hospital made so little appeal to the benevolence of the citizens of Glasgow that at no time did the income derived from public subscriptions approach the moderate sums that were required to enable the affairs of the Hospital to be conducted with other than the most stringent economy". [HENDERSON, T. Brown, [1980], p. 12.]
50. In 1912 W.B. Hepburn suggested that charges for dental treatment should be levied to finance the establishment. [Glasgow Odontological Society. Unpublished Minutes. 1912.]
51. Had universities insisted on university teaching in mechanical dentistry the course would have been prohibitively expensive compared with College diplomas. Although private pupillage to a good practitioner could be costly - Professor A.D. Hitchin, for instance, in a personal communication in May 1989 described his own experience of a premium of £100 - full-time university training was more expensive and inconvenient. In 1915 "Glasgow was the only school which did not offer training in its own laboratory". [HENDERSON, T. Brown, [1980], p. 34.]
52. Charles S. Tomes LDS, RCS, Eng. FRCS, was chairman of the Dental Education and Examination-Committee on the Inspection of the Qualifying Examinations in Dentistry. A.S. Underwood, MRCS, LDS, former dental surgeon to King's College Hospital, was an inspector but he was not a member of the Committee. Neither were dental graduates. ["Report of the Dental Education and Examination Committee on the Inspection of the Qualifying Examinations in Dentistry Held During the Year 1911". GMC Minutes. 1911. Appendix XXXV, pp. 791-800.]
53. Glasgow Odontological Society. Unpublished Minutes. 1914. For details of Campbell's career and status see Appendix 10.3: Biographies.

54. The University of London had introduced the Master of Surgery in Dental Surgery in 1910, but since candidates had to have the university's B.S. London's dental degree was not equivalent to those established elsewhere and there was no demand for it. [GMC Minutes. 1911, p. 791.]
55. Including post-graduate qualifications established after 1957. The date of registration is the year the qualification was first recorded in The Dentists Register. Where dates have been omitted they have not been ascertained, despite applications for this information to the colleges and universities concerned.
56. From 1909 RFPS, Glasgow and from 1962 RCPS, Glasgow.
57. In Trinity College Dublin 1592-1952: an academic history. Cambridge University Press. 1982, R.B. McDowell and D.A. Webb suggest a date prior to 1904 and that it ceased to be granted in 1910, but it was listed in the Educational Supplement of 1915. [BDJ, v.36, 1915, p. 805.]
58. The University of Dundee came into being in 1967, previously it was Queen's College, Dundee. Dentistry was taught in the Dental School of Queen's College Dundee but prior to 1967 degrees were awarded by the University of St Andrews.
59. Transferred to the University of Newcastle-Upon-Tyne following the Universities of Durham and Newcastle Act, 1963. The LDS was discontinued in 1962, according to The Dentists Register.
60. Prior to 1964 awarded by the University of Durham.

**CHAPTER 8: 1917-1923: THE FIRST GOVERNMENT REPORT ON
DENTISTRY AND THE DENTISTS ACT 1921**

The previous chapter examined the impact of university dental education on curricular change and demand for university dental qualifications, prior to the end of the First World War. This chapter will examine adverse social, political and economic circumstances which affected demand for dental qualifications, and in particular the degree. These factors were emphasised in the first government report on dentistry, which will be examined in detail. The chapter will also show that, although better legal protection was necessary to protect both the general public and the interests of qualified dentists, legislation which in the long term achieved this end involved short term compromise which seriously affected demand for dental qualifications. The chapter will conclude with an analysis of The Dentists Register 1923 which will show the disastrous short-term effect of The Dentists Act, 1921 on demand for professional education.

8.1. A DISADVANTAGED PROFESSION

Career prospects affected demand for professional qualifications. There needed to be competition for places before the standard could be raised. From the 1880s the BDA campaigned to extend the scope of dental practice and individuals such as George Cunningham and W.M. Fisher, who pioneered school dentistry, publicised the need for state dental services. [1] The numbers rejected by the British Army or invalided home owing to dental disease "assumed alarming proportions". [2] During the Boer War 5,000 were found to be unfit for duty owing to lack of dentures; 2,164 of those suffering from dental caries were subsequently discharged from the army and in 1905 72.32 per 1,000 potential recruits were rejected because of defective teeth. [3] The "importance of dental caries from a military standpoint, and the need for national action in the prevention of disease in the interests of an efficient Army as well as in the interest of public health", was a major influence on government policy and brought to public attention the need for dental services accessible to all. [4]

The Report of The Interdepartmental Report on Physical Deterioration, published in 1904 was a watershed in terms of government recognition of the detrimental effects of years of neglect of the nation's oral health, insufficient numbers of

qualified dental practitioners, the absence of dental health education and limited access to dental services at a time of unchecked dental disease of epidemic proportions. [5] The Committee's Report recommended "systematic examination of the teeth of children by competent dentists, employed by school authorities". [6] This led to the appointment of full-time school dentists, but The Education (Administrative Provisions) Act, 1907 merely imposed a duty on local authorities to provide dental inspections rather than treatment, and there was no Scottish equivalent prior to The Education (Scotland) Act, 1913. [7] Thus, access to dental treatment administered by trained and qualified dentists was restricted to a narrow range of society:

The qualified being so comparatively few in number, economic causes have operated to confine our practices with few exceptions almost exclusively to patients of the upper and middle classes, so that even after full allowance is made for all the voluntary hospital work and all the public appointments, such as Poor Law schools and elementary school clinics; it is still substantially true that at present we are able to do but little for the teeth of the working classes. [8]

In 1908 the BDA observed that:

The moneyed classes, and upper social strata of

society naturally went to the hospital-trained man, the registered man received his support from the middle classes, and there was left a great mass of the public, the lower middle, and lower classes, without any one to minister to their dental wants. [9]

In Glasgow in 1912 Dr. J. Mason Noble recommended the establishment of BDA surgeries staffed by qualified dentists at rates which would compete with the unqualified. [10] However, inadequate provision for the dental care of the less affluent meant that the number of unqualified dentists increased.

The low priority attached to dental health meant that career prospects were poor. The advantage to the medical profession of posts in Poor Law Institutions, as Medical Officers of Health, salaried posts in the friendly societies, in factories and in prisons was not shared by dentists, despite the fact that, as Denison Pedley pointed out in 1903, medical practitioners were often ignorant in matters of dental disease and were not qualified to carry out dental inspections. [11] Competent dental inspectors were required.

Following the Liberal victory of 1906 a series of social reforms were implemented. The National Insurance Act, 1911 gave doctors the advantages of capitation fees, regular income and extended the scope of medical practice to poor areas. [12] But there

was no extension of professional opportunities for dentists. As one of a large number of "additional benefits", dental treatment was only provided in cases where schemes had sufficient surplus funds, subject to the priorities of local administrators. Thus, from the earliest attempts to establish a state health care system dentistry was not considered an essential part of that service. Dental treatment was not subsidised to the same extent as medical care and there was no state-sponsored campaign of dental health education and promotion by an agency with the financial resources of the Ministry of Health. Since dental treatment was excluded from National Health Insurance (NHI), the dental profession was disadvantaged compared with other branches of health care and poorer sections of the population were denied the benefits of professional dental treatment. Demand for professional treatment was not sufficient to support a qualified profession trained to the highest standard. [13]

Dentistry was not one of the classified occupations exempted from combatant military service: a measure of the low priority placed by society on dental health. The shortage of dentists was exacerbated by wartime conscription which meant that practices and patients were left unattended. [14] Unlike the armed forces of New Zealand, Canada and Australia during the First World War Britain had no

army dental corps. Instead, The Royal Army Medical Corps was responsible for dental treatment - another example of the British establishment's reluctance to accept the principle that dental treatment should be provided by dentally qualified practitioners. The Admiralty operated no dental standard in regard to fitness to serve. [15] Thomas Gaddes, Charles Tomes, Norman Bennett and F. Newland Pedley urged the appointment of dentists to the armed forces. [16] The high incidence of head injuries requiring specialised dental surgery helped to promote the dental profession and in 1918 the War Office agreed to transfer all dentists serving in the ranks to dental commissions. [17] Yet there was still no army dental corps. [18]

Expectations of dental health were so low that some advances in materials and technology emphasised dental prosthetics to the detriment of conservative and preventive dentistry. Dentures remained the cheap and commonly accepted remedy for dental disease. Had general dental practitioners been trained to provide a wider range of services, expectations might have been raised and demand for more sophisticated dental treatment from a more discriminating clientele might have increased. For dentists to be fully competent they needed to be properly trained. Although some extravagant claims of links between dental disease and systemic diseases were later disproved, knowledge of

infection and of the oral manifestations of systemic disease meant that training beyond the acquisition of practical skills was required. But the generally low standards of dental practice enabled unqualified, untrained practitioners to encroach upon the legitimate practice of the qualified and undercut professional fees. This situation did not promote the profession to potential recruits or patients.

Public indifference to dental health and opposition from unqualified dentists to legislation which would curtail their activities undermined the profession's campaign for legislation to prohibit unqualified practice. Although the BDA achieved several successful prosecutions for use of bogus titles such as "tooth specialist", dental companies, whose motives were purely profit-making, openly flouted the protection to qualified practitioners. [19] The BDA sought an amendment to The Companies Act in 1898 to prohibit the practice of dentistry by companies, but this was rejected on the grounds that "it was not germane to the Act" and in 1907 the Dental Companies (Restriction of Practice) Bill was dropped on the grounds that such companies were necessary in areas where there were no registered dentists. [20] The government was aware that "the teeth of the people have become much worse of late years, and in many parts of the country may now be described as very bad". [21] Yet a BDA memorial to the GMC in 1908

regarding suppression of dental advertising only succeeded in obtaining an agreement to prevent doctors administering anaesthetics for unregistered dentists.

[22] The dental profession had failed to achieve the support of the medical profession or the state.

Unregistered practitioners grew in number and formed alliances to protect their livelihood. The aim of The Society of Extractors and Adaptors of Teeth, formed in 1894 and renamed The Incorporated Dental Society (IDS) in 1911 and The Chemists Dental Society from 1910, was to protect the interests of their members by "limiting the influence and hindering the policies of the BDA". [23] Unqualified members of the IDS were excluded from professional positions in the army, navy, central government departments and local authorities, and therefore had much to gain by legislation which would legitimise their position and much to lose by legislation which would restrict their activities. Similar bodies were also formed. [24] With a combined membership of 2,000 compared with the BDA's 2,750, unregistered dental practitioners seriously undermined the BDA's authority to speak for all practising dentists. [25] The last straw was the final ruling in the test case arranged by The Incorporated Society of Extractors and Adaptors of Teeth. [26] In 1910 the House of Lords ruled that unregistered persons practising dentistry did not infringe the Act providing they did not claim to be

registered by using one of the protected titles. This ruling, which came to be known as "the Charter of the unregistered dental practitioner", meant that titles such as Dental Specialist, Dental Consultant, Dental Expert, Dental Operator, Dental Surgery, Dental Institute were used with impunity by unregistered dentists and dental companies who undercut professional fees. [27] Dentistry was in danger of becoming once again a free for all.

The worst abuses were perpetrated by canvassers, who were paid a fee per extraction, and the "blood and vulcanite men" who often did nothing but extract teeth and supply dentures. Dental services provided by unqualified practitioners became big business. [28] The proliferation of "Dental Companies, Hygienic and other Institutes" engaged in advertising, canvassing from house to house, charging high fees and making handsome profits, their claims to be meeting the demand for "economical dentistry for the wage earning sections of the public" would subsequently form a major focus of the Acland Committee report. [29] This damaged public confidence and dentistry's status as a profession. In 1915 The British Journal of Dental Science observed that:

few youths will be induced to enter a profession which seems to offer no advantages commensurate with the monetary outlay and labour entailed during the stage of development from student to

practitioner. [30]

Career prospects for qualified dentists were grim:

save in the case of the fortunate few, it is impossible to make a living by conservative dentistry done for the low fees the public are willing to pay for such work. [31]

The strength and aspirations of the unqualified epitomised all that Tomes had feared if high standards of training and qualification were not enforced, made a mockery of training and qualification, and dealt a serious blow to efforts to raise the standard of education and qualification. Standards could not be raised until the majority of dentists were qualified. Dental companies and unqualified practitioners would continue to prosper as long as "state recognition of the dental expert is all but non-existent". [32] What was needed was a sea change in public recognition of the importance of dental health. [33]

Mobilisation and medical inspection during the Boer War and the First World War which revealed an epidemic of dental health was a major turning point. [34] The Departmental Committee on Sickness Benefit Claims under the National Health Insurance Act was charged with the task of investigating the need for dental services. [35] In 1915 the Committee reported that:

the absence of any provision for dental treatment
... has produced much sickness of various kinds

resulting in a drain on the sickness benefit funds, which would have been avoided had there been provision for the treatment of the teeth.

[36]

In the following year the GMC's Dental Education and Examination Committee recommended new legislation to remedy the deficiencies of The Dentists Act, 1878 and the effects of unqualified dental practice, especially on poorer sections of the population, were drawn to public attention by the report of the Acland Committee. [37]

8.2. THE ACLAND COMMITTEE

The government responded to growing concern regarding dental health by appointing the Departmental Committee on the Dentists Act, 1878 in 1917. The Committee's remit was to "enquire into the extent and gravity of the evils of dental practice by persons not qualified under The Dentists' Act" and in particular the activities of the dental companies. [38] The investigation chaired by Francis Dyke Acland, M.P., was conducted by a lay committee which examined witnesses from the GMC, RCS, Eng., BDA, IDS, National Dental Corporation, Chemists' Dental Society and the School Dentists Society. [39] Dental and medical expert witnesses played a key role in informing the Committee's damning indictment of standards in dental

practice owing to the failure of The Dentists Act, 1878 to eliminate unqualified dental practice and the low standard of education of those who were qualified. There were only two qualified dental practitioners on the Committee - W.H. Dolamore and Charles S. Tomes - but the Committee also heard evidence from a further six qualified dentists. Some had been vocal and active in their endeavours to raise standards in dental education and practice, namely, Norman G. Bennett, F. Montagu Hopson, R. Denison Pedley, and Sidney Spokes. Furthermore, eminent medical members and witnesses - Sir Donald Macalister, Sir George Newman and Sir Bertram Windle to name but three - were also outspoken in their indictment of the failure of The Dentists Act, 1878 to in any substantial way improve standards in dental practice. Their evidence also emphasised the importance of high educational standards.

The report revealed the legacy of neglect and compromise with the medical profession and with the majority of dental practitioners. In particular the report brought to public attention the effects of inadequate legislation to outlaw unregistered dental practice:

the least reputable section ... has increased and tends to increase. This constitutes a menace alike to the public health, the registered dental practitioner and the more reputable unregistered

practitioner. [40]

The health of the general public was threatened and the growth of unregistered dental practice was a major disincentive to prospective candidates for the profession.

In evidence to the Committee the BDA reported that untrained practitioners working alone or for dental companies, "to the danger of the public, but with lucrative results to themselves" were responsible for "a very large amount of bodily injury, suffering and pecuniary loss inflicted upon the public". [41] The BDA also pointed out that, whereas "the preservation of the natural teeth should be the first aim of the dental profession", the number of untrained practitioners who made substantial profits from extractions and dentures was "a very real danger to conservative dentistry". [42] Evidence submitted to the Committee included references to "drillers and turners and butchers" who were by 1918 "doing what are tantamount to major dental operations". [43] Sound and only slightly decayed teeth were extracted and artificial teeth fitted over decayed stumps and into septic mouths. [44] The medical profession endorsed the need for a medically based training and the GMC drew attention to the risks of anaesthesia administered by persons "devoid of all medical knowledge and training". [45]

The Committee stressed that dental health was an

essential aspect of general health and noted that, since dental treatment was not covered by National Health Insurance:

the teeth of the adult population have been greatly neglected and that the national health is suffering from such neglect. [46]

There was "a marked want of appreciation of the importance to health of maintaining an efficient masticatory apparatus by conservative treatment of carious teeth". [47] Although dental disease was a cause of poor health, dental health was a matter of little concern to the general population. The Committee was unanimous as to "the failure of the population to regard dental disease and its effects on health as in any way a serious matter". [48]

Between 1878 and 1917 the population had increased by 37% without any corresponding increase in the number of registered dentists. [49] The shortage of dentists was such that in most areas "the provision of an adequate dental service to meet the existing needs" was impossible. [50] Poor dental health was not matched by demand for treatment. Limited access to dental treatment and the large number of dental practitioners offering a sub-standard service contributed to the low expectations and lack of awareness of the benefits of conservative or preventive dentistry.

Evidence submitted to the Acland Committee

emphasised that demand for professional education was adversely affected by the cost of training. The IDS claimed that the expense and time taken to qualify had contributed to the shortage of qualified dentists, the cost of training being only slightly less than that required for medicine and surgery which offered better prospects and higher status. Thus, conditions were no more favourable to dental education than they had been when Tomes described the dental diploma as a compromise between the ideal and the possible. Evidence presented to the Committee addressed the need to finance professional education. Norman Bennett, for instance pointed out that "teaching to be properly done has to be properly paid for". [51] He called for scholarships for dental mechanics and school leavers covering fees for instruction, examination and maintenance as well as "increased grants to dental schools". [52] Compared with medical schools dental schools were underfunded. [53] And, since it was not essential to qualify, universities which relied on student fees, had difficulty in funding dental departments.

The Committee commended the proposal of the BDA and the IDS that each registered dentist should pay an annual licence fee of between three to five pounds, to be used to support professional education:

the proposal of the dental profession to tax itself so as to place dental education on a more

satisfactory basis is ... greatly to the credit of the profession. [54]

This was to be used, not just to meet the expenses of the Dental Board but also to provide scholarships for students and dental mechanics as well as aid for dental schools and dental research. [55] However this was regarded as a temporary expedient which reflected "the peculiar difficulties under which dental schools labour" and the Committee recommended that this function should be the responsibility of the Board of Education rather than the dental profession. [56]

The Committee also addressed the likely affect of prohibition on demand for professional education. It was recognised that the length, content and cost of study should impose no obstacles to recruitment. The Royal College of Surgeons suggested that prohibition would therefore necessitate a modified curriculum for the LDS. [57] However, the Acland Committee recommended that training in preliminary science should be the same as that required for medical students and that instruction in dental mechanics should be undertaken, not in private pupillage, but in a dental school. [58] If the course were to be shortened this should be achieved by reducing the time devoted to medical subjects: the dental curriculum on the other hand should receive "more attention". [59] Acland recommended that it was "essential to reduce

the cost of a registrable diploma" by subsidising dental education rather than by shortening the course or reducing the cost of institutional training by relying on private pupillage. [60]

The Committee's educational recommendations were not confined to the needs of general dental practitioners. The need for research "into the causes and effects of dental caries and other diseases of dental origin" was also emphasised. [61] The need for dental research, which was acknowledged by the BDA and the medical profession as being "long overdue", and the role of the universities in developing laboratory-based dental science, would be a major factor in the eventual establishment of the dental degree. [62]

The Committee also recognised that the dental profession was in a "remarkable" position in that it was governed by the GMC, "of which all members were medically qualified and only one member was a registered dental practitioner". [63] The dental profession was therefore "entirely controlled by members of the profession of medicine". [64] Acland endorsed the GMC's resolution of 1917:

it would be of advantage to the Council, in administering the Dentists Act, if provision were made for the appointment to the Council of members representative of the Dental Profession.

[65]

Indeed, Acland went further and recommended that the dental profession should be governed by a Statutory Board, subordinate to but independent of the GMC, comprising dentists elected by the profession, representatives appointed by the dental licensing bodies and Crown nominees. Unqualified dentists would have only a minority representation on the Dental Board.

The Committee's Report, published in 1919, was "a watershed for dental politics". [66] The Report recommended state intervention to prohibit future uneducated, untrained, unqualified dental practice which was causing "untold damage and casting undeserved odium and dishonour on a scientific profession". [67] The Committee also recommended that the government should establish a public dental service, fund dental health services in schools and clinics, finance and improve facilities and teaching establishment in dental schools and fund scholarships to assist recruitment to the profession and concluded that:

The dental profession should be regarded as one of the outposts of preventive medicine, and as such encouraged and assisted by the State. Treatment should be available for all needing it.

[68]

Recognition of dentistry's role in a preventive medical service was a profound impetus to dental

education and research, without which there could be no progress in treatment and prevention. [69]

Crucially, however, the report distinguished between the desirability of high standards of professional education and the need to recruit students "in sufficient number to meet the dental needs of the nation". [70] The report made no reference to the dental degree. Higher standards of education were secondary to the more urgent need to prohibit dental practice by unqualified persons:

Unless effective steps to this end are taken we are of opinion that the number of registered dentists entering the profession is only likely to suffice for the services of the rich and comparatively well-to-do. The working classes will have to rely on the unregistered practitioner and will continue to be liable to suffer all the evils associated with his class of practice. [71]

Far from recommending a higher standard of professional qualification, the Committee concluded that it would be neither just nor in the public interest "to prevent all the present unregistered practitioners from continuing in practice", since this would lead to a "sudden shortage of dentists". [72] This was to have a major impact on demand for dental professional education in the short term, as will be shown with reference to The Dentists Register 1923.

Comment in the medical and national press went beyond the pressing need for an increase in manpower: the quality of service and the need for dental research were also stressed. The Times drew attention to the need for preventive dentistry which unqualified practitioners were ill equipped to provide. The Lancet endorsed the Committee's recommendation that research into the causes and effect of dental caries should be undertaken, recommended that dental research should be "generously endowed" and pointed out that it was unreasonable to expect the profession to bear the cost of research which was in the national interest.

[73] This underlines the underfunding which was a major factor in delaying progress in dental education and research. Although the need for dental research would help to advance the case for dentistry within the university, the Acland Committee acknowledged that the development of university dental education and research and demand for it would depend on the government's commitment to implement their recommendations. In the short term the legislative outcome of the Committee's deliberations had grave consequences for dental education. Nevertheless, in the longer term prohibition of unqualified practice was the sine qua non if standards of education and qualification were to be raised.

8.3. THE DENTISTS ACT, 1921

Following the Acland Committee's Report, the government took measures to ensure that dental treatment was provided by properly qualified persons and The Dentists Act, 1921 went a long way to limit the worst forms of malpractice. [74] But the new legislation reflected the shortage of trained dentists and respected the vested interests of practising dentists.

The registration of unqualified practitioners was opposed by many, especially the "Harley Street brigade". [75] However, others were concerned that, since professional training was demanding and costly, only a privileged minority were qualified and a professional monopoly would result in higher fees. Even Norman Bennett acknowledged the need for an "equitable measure of compromise". [76] The BDA, which represented only a minority of those practising dentistry, was forced to accept compromise. [77] The priority was to make available to the majority the most "efficient" rather than the most comprehensive dental service. [78] In the economic climate of the 1920s a national dental service based on a monopoly for the minority of qualified dentists would not extend dental treatment to the majority of the population. Thus, although The Dentists' Act, 1921 prohibited the future practise of dentistry by persons

who were not registered, initially a large number of unqualified dental practitioners were registered as "dentist 1921". [79] The profession had also failed to establish the principle that those practising dentistry required dental qualifications: those on The Medical Register were still entitled to practise dentistry.

The establishment of the Dental Board of the United Kingdom was an important step towards professional autonomy. Three of its members were appointed to the GMC to advise on dental matters. However, educational standards continued to be supervised by the GMC. Board recommendations were subject to approval by the GMC on the grounds that self-government could not be entrusted to a profession in which the qualified were outnumbered by the unqualified. [80]

To maintain the status of its membership, the British Dental Association did not admit "Dentists 1921". [81] Similarly, a proposal from the University of Liverpool to institute "an attenuated LDS course for the benefit of those who have recently been admitted to the Dentists' Register" was rejected by the BDA on the grounds that such a course of action "cannot be in the best interests of the profession and tends to lower the value and status of the Diploma held by those who have taken the four-year course." [82] The Association was unwilling to further

compromise standards within a profession damaged by the admission of unqualified "Dentists 1921".

In view of the long campaign to establish the necessity of dental qualifications for dental practitioners and the more recent establishment of dental degrees, the registration of practitioners without professional qualifications was a very regressive step. In the short term, the registration of 8,000 unqualified practitioners under the terms of the 1921 Act had grave consequences for dental education and initially set back any hopes of higher standards. Although, as in the nineteenth century, some unqualified practitioners had established a respectable reputation based on their practical experience and some made sincere efforts to obtain professional qualifications, the registration of dentists such as John Fraser Ross of Glasgow shows that dentists who had failed to obtain professional qualifications and therefore did not meet the minimum criteria of competence, were able to register under the terms of the 1921 Act. [83] This was damaging for the status of the profession and for standards of treatment. Most damaging for prospects of raising standards of training and qualification in the short term was the sheer number of unqualified dentists who swelled the ranks of the registered.

However, after 1921 entry to the profession required education and training at an approved

institution followed by certification as a "graduate or licentiate in dental surgery". [84] It was also anticipated that the appointment of a dental committee to advise the MRC on the promotion of dental research and the application of DBUK funds would stimulate dental research. [85]

8.4. THE DENTISTS REGISTER 1923

Prior to 1921 the proportion of qualified registered dentists had increased. Although the number of qualified dentists was inadequate and although there was little demand for university dental qualifications, by 1918 76% of registered dentists were qualified, owing to the retiral of "dentists 1878". [86] But the number of registered dentists was only a fraction of those practising dentistry. [87] The rapid growth in dental disease from the mid-nineteenth century had strained the capacity of the dental profession. The massive influx of unqualified dentists in 1921 reflects the existence of demand for dental treatment, albeit for a limited range of treatment and most frequently extraction owing to neglect, ignorance of preventive and restorative dentistry and the cost of treatment. This demand had been met, not by an increase in the number of qualified dentists, but by a vast increase in the number of unqualified practitioners. So much so that,

after 1921, the unqualified substantially outnumbered the qualified on the Register which confirms the failure of The Dentists Act, 1878 to prohibit unregistered practice. [88] The Dentists Register 1923 was the first to record the influx of unqualified dentists permitted to register under the terms of The Dentists Act, 1921. The effect of this was twofold. Firstly, the number registered more than doubled from 5,831 in 1922 to 12,762 in 1923. Secondly, the qualified (4,995) were outnumbered by the unqualified (7,668). [89]

Entry-by-entry analysis of The Dentists Register, 1923, presented in Appendix 8.1, reveals the effects of inadequate legal protection and poor professional prospects on demand for university qualifications. The majority of qualified dentists (4,517) held a college LDS, and of this number 2,754 (more than 50%) were licentiates of the RCS, Eng. (Table 8.1). The college LDS, and in particular the RCS Eng. LDS, was the preferred qualification. Only 407 (3%) had registered by virtue of a university LDS.

TABLE 8.1: COLLEGE AND UNIVERSITY LDS, 1923

| | |
|--------------------|----------------------|
| <u>COLLEGE LDS</u> | : <u>4,517 (36%)</u> |
| RCS, Eng. | : 2,754 (22%) |
| RCS, Edin. | : 690 (5%) |
| RFPS, Gla. | : 603 (5%) |
| RCS, Irel. | : 470 (4%) |
| University | : 407 (3%) |
| <u>TOTAL</u> | : <u>4,924 (39%)</u> |

Source: "Table showing the numbers and qualifications, with percentage of the total, of persons registered in The Dentists Register 1923", p. xxx.

Although, by 1923, eight universities offered a degree in dental surgery, the number registered as graduates was only 0.51%. (Table 8.2)

**TABLE 8.2: DEGREES REGISTERED AS FIRST QUALIFICATION,
1923**

| | |
|---------------------|----------------------------|
| Manchester | : 5 |
| Birmingham | : 2 |
| Liverpool | : 14 |
| Leeds | : 2 |
| Bristol | : 1 |
| Dublin | : 14 [90] |
| Nat. Univ. Ireland | : 26 |
| <u>TOTAL</u> | <u>: 64 (0.51%)</u> |

Source: "Table showing the numbers and qualifications, with percentage of the total, of persons registered in The Dentists Register 1923", p. xxx.

Demand for the BDS as a second qualification (Table 8.3) had altered little since 1910 (See Chapter 7. Tables 7.1 - 7.3).

TABLE 8.3: BDS AS SECOND QUALIFICATION, 1923

| | |
|---------------------------------|--------------------|
| University LDS and BDS | : 3 |
| College LDS and BDS | : 8 |
| <u>TOTAL LDS AND BDS</u> | <u>: 11</u> |

Source: Entry-by-entry analysis of The Dentists Register 1923.

The impact of unqualified practice on the uptake

of university dental qualifications may be further illustrated by a local study of Birmingham and Newcastle, based on entry-by-entry analysis of The Dentists Register 1923. Of those registered since 1900 and practising in Birmingham, Newcastle or their environs the majority were registered as "Dentist 1921", with no formal training or qualification. The number who had qualified since 1900 was very small. (Tables 8.4 and 8.5)

TABLE 8.4: DENTISTS PRACTISING IN THE BIRMINGHAM AREA IN 1923 AND REGISTERED SINCE 1900

| | |
|------------------------|-------------|
| <u>DENTIST 1921</u> | <u>:163</u> |
| LDS RCS, Eng. | : 31 |
| LDS RCS, Edin. | : 3 |
| LDS RFPS, Gla. | : 7 |
| LDS Univ. of Birm. | : 13 |
| LDS Univ. of Manch. | : 2 |
| LDS Univ. of Liverp.: | 1 |
| BDS Univ. of Birm. | : 3 |
| <u>TOTAL QUALIFIED</u> | <u>: 60</u> |

Source: Entry-by-entry analysis of The Dentists Register 1923.

In Birmingham, where the BDS had been available since 1900, the preferred qualification remained the college LDS. This suggests that those seeking a professional

qualification preferred college qualifications, even if they had trained in the university.

TABLE 8.5: DENTISTS PRACTISING IN THE NEWCASTLE AREA AND REGISTERED SINCE 1900, 1923

| | |
|-------------------------------|--------------------|
| <u>DENTIST 1921</u> | <u>:133</u> |
| LDS RCS, Eng. | : 14 |
| LDS, RCS, Edin. | : 21 |
| LDS, RFPS, Gla. | : 13 |
| LDS, RCS Irel. | : 1 |
| LDS Univ. of Durh. | : 14 [91] |
| <u>TOTAL QUALIFIED</u> | <u>: 63</u> |

Source: Entry-by-entry analysis of The Dentists Register 1923.

Table 8.5 shows that, as in Birmingham, the majority of dentists in Newcastle were registered as "Dentist, 1921" and that the college LDS was the preferred qualification, even when there was a locally available university equivalent. In Newcastle candidates preferred the geographically closer Scottish colleges to the RCS, Eng. in London. The number domiciled in Newcastle who had qualified at the Scottish colleges (34) is higher than the number of LDS, RCS, Eng. (14). The same number held the University of Durham LDS which suggests that there was some demand for university qualifications from local candidates even

if demand for the BDS remained negligible.

As in 1910, the BDS was not an alternative to additional medical qualifications. The number holding college or university medical qualifications was higher than the number with dental degrees (Table 8.6). Some had taken medical qualifications at universities where the BDS was available, an indictment of the perceived usefulness of a dental degree to those with ability and ambition. Few held both dental degrees and medical qualifications.

TABLE 8.6: DENTAL AND MEDICAL QUALIFICATIONS, 1923

| | |
|---|--------------|
| LDS and College MRCS/LRCP | : 191 |
| LDS and medical degree | : 28 |
| LDS, College MRCS/LRCP and med. degree | : 8 |
| LDS, BDS and medical qualifications | : 4 |
| BDS and MBChB | : 3 |
| <u>TOTAL DENTAL AND MEDICAL QUALIFICATIONS</u> | : 234 |

Source: Entry-by-entry analysis of The Dentists Register 1923.

As for higher dental qualifications, detailed analysis of the Register shows that nine held the MDS. The same number held the Higher Dental Diploma (HDD) of the RCS Edin., which had been introduced as recently as 1920 (Table 8.7). Although the college HDD, a higher clinical qualification, was not

comparable to the MDS which was a research degree, these figures illustrate two features of demand for dental qualifications at this time. Firstly, there was little demand for higher dental qualifications and secondly, those who sought higher qualifications preferred a clinical college qualification. The demand for higher college qualifications illustrates their continuing status and appeal and the way in which the colleges, determined not to lose their role as prestige qualifying bodies for the dental profession, had moved into the market for higher qualifications.

TABLE 8.7: HIGHER DENTAL QUALIFICATIONS, 1923

| | | |
|--------------------------|---|---|
| College LDS, BDS and MDS | : | 2 |
| LDS and HDD | : | 9 |
| College LDS and MDS | : | 5 |
| BDS and MDS | : | 2 |

Source: Entry-by-entry analysis of The Dentists Register 1923.

This analysis of The Dentists Register 1923 confirms the effect of forty years of unqualified dental practice on demand for professional qualifications. Since there had been little incentive for a parent to spend "upwards of £1,000 in educating his son as a dentist" for him to receive "no

protection whatever from the State", the desire of some to raise the standard of training and qualification was disproportionate to prospects in dental practice and incompatible with the need to increase the number of qualified practitioners. [92] The registration of the unqualified "dentists, 1921" meant that in the short term there would be little demand for professional qualifications and demand for university qualifications, especially the degree, would be slight unless the degree could achieve recognition as a status degree which would appeal to ambitious recruits and clearly distinguish holders from licentiates and "dentists, 1921".

However, in the nineteen-twenties conditions in the medical professions remained more attractive to those with the educational qualifications, inclination and financial means to undertake a demanding professional education. [93] Therefore, dental degrees remained an ideal standard of qualification, inappropriate for the majority and too demanding for a relatively unattractive and unprofitable specialty whose image, status and reputation were tarnished by the large number of unqualified practitioners and to which the state continued to attach relatively little importance. [94] The efforts of the profession were directed towards increasing the number of qualified dentists, improving their conditions and persuading the government of the need for dental services, rather

than towards higher standards of education at a time when the cost incurred was not reflected in job security or income. Also, funds for university dental schools, financial assistance for dental students and better job prospects for qualified dentists were needed to attract suitable entrants to the profession, introduce an element of professional competition and thus permit standards to be raised. Dental health education and the establishment of state dental services would also be important in generating demand for the services of qualified practitioners.

APPENDIX 8.1: ANALYSIS OF DENTISTS REGISTER 1923

| | | |
|------------------------------------|---|-------------------------|
| <u>TOTAL REGISTERED</u> | : | <u>12,762</u> [95] |
| <u>TOTAL UNQUALIFIED</u> | : | <u>7,668 (60%)</u> |
| "Dentists, 1878" | : | 947 |
| "Dentists, 1921" | : | 6,721 |
| <u>TOTAL QUALIFIED</u> | : | <u>5,094 (40%)</u> [96] |
| <u>LDS</u> | | |
| RCS, Eng. | : | 2,754 (22%) [97] |
| RCS, Edin. | : | 690 |
| RFPS, Gla. | : | 603 |
| RCS, Irel. | : | 470 |
| University | : | 407 (3%) |
| <u>TOTAL</u> | : | <u>4,924 (39%)</u> |
| <u>BDS AS FIRST QUALIFICATION</u> | | |
| Manchester | : | 5 |
| Birmingham | : | 2 |
| Liverpool | : | 14 |
| Leeds | : | 2 |
| Bristol | : | 1 |
| Dublin | : | 14 |
| Nat. Univ. Ireland | : | 26 |
| <u>TOTAL</u> | : | <u>64 (0.51%)</u> |
| <u>BDS AS HIGHER QUALIFICATION</u> | | |
| Univ. LDS and BDS | : | 3 |
| College LDS and BDS | : | 8 |
| <u>TOTAL</u> | : | <u>11</u> |
| <u>TOTAL BDS</u> | : | <u>75 (0.58%)</u> |

LDS PLUS MEDICAL QUALIFICATIONS : 227 (1.8%)

| | |
|--|-----|
| LDS and College MRCS/LRCP: | 191 |
| LDS and medical degree : | 28* |
| LDS, College MRCS/LRCP and medical degree : | 8* |

*Of which some had been taken at universities offering dental degrees.

BDS PLUS MEDICAL QUALIFICATION

| | |
|----------------------------|---|
| BDS and MBChB : | 3 |
| LDS, BDS and Med. qualif.: | 4 |

TOTAL DENTAL AND MEDICAL QUALIFICATIONS

: 234 (1.8%)

HIGHER DENTAL QUALIFICATIONS

| | |
|-----------------------------|-----------------|
| <u>MDS</u> : | <u>9</u> |
| MDS : | 1 |
| College LDS and MDS : | 5 |
| BDS and MDS : | 2 |
| College LDS, BDS and MDS : | 2 |
| <u>LDS AND HDD</u> : | <u>9</u> |

Source: Entry-by-entry analysis of The Dentists Register 1923.

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20. JENKIN, A.E. "Our Position and Prospects as a Profession". BDJ, v.31, 1910, pp. 732-739.
21. Interdepartmental Committee on Physical Deterioration. Report, Cd 2175, Appendix, Cd. 2186, and Evidence, Cd 2210. London: HMSO, 1904, para. 23, p.5. [Cited by RICHARDS, N.D. 1979, p. 315.]
22. The Anaesthetics Bill in 1909 suggested a possible line of attack against the unregistered whose practice would fail if they were denied the use of anaesthesia. [RICHARDS, N.D. Unpublished paper presented at the Jubilee Meeting of the Lindsay Society for the History of Dentistry, York, 1988.]
23. DONALDSON, J.A. Written communication. Summer 1988.
24. For instance, The Registered Dentists' Protection Association of Scotland in 1904, the Dental Mechanics' and Operators' Association of Scotland in 1906 and The Amalgamated Society of Dental Operators and Mechanics in 1907. ["The Dental Mechanics' and Operators' Association of Scotland". BJDS, v.49, 1906, pp. 1016-1017. Dental News. and RICHARDS, N.D., 1979, p. 363.]
25. Departmental Committee on the Dentists Act, 1878. Report of the Committee appointed by the Lord President of the Council to enquire into the extent and gravity of the evils of dental practice by persons not qualified under the Act. Chairman: F.D. Acland. London: HMSO, 1919. Cmd. 33. For a detailed account of the political campaign for new dental legislation see RICHARDS, N.D., 1979. Chapters 8-10.
26. Two unregistered practitioners James Bellerby and Joseph Heyworth sought to dissolve their partnership with William Forrest Bowen for breaking an agreement to abide by the terms of the 1878 Act.

27. Departmental Committee on the Dentists Act, 1878. 1919, p. 6.
28. DONALDSON, J.A. Personal communication. March 1988.
29. Departmental Committee on the Dentists Act, 1878. 1919. Section III.-Practice of Dentistry by Incorporated Companies, pp. 8-11.
30. "The Present and Future of the Dental Student". BJDS, v.58, 1915, pp. 593-595. Edit.
31. "Dental Companies (Restriction of Practice) Bill". BDJ, v. 28, 1907, pp. 672-674. Edit.
32. CUNNINGHAM, G. "What the Dentist Can Do for the State". JBDA, v.17, 1896, pp. 144-159. Cited by RICHARDS, N. D., 1979, p. 280.
33. The public needed to be better informed if the demand for dental services was to justify an increased entry to the profession. ["Report of the Extraordinary General Meeting, Saturday, May 17, 1919 to discuss recommendations of the Representative Board on the Report of the Dentists Act Committee". BDJ, v.40, 1919, pp. 433-462.]
34. When, during the Boer War, 5,000 soldiers were reported unfit for duty because they lacked dentures, the War Office's response was to issue mincing machines rather than appoint dentists. [BRADLAW, Sir Robert. "The Royal Army Dental Corps". BDJ, v.130, 1971, pp. 173-176 and "Soldiers' Defective Teeth". BDJ, v.24, 1903, pp. 261-2. Miscellanea.]
35. Report of the Departmental Committee on Sickness Benefit Claims under the National Insurance Act. London: HMSO, 1914-16. Cd. 7687.
36. "State and School Dentistry. Sickness Benefit Claims Under the National Insurance Act". BDJ, v.36, 1915, pp. 96-103. Cited by N.D. Richards. 1979, p. 517.
37. "GMC Minutes, 1916. Dental Education and Examination Committee". BDJ, v.37, 1916, pp. 457-472.
38. Departmental Committee on the Dentists Act, 1878. 1919.

39. Initially the unregistered were not represented on the committee but following protests Sir Francis Lowe, M.P. and Mr. W.F. Bowen, the President of the IDS were appointed to represent their interests.
40. Departmental Committee on the Dentists Act, 1878. 1919, p. 8.
41. Ibid, pp. 7 and 14.
42. Ibid, pp. 14 and 16.
43. Ibid, p. 14.
44. Ibid, p. 16.
45. Ibid, pp. 12-13.
46. Ibid, p. 23.
47. Ibid, p. 23.
48. Ibid, p. 53.
49. Ibid, p. 24. Between 1879 and 1914 the number of registered dentists had fallen despite a 30% increase in the size of the population of England and Wales during the same period. There were 5,289 dentists on The Dentists Register 1879: by 1914 there were only 5,275.
50. Ibid, p. 37.
51. Ibid, p. 53.
52. Ibid, pp. 51-52 and 55.
53. Ibid, p. 51.
54. Ibid, p. 53.
55. The IDS recommended that the proceeds of the licence fee should be used for bursaries for pupils of poor parents and for research, reflecting the background and concerns of unregistered but ethical dental practitioners for whom the cost of a professional education was prohibitive.
56. Ibid, p. 53.
57. Ibid, p. 42.
58. Ibid, p. 42.

59. Ibid, p. 42.
60. "We think that the expense and length of time involved in qualifying for a registrable diploma are factors which cannot be disregarded as contributing to the shortage of dentists". [Departmental Committee on the Dentists Act, 1878. 1919, pp. 27, 42 and 51.]
61. Ibid, p. 53.
62. Ibid, p. 53.
63. Ibid, p. 43. Sir Charles Tomes was succeeded on the GMC by Norman Bennett in 1920, but this was still a grace and favour appointment and he was a FRCS. Sir Donald MacAlister, President of the GMC and Principal of the University of Glasgow, explained that the dental profession was governed by the GMC because there had been no corresponding body or constituency from which to appoint a body to represent the dentists. This issue was also discussed in Glasgow in 1919 where speakers at the annual dinner of the Glasgow Odontological Society addressed the profession's status and in particular its relationship to the GMC. [Glasgow Odontological Society. Unpublished Minutes. 22 November 1922.] Recognition in the form of knighthoods for distinguished members of the profession such as Kenneth Goadby, Harry Baldwin and Frank Colyer did not extend to recognition of the value of dental services. And, no-one with dental qualifications only had achieved a position of this eminence. Kenneth Goadby and Harry Baldwin, whose specialties (bacteriology and maxillo-facial surgery respectively) lay on the borderland between dentistry and medicine, were both medically qualified.
64. Departmental Committee on the Dentists Act, 1878. 1919, p. 43.
65. GMC Minutes, 1917. The GMC's resolution of 27th November, 1917 was cited by Acland, p. 43. This matter was also being discussed in Glasgow in 1919 where speakers at the annual dinner of the Glasgow Odontological Society addressed the status of the profession in relation to its supervision by the GMC. [Glasgow Odontological Society. Unpublished Minutes. 22 November, 1922.]
66. RICHARDS, N. D., 1988.
67. Departmental Committee on the Dentists Act, 1878. 1919, p. 56.

68. Ibid. "If it be accepted that it is the duty of the State to ensure in the national interest that its citizens shall be maintained in a state of good health and working efficiency we have no hesitation in stating that adequate arrangements for keeping the teeth of the people in a sound condition are one of the essentials to this end." [Ibid, p. 36.]
69. Recognition of the importance of research was not confined to London. In 1920 Glasgow Odontological Society proposed to undertake research into "root treatment", "dietetics" and "local anaesthesia". [Glasgow Odontological Society. Unpublished Minutes. 16th November, 1920.]
70. Departmental Committee on the Dentists Act, 1878. 1919, p. 47.
71. Ibid, p. 27.
72. Ibid, p. 47.
73. "Dentists Act Committee Report. Opinions of the Press". BDJ, v.40, 1919, pp. 224-231.
74. The terms of the Dentists' Act, 1878 required that in future those wishing to register as dentists or dental-surgeons would have to qualify, but concessions to those in practice allowed many to register in 1878 without qualifications or training. The Act resulted in a largely untrained but registered profession, the necessity for even the minimum dental qualification was not established and the Act failed to prohibit subsequent unqualified practice.
75. Qualified dentists felt a profound hatred towards unqualified unregistered dentists. However the latter were determined to gain admittance to the Register to save their livelihoods. Personal communication J.A. Donaldson. Summer 1989. The ultra-conservatives, led by Sir Frank Colyer, were determined "to fight to the last ditch against this Bill". ["The Dentists Bill, 1920". BDJ, v.42, 1921, pp. 261-269. Branch and Section Reports. Metropolitan Branch.] J. Menzies Campbell, who was totally opposed to registering the unqualified, was among those who opposed the bill as "a fiasco". [CAMPBELL, J. Menzies. BJDS, v.64, 1921, p. 63. Cited by RICHARDS, N.D., 1979, p. 553 and BMJ, v.1, 1921, p. 408. Cited by Ross, R. M., 1994, p. 350.]

76. Glasgow Odontological Society. Unpublished Minutes. 19 February, 1919. Others anticipated the establishment of a Special Roll of unqualified practitioners. As early as 1917 Glasgow Odontological Society had discussed J.W.A. McGowan's proposal for the establishment of a special roll for unqualified bona fide dentists. [Glasgow Odontological Society. Unpublished Minutes. 27th November, 1917.]
77. See ROSS, R.M., 1994, pp. 338-357 for a more detailed account of the BDA's policy and strategy with regard to unqualified dentists.
78. "The Dental Board". The Lancet, v.ii, 1921, pp. 1284-5. Edit.
79. i.e. members of the IDS, those in practice as dentists or dental mechanics for five years prior to the passing of the Act, those practising dentistry as "their principal means of livelihood", and, subject to certain restrictions chemists and druggists who had a "substantial practice as a dentist", in the case of extraction only, where the case was urgent, and where no medical practitioner or dentist was available, and as long as no general or local anaesthetic was used. Others who had been in practice for less than five years would be required to pass a test of competence within two years.
80. The Board had twelve members, six of them dentists. The Ministry of Health, Scottish Board of Health and the Lord Lieutenant of Ireland were represented, there were three GMC representatives, and six dental representatives: W.H. Dolamore, W.H. Gilmour, W. Guy and E.L. Sheridan represented the registered dentists of England, Wales, Scotland and Ireland respectively; Fred Butterfield, Honourary Secretary of the IDS and Horace Robertshaw, President of the NDA represented the newly registered practitioners. After three years membership would be by direct election by both groups of the profession.
81. The Association had discussed the question of the admission of Dentists 1921 to membership of the Association under proper safeguards, and held a referendum on the matter in 1922. In 1927 a referendum voted by a majority of 462 against admission of Dentists 1921 to membership. [DONALDSON, J.A. "The Association and Dental Legislation". in COHEN, R.A. and SPENCER, E.M. (eds), 1979, p. 27.]

82. JONES, H.A. "The Course for the Dental Diploma". BDJ, v.44, 1923, pp. 579-581. Corresp.
83. John Fraser Ross of Glasgow, 1896-1978, a member of the Incorporated Dental Society, was registered on June 5, 1928 by virtue of the fact that for any five years out of seven immediately preceding the commencement of the 1921 Act he was engaged, as his principal means of livelihood, in the occupation of dental mechanic in the British Isles and was aged twenty-three before the commencement of the Act. Although he passed the DBUK examinations in 1928 he had, between 1919 and 1926, tried and failed to meet the standard required for the LDS, FPS, Glasgow. [Unpublished examination records held by The Royal College of Physicians and Surgeons of Glasgow. Loaned by Dr. Henry Noble. May, 1990.]
84. Illegal practice was subject to summary conviction and a fine of not more than £100.
85. BRITISH DENTAL ASSOCIATION. Memorandum on Dental Research in the United Kingdom, 1958.
86. 4,214 of 5,524. Departmental Committee on the Dentists Act, 1878. 1919, p. 7.
87. Furthermore, the Register was not always accurate. For instance, although the first qualified surgeon-dentist in practice in Dundee, Alexander Blair Spence, practised until 1893 and died in 1895, his name remained on the Register until 1900. This suggests that the actual number of qualified practitioners could have been less than indicated by The Dentists Register. [FAIRLIE, J.M. "A City Set on a Hill: the story of dentistry in Dundee up to 1940". Unpublished paper presented to the Lindsay Club, 1987 published in abbreviated form as "A City Set On A Hill: dentistry in Dundee". BDJ, v.163, 1987, p. 94.]
88. Only two qualified medical practitioners took advantage of the terms of the 1921 Act in order to register in The Dentists Register.
89. There were 4,989 licentiates or graduates in dentistry plus 6 Dentists, 1878 with additional medical or surgical qualifications. The unqualified comprised of 6,721 unqualified "Dentists 1921" and 947 unqualified "dentists 1878". ["Table Showing the Numbers and Qualifications, with Percentage of the Total, of Persons Registered in The Dentists Register 1923, p. xxx.]

90. Plus one MDS which had been registered as a first qualification.
91. The University of Durham did not offer a dental degree at this time.
92. "The General Medical Council and the Dental Curriculum. BDJ, v.36, 1915, pp. 31-33. Edit.
93. Whereas, between 1889 and 1912, numbers entering the medical profession increased by 46%, there was no increase in the number of qualified dentists. ["Report of Dr. Newsholme's Report to the Dental Committee of the G.M.C". BJDS, v.57, 1914, pp. 1017-1019.]
94. The low earnings of general dental practitioners at this time is reflected in the advertisements section of the BDJ e.g. August 15, 1922, 1923 and 1924. Advertisements. p. i. See also rough notes made by Robert Lindsay when first Dental Secretary of the BDA for either an article, a speech, or evidence to give to a committee in connexion with the development of an Association policy regarding salary levels in the statutory dental service, held in the BDA Museum.
95. This total includes 63 colonial and 34 foreign dentists.
96. Of the "Dentists, 1878", 6 held medical or surgical qualifications, but not the LDS or BDS. Of the "Dentists, 1921", 2 held medical or surgical qualifications, but not the LDS or BDS.
97. 55% of total qualified.

CHAPTER 9: SEPARATE BUT NOT AUTONOMOUS: PROFESSIONAL EDUCATION, 1921-1940

This chapter will examine the contextual factors which adversely affected career prospects for dentists, demand for professional education and uptake of university qualifications during the 1920s and 1930s, namely, the registration of large numbers of unqualified dentists, economic conditions and social policy. Funding of university dental education will also be examined with particular reference to the funding policies of the newly established Dental Board of the United Kingdom (DBUK). This analysis will show that underfunding delayed the establishment of teaching facilities and the appointment of the qualified staff needed to develop dental education and research.

The Dentists Act, 1921 had left the profession in an anomalous position in relation to the medical establishment - a separate yet not fully autonomous profession. [1] The chapter will conclude by examining the effects of continued GMC supervision of dental curricula, examinations and qualifications. University curricula will be compared with the reports and recommendations issued by the GMC which will in turn be compared with reports issued by professional bodies - the BDA and The International Dental Federation. This comparative analysis will highlight

the discrepancies between the standards recommended and practice in the dental schools and also the deficiencies of GMC recommendations in relation to dental science and clinical practice.

9.1. OPPORTUNITIES FOR DENTAL PRACTITIONERS AFTER THE DENTISTS ACT, 1921

After the First World War qualified dentists continued to be adversely affected both by economic conditions and by social policy. The influx of unqualified practitioners further depressed dental fees and adversely affected the incomes of the qualified. Whereas expenses increased with the rampant post-war inflation, demand for treatment and earnings did not. [2] Demand for dental treatment was depressed by a number of factors - economic recession, unemployment and the relative indifference to dental health of medical authorities and general public alike when confronted by more pressing medical priorities such as tuberculosis, polio, diphtheria and venereal disease.

Prior to the Second World War the profession was "very far from being fully employed". [3] These conditions did not promote demand for dental qualifications, nor did they create the element of competition which would be necessary if entrance standards were to be raised.

Ignorance or indifference contributed to the lack of demand for all but last-resort dental treatment from large sectors of the British population. Despite widespread dental disease, many did not seek treatment until it was too late for conservative techniques. This might not have been the case had the state been active in promoting dental care.

The establishment of The Royal Army Dental Corps (RADC) and the Royal Navy Dental Service in 1921 was a measure of the profession's advance in status and recognition. [4] Yet, when the Ministry of Health was established in 1919 dental services did not fall within its remit and, whereas in medicine reform between the wars emphasised the provision of a free and comprehensive health service to all classes in society and the prevention of disease, there was no large scale attempt to educate the public in dental health "chiefly because there was no body that was specially interested and had sufficient funds at its disposal to carry out such education". [5] During the 1920s and 1930s the Dental Health Propaganda Committee, the Dental Board of the United Kingdom and the Ivory Castle Leagues, funded by Messrs D. & W. Gibbs Ltd., provided dental health education propaganda on a national scale and it was anticipated that these campaigns would lead to increased demand for manpower. [6]

The cost of treatment also contributed to the

lack of demand which adversely affected the earnings of dental practitioners. It was anticipated by the profession that a subsidised service would stimulate demand for dental treatment and that "the ever-widening field of dental practice" would create a demand for the services of more qualified dentists. [7] The BDA campaigned for the establishment of state dental services which would extend the scope of qualified dental practice, particularly into areas which would otherwise be uneconomic for qualified dentists. [8] In 1923 The National Health Insurance Act, 1911 was extended to include dental benefits but, as an additional rather than a statutory benefit, dental treatment was treated less favourably than medical services. [9] Earnings were so insecure that many dentists regarded NHI dentistry as a threat to private practice. [10]

Compulsory dental inspection and treatment for school children was introduced in 1925, but the BDA's Memorandum to the Royal Commission on the National Health Insurance Acts, which drew attention to the lack of dental services for the working classes, had no immediate result. [11] Since patients still bore part of the cost, only 6-7% of those entitled to benefit applied each year. [12] And, although initially dental treatment in National Health Insurance (NHI) dispensaries was provided by qualified dentists, thus creating an incentive to qualify, the

IDS secured the right of all registered dentists to practise NHI dentistry. Career prospects for qualified dentists were so poor that this erosion of the exclusive rights of the qualified caused resentment which was such that qualified dentists would cross the road rather than pass a "dentist 1921". [13] Competition, such as it was, was still largely between qualified and unqualified dentists, rather than between LDS and BDS.

Many dentists faced professional and financial insecurity. [14] Gross returns of practices advertised for sale in the BDJ indicate that average earnings were low during the 1930s and that many dentists did not earn enough to sustain a middle-class livelihood. [15] Dentistry was not attractive as a profession and by 1929 the numbers entering the register was expected to be insufficient to balance the number retiring. [16] This would soon be compounded by the "undue preponderance of older men in the profession" and the high retiral rate, owing to the massive influx in 1921. [17]

As long as dental treatment was considered an unnecessary luxury, especially by the working classes, career prospects for the majority of dentists were unlikely to improve. This, plus the cost of training, adversely affected the demand for dental qualifications. Indeed, there were no BDS graduates at Durham until 1932 because few could see its value.

[18] Instead, students in Newcastle and Durham took a college LDS, sometimes in addition to the LDS, Dunelm. Some students took both examinations as a safeguard against failure but the status of college qualifications still exercised a considerable appeal.

[19] Dentistry continued to be regarded as a second-rate, second choice profession. As in social policy, dentistry was disadvantaged compared with medicine in terms of state funding for education and research. From its establishment in 1919, the University Grants Committee (UGC) became an increasingly important factor in university finance and in university medical education. In medical faculties, the UGC funded whole-time clinical teaching units directed by university professors. These were intended to advance research, train academic clinicians and introduce students to scientific methods and a critical approach to clinical practice.

[20] Similarly, the availability of funds granted by the Medical Research Council (MRC) meant that medical research was no longer exclusively dependant on philanthropy. [21] There was no equivalent central funding for dental education or research.

As central control and funding of medical education increased, to benefit from government monies dentistry would have to be closely associated with the universities and dental students would have to be undergraduates. Even the BDJ acknowledged that:

a closer linking with the universities seems desirable, since government grants ... for such teaching are made by way of the universities. In order to entitle a dental school to share fully in university grants, it would seem necessary that a considerable number of the students should be undergraduates of the university. [22]

The diploma placed the dental profession in a "curiously anomalous position" and it was suggested that, following the precedent set by the National University of Ireland, the BDS should be established as the primary dental qualification. [23] The BDJ carried renewed demands for improved standards in professional education. Yet, more than forty years since the need for dental degrees had first been expressed and despite considerable advances in dental education, only a "relatively small number" took degrees. [24]

It was also recognised by some that the development of preventive dentistry would be crucial to the future status of the profession:

When dentists realized that the true aim of dentistry was the prevention of dental disease - and not merely tooth repairing ... tooth removal and restoration ... dentistry was accorded a high position among the healing professions. [25]

Prevention of dental disease would require research, based on education in science, theory and practice,

into the anatomical, physiological and environmental processes contributing to disease. The role of universities in promoting dental research would be a significant factor in determining their role in professional education.

9.2. THE ROLE OF THE DENTAL BOARD OF THE UNITED KINGDOM IN FUNDING PROFESSIONAL EDUCATION

Funds were needed to establish the facilities and teaching staff necessary to develop university dental education and research. Although the UGC had been in existence since 1919 dental schools had not benefitted directly from UGC funds. [26] Clause 10 of The Dentists Act, 1921 granted to the DBUK statutory power to allocate revenue derived from dentists' registration fees to purposes connected with dental education and research, to scrutinise standards and to recommend uniformity of the curriculum, subject to the approval of the GMC. [27] The DBUK's policy of subsidising professional education was not without its critics. In effect registered dentists, whose practices had already been eroded by the influx of "dentists 1921", were subsidising the education of dentists with whom they would shortly be in competition. Nevertheless, although the retention fee was resented and there was discussion of reducing the amount, the revenue raised was significant. [28] To

quote the views of one member of the profession:

it was enormously to the credit of the dental members on the new Dental Board of the United Kingdom that they decided on an annual retention fee of £5, whereas in the medical profession an initial fee to be entered on the Medical Register was all that was required. The money was used to augment salaries of dental teachers, to fund chairs, to improve dental schools, to give bursaries to dental students and to start the dental health education of the public. [29]

During the 1920s and 1930s improvements in university dental education were due in great measure to DBUK assistance. The Board allocated funds to supplement remuneration for teaching staff "in the extreme case where it can be shown that the existing resources of the school are insufficient to attract the right type of teachers". [30] About half a million pounds was spent in this way. [31] The substantial amounts awarded indicate the absence of funds from other sources. [32] For, although the DBUK assumed a role similar to that of the UGC it received no government monies. In 1955 Sir Wilfred Fish noted that the Board's policy "had done more to encourage a university standard of dental education within the dental schools than any other factor". [33]

Since facilities and teaching positions supported

by DBUK monies had to be of university standard, the Board's policies assisted the appointment of full-time teachers and professors. In 1928 the Dental Board offered to pay £500 per annum, per university towards the salary of a professor, who was to be paid no less than £1,000 per annum, and two sums of £250 per annum per school towards the appointment of two full-time lecturers or demonstrators, on condition that the salary was no less than £600 per annum. [34] Previously, staff appointments had been underpinned by charitable funds. For instance, when W.H. Gilmour, MDS, LDS, RCS Eng., who had been honorary Director of Dental Education since 1912, was appointed in 1920 to the Chair in Dental Surgery in the University of Liverpool, he gave up a lucrative private practice to become the first and for many years the only salaried, full-time dental professor in the United Kingdom. His appointment would not have been possible without a generous endowment. [35]

The Board's insistence on academic qualifications led to the appointment of candidates who did much to promote the development of teaching and research. For instance the appointment of G.L. Roberts, MB, ChB, BDS, in 1935 to a dental chair funded by the DBUK in the University of Sheffield led to change in the curriculum, expansion in facilities and an increase in the number of students. [36] Similarly H.H. Stones, MD, MDS, Ch.B, FDS, Eng., who succeeded W.H. Gilmour

to the Chair in Dental Surgery in the University of Liverpool, emphasised the biological sciences and developed dental research. [37] His textbook Oral and Dental Diseases, which was first published in 1948, became a standard work for several generations of undergraduates throughout the United Kingdom. [38] However, professors needed staff and resources. In 1944 Stones had only two full-time staff, research facilities were limited and he was unable to continue his research due to the pressure of administration. [39] Thus, although significant, DBUK funding was less than adequate.

The universities continued to rely to a great extent on charitable funding and the low priority placed on dentistry as a charity, when compared with medicine, meant that progress in establishing dental chairs was slow, as shown in Appendix 8.1. [40] This was particularly true of chairs in oral pathology. Professor R. Bradlaw's appointment in 1936 to the Chair in Oral Pathology in Durham was the first of its kind in the United Kingdom. [41] It was not until 1961 that Professor J.J. Hodson, BDS, PhD, LDS, RCS, Eng. was appointed in Manchester to the first Chair in Dental Pathology to be established in the four northern universities. [42] Dental education was conducted in some universities for twenty to thirty years without the guidance of salaried full-time professors or deans.

In the long term, the DBUK's policy of appointing graduates provided an incentive to those embarking on university dental education. However, initially many of those appointed were neither graduates nor dental graduates. For instance, J. Osborne, LDS, University of Birmingham, the first full-time lecturer to be appointed in Sheffield in 1937, was neither a graduate nor a BDS. [43] W. Malcolm Gibson, MB, ChB, LDS was appointed in the same year, not in oral medicine as his medical degree might suggest, but as lecturer and demonstrator in dental prosthetics and dental mechanics at the Glasgow Dental School. [44] Although a medical graduate, he did not hold a dental degree. As late as 1951 James Aitchison LDS, HDD, RCPS, Glasgow, was awarded an honorary degree in order to facilitate his appointment to the newly-established Chair of Dental Surgery in the University of Glasgow. [45] Such expedients highlight the dearth of suitably qualified candidates for teaching positions in dentistry in the first half of the twentieth century.

For staff, buildings and equipment universities had to rely on funds from a variety of sources: substantial assistance from the DBUK, credit balances accumulated when honorary clinical lecturers were running the school, local fund-raising campaigns and benefactions. [46] DBUK funds were not sufficient to improve staffing on the scale required. Dental

education remained indebted to general dental practitioners who accepted honorary teaching positions and used their influence to attract local philanthropy to the dental hospitals and schools. The University of Sheffield provides a fairly typical example of the lack of funding to improve facilities. In 1920 accommodation was insufficient for both teaching and treatment. Upgrading of clinical equipment with monies raised by members of the honorary dental staff meant that by 1922 the University could establish its own BDS and MDS, but the apprenticeship in dental mechanics continued until 1925 when a large dental workshop was provided. When the Dental School was expanded and re-equipped with Board funds in 1928 it still occupied restricted accommodation at the Royal Hospital. [47]

The contrasting experiences of the schools in Dundee and Glasgow highlight the beneficial effects of the Board's funding policy on staff and facilities, the acute problems facing dental schools not attached to universities and also the way in which the role of dental schools in providing dental treatment to poorer sectors of the population diverted funds which might otherwise have been used to support teaching. [48]

The Dental Hospital and School in Dundee benefitted from close links with the medical faculty of the University of St. Andrews. As in England, where the degree was first established in universities

which did not face local competition from a Royal College, University College Dundee became the first in Scotland to award a dental degree in 1937. [49] In Dundee DBUK-funded part-time lecturers in dental subjects were appointed from 1928 and, in the same year, the Board gave £2,000 for an extension, £500 for equipment for the Dental School, and £500 towards the cost of the new Mechanical Laboratory - the full cost of which was £1,500. [50] Although the DBUK provided much-needed financial assistance, the value of this assistance in relation to the actual cost of both facilities and staff was diminishing. For instance, the DBUK offered the University of Dundee £5,000 in 1927 towards the cost of rebuilding, plus £1,000 towards equipment costs, followed by a further £2,000 in 1928. But the estimated cost of rebuilding was £45,000, which left an enormous shortfall. The new building which was completed in 1932 and the extension which was added in 1934 were funded by public appeal. [51] The DBUK's grant of £500 towards a professorial salary of £1,000 was also insufficient and it was not until 1938, following a generous endowment specifically for this purpose, that the university was able to appoint H. Gordon Campbell as Professor of Dental Surgery and Dean of the Dental Hospital. [52]

Unlike Dundee, prior to 1947 the dental school in Glasgow had no formal links with the university and facilities in Glasgow Dental Hospital and School, for

students preparing for the LDS RFPS, Gla., were lamentable. From 1922 GMC regulations stipulated that instruction in dental mechanics should take place in recognised dental hospitals or schools. Facilities in Glasgow were so poor that the school did not qualify for DBUK assistance to upgrade its accommodation to the standard required. In 1923 a new laboratory was opened and a full-time tutor in practical dental mechanics appointed but this was not an unmitigated blessing. In 1925 the DBUK's Educational Grants Committee ruled that bursary students would only be sent to Glasgow for practical dental mechanics. Improved facilities for providing dentures merely reinforced the high demand for extractions and prostheses. The number of extractions increased from 17,980 in 1923 to 31,231 in 1925 and undermined the development of conservative dentistry. This indicates the way in which the absence of affordable dental treatment in general dental practice created a demand for treatment in the dental schools which did little to promote teaching in conservative dentistry.

Student fees were often needed to support the pre-clinical curriculum in the medical faculty, as in Dundee, or to meet the general running expenses of the hospitals, as in Glasgow. [53] Indeed, in 1936 the Dental Board's Educational Grants Committee stipulated that an Almoner's Department should be established in Glasgow to ensure that the dental treatment provided

was required for teaching students and that DBUK funds were being used for educational purposes, rather than financing the running costs of the dental hospital. [54] The appointment in 1935 of Dr. John Forbes Webster (who had been Dean since 1925), as Director of Dental Studies in Glasgow Dental School on a salary of £1,000, necessitated a change in the original Articles of Association of the Incorporated Glasgow Dental Hospital which had restricted the Dean's remuneration to fifty guineas. This is a measure of the influence of the DBUK in improving terms and conditions for teachers of dental education in order to attract suitable applicants. [55] Although the DBUK had hoped that this appointment would lead to closer links with the University of Glasgow, affiliation did not take place for another ten years. [56]

Dentistry's place in the universities remained tenuous. Dental schools were financed on a hand to mouth basis, there was a shortage of well-qualified staff and dental schools which were not linked to universities were in a parlous state. Although DBUK policy and its financial assistance was invaluable to the development of university education for dentists, this was not sufficient to meet the cost of facilities and salaries on the scale required in the absence of other funding for a discipline which was relatively new to the universities. Dental Board scholarships were also too few to encourage substantial

improvements in recruitment.

9.3. DENTAL CURRICULA AND EXAMINATIONS, 1922-1939

The GMC reports and recommendations issued during the 1920s and 1930s reflect changing emphasis in medical and dental education accompanied by somewhat better funding for dental education. Comparison of this material with university and college curricula and with views expressed in the dental literature by individuals, by the BDA and by the International Dental Federation (FDI), suggests that progress in professional education for dentists during this period was slow.

The new recommendations had been postponed twice pending the new legislation. The GMC's Report endorsed Acland's recommendation that instruction in dental mechanics should take place in dental schools rather than in pupillage. [57] There were several reasons for this. Firstly, the standard of teaching in private pupillage was variable, difficult to monitor, inefficient and was restricted to the narrow and repetitive range of experience and techniques carried out within one practice. Secondly, students who came to the dental schools after a period in pupillage had to attend classes in dental mechanics and dental metallurgy to supplement their pupillage. This "encroached upon the time required for the study

of the later subjects of the curriculum" and made it difficult to expand the scientific and medical curriculum without making the course too long. [58]

Forty years after these criticisms had first been made, the lack of teaching facilities and the cost of training meant that the BDA still regarded abolition of apprenticeship as "premature". [59] Nevertheless, the time spent in pupillage was twice that spent at a dental school where the instruction in dental mechanics was reduced from three years to twenty-four calendar months or 2,000 hours, and spread throughout the curriculum. This shows that students in university dental schools benefitted in the long term from the more varied clinical experience, the more efficient teaching methods, the emphasis on scientific and medical training at the expense of dental mechanics and the gradual integration of clinical teaching with the pre-clinical curriculum on which it was based. [60] The curriculum was now described in academic terms, which also reflects the establishment of dentistry within a university environment.

The new recommendations indicate the way in which improvements in state education beyond the elementary level assisted the development of the professional curriculum. Students were better prepared for a science-based professional training. For instance, the examination in elementary biology could be taken immediately if the candidate had taken an approved

course at "a secondary school or other teaching institution recognised by the Licensing Body". [61] In Liverpool those who had equivalent higher school certificates were exempted from the first BDS examinations. [62] It was possible, then, to extend the professional curriculum once the basic sciences were taught in schools.

Following The Dentists Act, 1921, the dental profession was better represented on the GMC's Dental Education and Examination Committee, but dental education was still supervised by a medical council. [63] The GMC's curricular recommendations reflect the fact that the report and recommendations were issued, not by the dental profession, but by the GMC in that change continued to be most evident in the medical curriculum. Indeed, in some respects the dental curriculum could have been mistaken for a medical curriculum. New preliminary examinations in elementary physics and elementary chemistry conformed with regulations for medical students and the introduction of an examination in elementary biology, following the example set by the universities, endorsed the importance of the scientific foundations of a substantially medical curriculum. Even the minimum curriculum now covered science, medicine, general pathology and bacteriology plus clinical medicine and surgery at a general hospital, attendance in out-patient or casualty departments, instruction in

and administration of general anaesthesia and courses on morbid histology, materia medica and therapeutics. [64] The certificate of clinical instruction in venereal disease reflects public health legislation and awareness of the relationship between oral and systemic diseases. There were new courses on radiology and examinations in biology, human anatomy, general pathology and bacteriology. Established university courses in science and medicine continued to underpin the dental curriculum. Indeed, it was suggested that bacteriology should no longer be studied at the dental school but should be combined with general pathology to form a new, two-term course at a medical school. [65] Thus, in the sciences the dental curriculum was being upgraded in line with the medical curriculum.

Although many changes in the dental curriculum were university-led (for instance the University of Liverpool's LDS curriculum included laboratory work in dental pathology) courses varied and universities did not always fulfil the GMC recommendations. For instance the University of Durham and the RCS, Edin. were the only institutions to require certificates of instruction in venereal disease, and the RCS, Eng. and the Universities of Birmingham, Sheffield and St. Andrews omitted radiology. [66] And, despite repeated demands since the late nineteenth century for more pathology in the curriculum, it was reported that

"the need of teaching pathology has not been recognized in the curricula of various examining bodies." [67]

Research during the 1930s examined the relationship between fluoride and caries prevention and between dental surgery, bacterial endocarditis and systemic bacterial infection resulting from pyorrhoea gingivae. [68] This re-emphasised the place of pathology and bacteriology in dental practice and stressed the relationship between scientific research and dental health. But, although GMC supervision and university initiative ensured the science base of the dental curriculum, there was delay in establishing courses in the dental sciences - oral histology, oral pathology, oral microbiology and dental radiology. There were similar deficiencies in the clinical dental curriculum taught in under-resourced and understaffed dental schools. These deficiencies reflect the lack of resources to establish specifically dental courses and, arguably, the priorities of the GMC.

At this time the GMC's objective was to achieve "a minimum curriculum without impairing the standard of efficiency", a standard regarded as sufficient for the needs of general dental practitioners. [69] And yet the dental curriculum was grounded in the medical sciences whereas the majority of candidates wanted sound training in clinical dentistry in which the curriculum was still weak. [70] The strength of GMC

supervision lay in its emphasis on the scientific and medical curriculum which assisted the evolution of the dental profession from a skilled occupation to a medical profession.

The recommendations favoured changes which drew dental education closer to medical education and into the universities. This would, in the longer term, widen the range of competence from that of a dental-surgeon or technician focusing on the teeth, to that of an oral physician with skills in diagnosis and treatment of the whole mouth and an understanding of the related organs. But this standard was too high for the majority of candidates in the first half of the twentieth century and the curriculum's deficiencies in clinical dentistry meant that it was doubly unattractive to prospective general dental practitioners. Although some dentists were highly skilled in conservative dentistry, particularly cohesive gold work, the majority did not aspire to a wider range of preventive dentistry and oral medicine.

[71]

For those with higher aspirations medical qualifications remained more attractive. Indeed, the GMC noted "an increasing tendency for Dentists to take a Medical as well as a Dental Qualification". [72] The number of dentists who held the LDS and medical qualifications had risen from 184 in 1910 to 234 in 1923, and was greater than the number with dental

degrees (64 in 1923). [73] The small number taking the BDS suggests that the degree was not yet established either as a qualification for ambitious general dental practitioners, nor was it regarded as a specialised alternative to medical qualifications for those whose ambitions lay in teaching, research or hospital dentistry. Thus, although the GMC's commitment to laying the medical foundations for dental education was not in doubt, the weakness of the dental curriculum at this time reflects, as it always had done, the limitations of the GMC's commitment to and the difficulty of funding specifically dental education.

The BDA's advice to prospective candidates, published annually in the BDJ's "Educational Supplement", was authoritative and influential. In 1923 the BDA endorsed many of the GMC recommendations and proposed institutional training in dental mechanics rather than apprenticeship:

it is almost imperative that [the student] should not pursue the study of Dental Mechanics with the private practitioner for a greater period than one year, and should then join a Dental School; otherwise his curriculum will be unduly prolonged. [74]

The BDA also specifically criticised the Royal College of Surgeons of England's requirements in biology, chemistry and physics:

unless the character of this examination be altered from what it has been in the past there would not appear to be an opportunity for testing, even in an elementary way, the student's knowledge of these subjects. [75]

Although this marked a significant change in the Association's attitude to professional education and emphasised the role of the universities in upgrading standards of dental education, the Association did not specifically recommend the dental degree. Students were advised to take "a University Degree in Medicine or in Dentistry or a Medical Diploma". [76] Thus, although the BDA was beginning to acknowledge the deficiencies of teaching and examination for a college licence, it still withheld outright endorsement for the BDS, with inevitable consequences for the uptake of dental degrees by candidates for dental education.

The International Dental Federation (FDI) also issued a report on dental education in 1923 which set out the ideal curriculum required for the efficient practice of dentistry. [77] This reflected the views of dental teachers and would therefore be influential with those directing dental education, just as the BDA's views would be likely to influence candidates for dental education. The author of the report, William Guy, LRCP, HDD, FDS, RCS, Eng. and Edin., FRCSE, LDS, RCS, Edin., though not a dental graduate, had a distinguished career fitting him to report

matters relating to dental education. [78]

The FDI envisaged the integration of teaching and examination in schools "with a university affiliation". [79] There is no mention of schools preparing candidates for college examinations. And, although few American qualifications were registrable in the United Kingdom at that time, the FDI's report was based on "experience of a number of the best American universities". [80] This suggests that GMC recommendations were not the last word in dental education. [81] The course which was divided into three sections - preliminary, scientific and professional - was more specific than the GMC recommendations and anticipated the subsequent evolution of dental curriculum in the United Kingdom. For instance, the FDI specified lectures and laboratory hours in human and comparative odontology, histology and embryology. [82] The FDI also endorsed the GMC's findings regarding pathology which was described as "one of the greatest deficiencies observable in many dental curricula" and stressed that medical courses were not ideal for dental students. [83] However, bacteriology and biochemistry were not mentioned.

Teaching in clinical dentistry - the need to acquire "a high degree of manual and technical skill" - was emphasised and the report stressed that science and theory should not be emphasised at the expense of

clinical subjects - "the enlargement of our medical scientific horizon must not be allowed to obscure the need for adequate technical training". [84] Indeed, the FDI recommended that more time be allocated to a broader range of clinical dentistry including crown and bridge prosthesis, orthodontics and major and minor oral surgery, and it was recommended that the final year be devoted largely to clinical practice.

The FDI's report noted that schools benefited only indirectly from grants paid to universities and that the government provided no financial assistance to dental students, other than the Government's grants to ex-service students. [85] The report also drew attention to the lack of government funding and inadequate provision for post-graduate study and research in the United Kingdom. Guy endorsed Sir George Newman's memorandum Recent Advances in Medical Education which had stressed dentistry's role in preventive medicine:

The new knowledge of bacteriology and infection, anaesthesia, antiseptic surgery, venereal disease, the principles of pathology, and the methods of radiology are all brought fully into application. Dentistry may now become, for the first time, an organized instrument and means of preventive medicine. [86]

For this to be achieved standards of education needed to be broader than the LDS, capable of widening the

horizons of general dental practitioners and research scientists. But funding was inadequate to support teaching or research or to assist dental students and demand for postgraduate professional education was undeveloped with attendance poor. [87] Although the Dental Board sponsored post-graduate lectures, and the higher dental diploma promoted higher standards in clinical dentistry, there was no state provision for post-graduate study or research. [88] The money financed by dentists through their annual retention fee and allocated by the DBUK to MRC-funded dental research was allocated at the discretion of the MRC. Although Guy suggested that the Dental Board should fund buildings and equipment and make educational grants to students, this was asking much of a body financed by a professional levy.

Thus, although the strengths of British dental education lay in its attention to scientific and medical principles, compared with the technical specialisation in the United States, by the 1920s dental education in the United Kingdom appears deficient on both counts. The influence of the GMC may have perpetuated demand for the college LDS and delayed the evolution of the dental curriculum in the United Kingdom. [89]

The GMC recommendations issued in 1933 bear out the FDI's report of deficiencies in both scientific and clinical teaching and went some way towards

remedying the deficiencies. The report was for the first time divided into two sections, with lengthy reports on the dental curriculum compiled by C.F. Rilot, LDS, MRCS, LRCP, and on the "general subjects" by Farquhar MacRae, MB. [90] Neither was a dental graduate and their qualifications underline the fact that the dental profession was still governed by the medical profession. Their reports also reflect the lack of consensus regarding the appropriate balance between science and clinical practice in the dental curriculum.

Rilot's report on the clinical dental curriculum endorsed William Guy's report to the FDI and expressed concern that too much time was spent on the sciences whereas standards in clinical dentistry were low:

Dental Metallurgy, Dental Materia Medica and Therapeutics, Orthodontia, the extraction of teeth and the administration of anaesthetics ... in many cases cannot be considered adequate.

[91]

There should be more emphasis on "manipulative dexterity" with "frequent and repeated practice under skilled instruction and guidance", conservative dentistry should be widened to include amalgam filling, gold inlays and porcelain crowns and more attention should be paid to "simpler inflammatory conditions, and the diagnosis of dental caries."

[92] Apparently less progress had been made in

clinical dentistry and oral sciences than in the medical curriculum. [93] Rilot also stressed that "examination ... should be the rule rather than the exception". [94] Orthodontics was not generally examined and examination in extractions and anaesthesia varied greatly. [95]

Rilot's report indicates the differences between LDS and degree at this time. The degree was one year longer than the four year LDS, "in most cases" required extra courses in practical dental mechanics and dental hospital practice, and in practical examinations the degree standard was "higher and the marking more stringent". [96] Therefore the degree offered a higher standard in clinical dentistry rather than in the oral sciences and was therefore aimed at general practitioners or teachers of clinical dentistry rather than research scientists, as had been anticipated by exponents of the dental degree at the turn of the century. Even in the universities standards in some subjects were low.

Whereas Rilot criticised the amount of time spent on the sciences at the expense of clinical dentistry, Farquhar MacRae, MB, found that standards in science and medicine were less than adequate. Examinations in medicine were "as a whole very disappointing". [97] It was however becoming recognised that universities were more likely to initiate curricular change. For instance, the Universities of Birmingham, Liverpool

and St. Andrews were the only centres to hold separate examinations in dental pathology and bacteriology in accordance with GMC recommendations. Conversely, MacRae specifically criticised the college system in two respects. Firstly, the colleges played no part in regulating teaching for its examinations: "The Royal College of Surgeons of England seems to lack the measure of control over the education of the candidates". [98] Secondly, compared with the universities, college standards were low. Indeed it was reported that the standard of the Scottish and Irish Colleges "though adequate, scarcely reaches the standard at the Universities" and that the general subjects compared "most unfavourably", not just with the universities, but "with any other examination". [99] In such criticism lay the beginning of the end of the previously unassailable supremacy of college qualifications in dental surgery.

However, within the universities the relative importance of science, medicine and clinical dentistry remained a matter of controversy and preference. The response of the universities to the draft recommendations emphasises the absence of consensus on the appropriate university education for dentists, another consequence of the absence of a corps of dental graduates directing dental education and of a dental council equivalent to the GMC. [100] For instance, whereas the Universities of Liverpool and

Manchester did not favour practical examinations in extraction and anaesthesia, the University of Birmingham favoured raising the standard in general anaesthetics and the University of London recommended examination in local as well as general anaesthesia. [101]

Pathology, medicine and surgery were not securely established in the dental curriculum. The University of Sheffield favoured a reduction of time spent on anatomy, physiology and clinical medicine in order to extend the dental subjects. [102] The universities of Bristol, London and Manchester favoured reducing the time spent on pathology and Birmingham, Manchester, Bristol, Liverpool and Sheffield regarded the course as excessive. Birmingham opposed the inclusion of medicine and surgery in the final examination and Liverpool referred to "the purely accessory value" of medicine and surgery in both curriculum and examination. [103] Sheffield viewed the examination in general medicine as "of little value in the present conditions". [104] The phrase "in the present conditions" is significant: medicine and surgery were still regarded as being beyond the aspirations of the majority and there was neither the incentive nor the means to raise standards to a level for which there was little demand.

The revised recommendations recognised the need to co-ordinate the curriculum in a logical, mutually

dependant whole: "systematic Courses in Medicine and Surgery and the Clinical instruction should, as far as possible, be co-ordinated" and emphasised the need to develop courses "specially adapted for students in dentistry". [105] Once again the recommendations extended the medical curriculum, emphasising the biosciences and oral medicine. [106] For instance, there were examinations in human anatomy, physiology, histology, general pathology, histology, materia medica, therapeutics and a clinical examination on the diagnosis and on treatment of dental disease and abnormal conditions of the oral cavity. And, whereas courses in materia medica and therapeutics were extended (from ten to sixteen meetings), metallurgy was reduced from twenty to sixteen. [107]

Improved facilities allowed greater clinical specialisation. Orthodontics was taught as a course in its own right, the examination in medicine included "clinical, examination of patients" and the examination in "Practical Dental Surgery" included a "clinical examination on the diagnosis and treatment of dental disease and abnormal conditions of the oral cavity". [108] The 1933 GMC Recommendations specified that examinations must include practical tests in "the filling and extraction of teeth and administering anaesthetics", but made no reference to other conservative techniques. The examination in practical dental surgery was restricted to a narrow

range of dental operations such as filling and extracting teeth and administering anaesthetics. [109] It is possible that a dental council might have attached more importance to remedying deficiencies in the clinical dental curriculum. However, although conservative dentistry was not stressed, the GMC recommendations emphasised diagnostic skills. Despite the need for institutional education, owing to the increasing sophistication and specialisation in dental techniques, a new "hardship" clause provided "exceptional treatment" for those who had taken practical instruction prior to registering as students. [110] Concessions which compromised the integrity of the curriculum were still regarded as necessary for those who could not afford the commitment to full-time institutional training. Such compromises continued to undermine the integrity of professional education for a profession already damaged by the influx of unqualified "dentists 1921".

The GMC recommendations issued in 1938 still relate primarily to the licence, which remained the minimum requirement for entrants to the profession. [111] Entry requirements reflected the ongoing improvements in school education. Students had to be one year older (eighteen) and the preliminary examination omitted elementary physics and chemistry. Although the 1933 "hardship" clause was rescinded, students could begin their studies as pupils of

registered dental practitioners, an important concession to dental technicians who wished to qualify as dentists. At a time of economic depression four years of full-time study was financially beyond the reach of many candidates and their parents. [112] Nevertheless, standards in pupillage and in poorly-funded non-university dental schools were significant factors in forming later policies which eventually brought dental mechanics into the dental schools and drew dental schools into universities equipped with resources to provide higher standards.

Dental curricular reports and recommendations suggest that by the late 1930s university standards in the sciences and medicine, where the functions of teaching and examination were integrated and monitored by university boards of study, were superior to the system of teaching in hospitals and schools for college examinations. The period 1920-40 was one of great change in medical education and research with better funding provided by the UGC and the MRC. Close links with medical faculties meant that it was possible to develop teaching in science and medicine. However, dental education remained under-resourced and teachers were often private dental practitioners with little opportunity for research. There was therefore less progress in developing courses in either oral sciences or clinical dentistry. [113]

However, in the long term university dental

education had improved methods and standards of teaching and expanded the curriculum. Degree subjects were gradually assimilated into the curricula for university diplomas which meant that the university LDS was superior to the college LDS, particularly in the biological sciences. Thus, although there were few dental graduates, universities narrowed the distinction between the inadequacies of the previous system of training for the college LDS and the advantages of a university degree. However, while these trends improved standards in professional training for dentists, they also blurred the distinction between degree and diploma and undermined demand for the degree. Universities needed better funding channelled directly to dentistry and more dental graduate appointments to develop dental courses. Grants to cover the cost of the longer degree course would also be a crucial factor in widening access to the degree. [114] Meanwhile, the cost of training combined with the lack of demand for dental treatment meant that demand for dental degrees was effectively restricted to an affluent minority, for whom prospects in other professions were better.

Following a period of increased awareness by both government and the profession of the need for wider access to dental treatment and significant progress in professional education, the standard of its professional qualification, conditions of employment,

career prospects and the status of the dental profession remained unattractive and the expanding curriculum was beyond the means and aspirations of the majority of candidates. Despite general acceptance among those directing dental education of the need for a higher standard of training and qualification, the LDS was preferred by the majority of entrants to the profession and there had been no progress towards establishing the degree as the qualification required for entry to the profession.

Nevertheless, there was considerable consensus among arbiters of standards, that training and examination for college examinations was inadequate and that, even if the degree standard was not yet appropriate for the majority of dental practitioners, teaching should be carried out in institutions capable of promoting higher standards in education and research. The formation of the Education Consultative Committee of the Dental Schools of Great Britain in 1931, which became the Dental Education Advisory Council of Great Britain and Ireland in 1937, enabled university teaching staff, represented by dental deans, to play a greater role in determining and co-ordinating standards in dental curricula and examinations. [115] Their beliefs had influenced the redrafted GMC recommendations in 1938 and would find broader implementation in the radically altered conditions of the period following the Second World

War.

APPENDIX 9.1: APPOINTMENT OF SALARIED CHAIRS PRIOR TO 1957

1920 Liverpool

William Henry Gilmour

1931 Leeds

T. Talmage Read

1935 Birmingham

Hubert F. Humphreys

1935 Manchester

Frank Clare Wilkinson

1935 Sheffield

George L. Roberts

1936 Durham

Robert V. Bradlaw

1938 Dundee

H. Gordon Campbell

1951 Glasgow

James Aitchison

Sources: CHAPMAN, Arthur W. The Story of a Modern University: a history of the University of Sheffield. Published for the University of Sheffield by Geoffrey Cumberlege. Oxford University Press, 1955, p. 367; FISH, Sir E. W. "Designing Dental Education. The first F.C. Wilkinson Commemoration lecture, Manchester, 1954". BDJ, v.97, 1955, pp. 1-13; FISH, E. Wilfred. "The Future of Dentistry". BDJ, v.82, 1947, pp. 35-45; HENDERSON, T. Brown. The History of the Glasgow Dental Hospital and School, 1879-1979. Glasgow: Printed by W.S. Bisset & Son Ltd., [1980], pp. 52-53; HODSON, J.J. "Oral Pathology as a University Discipline: the nature and relevance of its speciality". University of Sheffield inaugural lecture, 29 November, 1961; KELLY, Thomas. For Advancement of Learning: the University of Liverpool, 1881-1981. Liverpool University Press, 1981, p. 255; SHIMMIN, A.N. The University of Leeds: the first half-century. Published for the University

of Leeds at the University Press Cambridge, 1954, p. 185; SOUTHGATE, Donald. University Education in Dundee: a centenary history. Published for the University of Dundee by Edinburgh University Press, 1982, p. 188; VINCENT, Eric W. and HINTON, Percival. The University of Birmingham: its history and significance. Birmingham: Cornish Brothers Ltd, 1947, p. 229.

9.4. ENDNOTES

1. FISH, Sir Wilfred. "100 Years of British Dental Surgery". JADA, v.63, 1961, pp. 102-103. For details of his career and standing within the profession see Appendix 10.3: Biographies.
2. Personal communication. J.A.Donaldson, 1990; "Dental Education". BDJ, v.41, 1920, pp. 771-774. Edit. and MACKINTOSH, J. Kyle. "The Future of the Dental Profession". Presidential Address to the North of Scotland Branch of the British Dental Association, May 15, 1925. BDJ, v.46, 1925, pp. 678-680.
3. "The Royal Commission on the National Health Acts". BDJ, v.46, 1925, pp. 321-341.
4. Previously entry to the RAMC had been restricted to those with a medical qualification. [COHEN, R.A. and SPENCER, E.M. (eds). The Advance of the Dental Profession: a centenary history, 1880-1980. London: BDA, 1979, pp. 237-238.]
5. DAVIES, J.B.M. Community Health, Preventive Medicine and Social Services. 5th ed. London: Bailliere Tindall, 1983. Cited by TOWNER, E.M.L. History of Dental Health Education. London: Health Education Authority, 1987. ROWLETT, A.E. "The Association, the Dental Board and Dental Health Education". BDJ, v.51, 1930, pp. 157-159. Cited by TOWNER, E.M.L., 1987, p. 25.
6. The Dental Health Propaganda Committee formed in 1923 was renamed the Dental Health Education Committee in 1924. [TOWNER, E.M.L., 1987, pp. 23-30. GUY, W. "The Work and Policy of the Dental Board". BDJ, v.49, 1928, pp. 419-425.]
7. CALE-MATTHEWS, G.F. "The Supply of Dentists and the Public Needs". BDJ, v.49, 1928, pp. 867-869.
8. Personal communication. 1990. J.A.Donaldson.
9. "The Number of Students Joining the Dental Schools". BDJ, v.50, 1929, pp. 1023-1027. Edit.
10. "Dental Service to Members of Co-operative Societies". BDJ, v.44, 1923, pp. 1133-1134. Association intelligence; "The Royal Commission on the National Health Acts". BDJ, v.46, 1925, pp. 321-341.
11. "Dental Inspection and Treatment for School Children". BDJ, v.46, 1925, pp. 1132-1133. Edit.; "An Important Advance in School Dentistry". BDJ,

- v.46, 1925, pp. 1105-1107. Edit. and "The Royal Commission on the National Health Acts. Extracts from the Minutes of Evidence. Memorandum Submitted on Behalf of the British Dental Association. Minutes of Evidence of the 18th day, Questions 9209-9461". BDJ, v.46, 1925, pp. 321-341.
12. FISH, E. W., "The Future of Dentistry". BDJ, v.82, 1947, pp. 35-45.
 13. The Public Dental Service Association was formed in 1923 to protect the interests of all concerned with the provision of NHI dentistry and to make consultation between the two professional bodies possible. [Written communication. J.A.Donaldson. 1988.]
 14. MACKINTOSH, J. Kyle. "The Future of the Dental Profession". Presidential Address to the North of Scotland Branch of the British Dental Association, May 15, 1925. BDJ, v.46, 1925, pp. 678-680.
 15. "The Spens Committee". BDJ, v.82, 1947, pp. 48-49. Edit. Returns of questionnaires to all dentists asking for particulars of income and expenditure for the years 1936, 1937 and 1938 showed that few dentists were making large incomes. [Report of the Interdepartmental Committee on the Remuneration of General Dental Practitioners. Chairman Sir Will Spens. London: HMSO, 1948. C.M.D. 7402.]
 16. "The Number of Students Joining the Dental Schools". BDJ, v.50, 1929, pp. 1023-1027. Edit.
 17. FISH, E. W., 1947, pp. 35-45.
 18. Professor A.D. Hitchin was the sole candidate for the final BDS (Durham) in 1932. But for other personal circumstances, Professor Hitchin would have taken a medical degree. [Personal communication. Professor A.D. Hitchin. May, 1989.]
 19. Personal communication. Professor A. D. Hitchin, May 1989.
 20. ELLIS, Sir John. LHMC, 1785-1985: the History of the London Hospital Medical College. London: London Hospital Medical Club. 1986, p. 53.
 21. Personal communication. David Hamilton, Director of the Wellcome Unit for the History of Medicine. University of Glasgow. 1987.

22. "The Number of Students Joining the Dental Schools". BDJ, v.50, 1929, pp. 1023-1027. Edit.
23. CALE-MATTHEWS, G.F. "1896-1928: Presidential Address to the British Dental Association". BDJ, v.49, 1928, pp. 910-914.
24. CALE-MATTHEWS, G.F., 1928; "Concerning Dental Schools". BDJ, v.47, 1926, pp. 952-955. Edit.; "The Number of Students Joining the Dental Schools". BDJ, v.50, 1929, pp. 1023-1027. Edit. The particular advances in dental education referred to were: radiography, bacteriology, vaccine therapy, local anaesthesia, prolonged nitrous oxide anaesthesia and great advances in orthodontic practice.
25. ROWLETT, A.E. "The Contribution of Dentistry to Medicine". BDJ, v.45, 1924, pp. 1573-1578.
26. FISH, Sir E. W. "Designing Dental Education. The first F.C. Wilkinson Commemoration lecture, Manchester, 1954". BDJ, v.97, 1955, pp. 1-13.
27. The Dentists Act, 1921. Clause 10 stated that :
The Board shall, after paying any expenses incurred by the General Medical Council in the execution of their duties under the principal Act and this Act, and any expenses of the Board ... allocate any money received by them, whether by way of fees or otherwise, to purposes connected with dental education and research or any public purposes connected with the profession of dentistry in such manner as the Board with the approval of the Council may determine.
28. TATTERSALL, W.R. "The Future of the Dental Profession". BDJ, v.46, 1925, p. 680.
29. Written communication. J. A. Donaldson. 1989.
30. "Report of the Educational Grants Committee of the Dental Board". BDJ, v.45, 1924, pp. 481-483.
31. Written communication. J. A. Donaldson. 1989.
32. For instance, whereas in 1910 the new dental hospital in Liverpool had been funded by public subscription and fund-raising events, in 1921 improved accommodation and training facilities to permit the School's transfer to the University were funded by University and DBUK funds. [KELLY, Thomas. For Advancement of Learning: the University of Liverpool 1881-1981. Liverpool: Liverpool University Press, 1981, pp. 159 and

- 255.] See also the Dental Board Educational Grant Committee Reports e.g. "Report of the Educational Grants Committee of the Dental Board". BDJ, v.45, 1924, pp. 481-483; BDJ, v.65, 1938, pp. 253-256 and "Educational Grants Committee". BDJ, v.69, 1940, pp. 70-71.
33. FISH, Sir E. W., 1955.
34. HENDERSON, T. Brown. The History of Glasgow Dental Hospital and School, 1879-1979. Glasgow, [1980], p. 47.
35. Of £15,000 from Louis S. Cohen. [KELLY, Thomas., 1981, p. 255.] See Appendix 10.3: Biographies for details of Gilmour's career and status within the profession.
36. CHAPMAN, Arthur W. The Story of a Modern University: a history of the University of Sheffield. Published for the University of Sheffield by Geoffrey Cumberlege, Oxford University Press, 1955.
37. See Appendix 10.3: Biographies.
38. STONES, HUBERT H. Oral and dental diseases: aetiology, histopathology, clinical features and treatment: a textbook for dental students and a reference book for dental and medical practitioners. Edinburgh: E.& S. Livingstone, 1948.
39. After the Second World War Stones fought successfully for more full-time teaching staff and by 1957 there were twelve. [KELLY, Thomas, 1981, p. 430 and BDJ, v.119, 1965, p. 369. Obit.] In Durham, grants from the DBUK established the first dental chair in 1936, but a research scholarship established in 1937 was endowed by W. Parker Brewis and MRC funding assisted research. [FISH, E. W., 1947, pp. 35-45.]
40. T. Talmage Reid was appointed in 1931 to the second UK dental chair in Clinical Dental Surgery in the University of Leeds, with financial support from the DBUK. [SHIMMIN, A.N. The University of Leeds: the first half-century. Published for the University of Leeds at the University Press, Cambridge, 1954.]
41. In Durham progress in other subjects was also slow: 1936; Oral Surgery and Operative Dentistry, 1946; Prosthodontics and Children's Dentistry, 1951; Oral Physiology, 1963; Oral Anatomy, 1964. [BETTENSON, E.M. The University of Newcastle-

upon-Tyne: a historical introduction. The University of Newcastle-upon-Tyne, 1971.]

42. The first research assistant in oral and dental pathology in Manchester was appointed in 1947, but work was carried out in the Department of General Pathology. [HODSON, J.J. "Oral Pathology as a University Discipline: the nature and relevance of its speciality". Inaugural lecture delivered 29th November, 1961. The University of Sheffield.]
43. CHAPMAN, Arthur W., 1955, p. 367.
44. HENDERSON, T.B., [1980], p. 47.
45. Personal communication. Dr. J.H. Noble. 1991.
46. When the Dental School and Hospital in Newcastle-Upon-Tyne transferred to a new building and the school was taken over by the University of Durham in 1931, the cost of the new Dental Hospital and School was met from a variety of sources: a donation of £12,600 from Sir Arthur Munro Sutherland, and a grant of £3,500 from the DBUK, plus funds accumulated by the Dental Hospital. [University of Durham College of Medicine Calendar, 1936-1937. pp. 179-180 and BETTENS, E.M., 1971.] Similarly, in Leeds the new Dental School and Hospital which opened in 1928 cost £35,000, towards which the DBUK contributed £5,000 plus a further sum for equipment. A substantial part of the cost of the new building was met by credit balances accumulated when honorary clinical lecturers were running the school. [SHIMMIN, A.N., 1954, p. 185.] Medical schools also drew funds from a variety of sources, but they benefitted from a long history of endowment, from fees for university teaching and from an appeal which dental services lacked.
47. The DBUK had offered a grant towards the project and local benefactor Sir Charles Clifford had undertaken to purchase a suitable building, together with £5,000 towards the endowment of a chair and but he died before this came to fruition and it was not until 1950, after the establishment of the NHS that the Ministry of Health financed the new Dental Hospital with equipment provided from funds left by Sir Charles Clifford. [CHAPMAN, Arthur W., 1955, pp. 368 and 427-428.]
48. This section on Glasgow and Dundee is derived substantially from material in HENDERSON, T.Brown. The History of Glasgow Dental Hospital

and School, 1879-1979. Glasgow, privately printed, [1980] and SOUTHGATE, Donald. University Education in Dundee: a centenary history. Published for the University of Dundee by Edinburgh University Press, 1982.

49. In 1937 Ordinance no.38 was approved by His Majesty in Council, and dentistry was fully incorporated into the university system. This provided for the degree of BDS by adding one year to the LDS and the degree of MDS by adding a clinical examination and original thesis to the work for the BDS, The LDS had been awarded previously by the University of St. Andrews. [SOUTHGATE, D., 1982, p. 188.]
50. SOUTHGATE, D., 1982, pp. 186-7.
51. Although the DBUK gave £600 in 1933 towards improved facilities to accommodate 70 students, the work cost £1,350 instead of an estimated £1,000. The following year the DBUK gave £400 towards £974 spent on equipment. [SOUTHGATE, D., 1982, p. 187.]
52. Dr. William Boyd offered £2,500 per annum for seven years on condition that £500 per annum went towards a professor or lecturer's salary. The remainder was to accumulate an endowment of over £14,000 to fund a Chair. Campbell was the first full-time professor of dentistry in the University not engaging in private practice and his appointment was designed to co-ordinate clinical teaching and supervise students in the Dental School. In the year of his appointment the University Court granted £160 towards post-graduate instruction. [SOUTHGATE, D., 1982, pp. 187-188.]
53. In Dundee in 1935-36 half the revenue from dental fees went to the medical college to support the pre-clinical curriculum. [SOUTHGATE, D., 1982, p. 189.]
54. HENDERSON, T.B., [1980], p. 49.
55. The DBUK offered £500 per year for five years towards the salary of a full-time teacher of clinical dental surgery and Director of Dental Studies, on condition that the appointee was of university professorial status on a minimum salary of £1,000 per annum. [HENDERSON, T. B., 1979, p. 46.]
56. HENDERSON, T.B., [1980], p. 47.

57. GMC Minutes, 1922. Report of the Dental Education and Examination Committee. Appendix IX, pp. 279-284.
58. Ibid.
59. "The Recommendations of the General Medical Council and the Dental Curriculum". BDJ, v.43, 1922. pp. 667-669. Edit.
60. Despite the importance attached to mechanical dentistry, especially by the BDA, the GMC recommended that specialisation should not begin too early:
it is not desirable that the specialization of studies should begin at too early a stage" ... " the general subjects should be taught with a view to meeting the requirements of Dental Students [while] the special subjects should be so arranged as to ensure a sufficient knowledge and the requisite skill in Operative and Mechanical procedures.
[GMC Minutes, 1922. Appendix IX, p. 280].
61. GMC Minutes, 1922. Appendix IX, pp. 279-284.
62. University of Liverpool Calendar 1919-20, pp. 285-299 and University of Liverpool Calendar. 1922-23, pp. 294-308. The University Archives.
63. Its President was Charles S. Tomes and Messrs Dolamore, Gilmour and Guy were committee members.
64. The University of Liverpool's BDS curriculum included a course on anaesthetics and dental materia medica included therapeutics. The new regulations requiring experience as a medical clerk in out-patient departments was already an established part of the Liverpool course. [University of Liverpool Calendar 1919-20, pp. 285-299 and University of Liverpool Calendar. 1922-23, pp. 294-308.]
65. As was the case for the University of Durham's LDS, where the course in dental pathology was the same as that for the MB BS. [Personal communication. Professor A.D. Hitchin. May 1989.]
66. "Educational Supplement". BDJ, v.44, 1923, pp. 941-950.
67. GMC Minutes, 1922. Appendix IX, pp. 279-284.

68. AMIES, Arthur B.P. "A Liberal Approach to Dental Education: the Ernest James Goddard oration, 1955". Reprinted from the Australian Journal of Dentistry, December, 1955; FISH, E.W. and MacLEAN, I. "The Distribution of Oral Streptococci in the Tissues". BDJ, v.61, 1936, pp. 336-362; ROUND, H., KIRKPATRICK, H.J.R. and HAILS, C.S. "Further Investigations on Bacterial Infections of the Mouth". Proceedings of the Royal Society of Medicine, Sec. of Odont. 29, 1552, Oct. 1936; STONES, H.H. "Advances in Dentistry" Reprinted from The Symposium on Advances in Treatment, 1952. The Practitioner, v.69, 1952, pp. 434-440.
69. GMC Minutes, 1922. Appendix IX, pp. 279-284.
70. Interview. Professor A.D. Hitchin. May 1989.
71. Personal communication. J.A. Donaldson. 1989.
72. GMC Minutes, 1922. Appendix IX, pp. 279-284.
73. BDS and medical qualifications: 7; LDS and medical qualifications: 227. [Entry-by-entry analysis of The Dentists' Register, 1923.]
74. "Educational Supplement". BDJ, v.43, 1922, pp. 810-816.
75. "Educational Supplement". BDJ, v.44, 1923, pp. 941-950.
76. The BDA also emphasised teaching in children's dentistry and advised students to carry out a course of orthodontic treatment. ["Educational Supplement". BDJ, v.43, 1922, p. 814.]
77. INTERNATIONAL DENTAL FEDERATION. Commission of Education. BDJ, v.44, 1923, pp. 1222-1253. TURNER, Charles R. "The Ideal Curriculum (Preliminary, Scientific, and Especially Professional) for Dental Education Up To the Standard Required for the Efficient Practice of Dentistry: Delivered at the International Dental Federation Commission of Education meeting on Tuesday, August 7, 1923 at the Hotel Majestic, Paris". BDJ, v.44, 1923, pp. 1222-1226 and GUY, William. "Report to the Commission on Dental Education of the F.D.I.". BDJ, v.44, 1923, pp. 1226-1228.

The Federation Dentaire Internationale (FDI) was established in 1900 by Frenchman Charles Gordon to "represent the profession of dentistry on a voluntary non-governmental international basis, to sponsor an annual world congress, and

- to establish and encourage international programmes which will advance the science and art of dentistry and the state of the profession". [CLENNETT, Margaret A. Keyguide to Information Sources in Dentistry. London: Mansell, 1985, p. 15.]
78. For details of his career and positions held see Appendix 10.3: Biographies. ["William Guy". BDJ, v.88, 1950, p. 337. Obit. and COHEN, R.A. and SPENCER, E.M. (eds), 1979, p. 249.]
79. TURNER, Charles R., 1923, pp. 1222-1226 and GUY, William, 1923, pp. 1226-1228.
80. Ibid.
81. Following the 1921 Act only those examinations which were inspected were recognised and previous to that date very few American Dental qualifications were registrable in the UK. [Personal communication. Professor A.D. Hitchin. May 1989.]
82. GMC recommendations specify only human anatomy and dental anatomy, practical dental histology and morbid histology. [GMC Minutes, 1922. Appendix IX, pp. 279-284.]
83. TURNER, Charles R., 1923, pp. 1222-1226 and GUY, William, 1923, pp. 1226-1228.
84. Ibid.
85. The Commission noted the since the Scottish Education Department did not recognize dental schools as "central institutions", they received no central grant. The Commission also reported differences in the cost of the LDS curriculum, ranging from £222 in Edinburgh to £367 in Leeds.
86. NEWMAN, Sir George. "Recent Advances in Medical Education". p. 151, para. 208. Quoted in "The Report to the Commission on Dental Education of the F.D.I. (1923)". BDJ, v.44, 1923, p. 1247.
87. "Notes and Comments". BDJ, v.46, 1925, p. 1167.
88. The Royal College of Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons in Glasgow introduced Higher Dental Diplomas in 1920, to promote higher achievement in clinical skills. This also enabled the College to retain its role as a qualifying association at a time when university influence was increasing. ["Dental Education". BDJ, v.41, 1920, pp. 771-

774. Edit.]

89. The power-struggle between colleges and universities to direct education and issue qualifications was also a feature of medical education in the U.K. which delayed demand for university medical qualifications until the early twentieth century. Relations between the Faculty of Physicians and Surgeons, the university and the extra-mural colleges in Glasgow present one such example. [JENKINSON, J., MOSS, M. and RUSSELL, I. The Royal: the history of the Glasgow Royal Infirmary 1794-1994. Published by the Bicentenary Committee on behalf of Glasgow Royal Infirmary NHS Trust. 1994. pp. 24, 38-39, 48, 74-75, 77 and 124-125] A similar account of the London experience is to be found in PETERSON, M. Jeanne. The Medical Profession in Mid-Victorian London. Berkeley: University of California Press, 1978. pp. 12-16, 33 and 35.
90. GMC Minutes. 1933. RILOT, C.F. General Report on Dental Examinations (Dental Subjects), pp. 4-13. MacRAE, Farquhar. General Report on Dental Examinations (General Subjects), pp. 14-16.
91. GMC Minutes. 1933, pp. 4-13.
92. GMC Minutes. 1933, pp. 4-13.
93. Examination regulations varied considerably. There was no clinical examination at the universities of Belfast, Birmingham, Durham, Dublin, Sheffield and St. Andrews, the National University of Ireland and the Royal Colleges of Edinburgh and Ireland. The universities of Birmingham, Dublin, Durham, Sheffield and St. Andrews and the Royal College of Surgeons of Edinburgh examined both extraction and anaesthesia. The universities of Bristol, Leeds, London and Manchester did not examine either. The standard in operative dental surgery was reported to be high at the University of St. Andrews. [GMC Minutes. 1933, pp. 4-13.]
94. GMC Minutes. 1933, pp. 4-13.
95. The Royal College of Surgeons in Ireland had no examination in Dental Anatomy and Physiology. Dental Materia Medica and Therapeutics was treated as a separate subject, with a written and oral examination in the Universities of Belfast, Bristol, Leeds, Liverpool, Manchester and St. Andrews. The Universities of Birmingham, Dublin, the National University of Ireland and the Royal Colleges of Surgeons of Ireland and Edinburgh

included one question on dental materia medica in the dental surgery paper, and therapeutics was covered in the oral examinations. [GMC Minutes. 1933, pp. 4-13.]

96. Standards in the University of Birmingham were significantly higher with extra lectures, practical work, written papers and oral examinations in dental surgery, prosthetic dentistry, dental comparative anatomy and dental histology and a practical in dental histology and patho-histology plus a "very thorough" examination in clinical surgery in relation to dental surgery. [GMC Minutes. 1933, pp. 4-13.]
97. MacRAE, Farquhar. General Report on Dental Examinations (General Subjects). GMC Minutes. 1933, pp. 14-16.
98. GMC Minutes. 1933, pp. 14-16.
99. GMC Minutes. 1933, pp. 14-16. Criticism of the Scottish and Irish colleges for attempting to increase their revenue by undercutting the RCS Eng.'s fees and standards was not new. [YOUNGSON, A.J. "Medical Education in the Later 19th Century: the science take-over". Medical Education, v.23, 1989, pp. 480-491.]
100. GMC Minutes, 1933. Dental Education and Examination Committee. Report on the recommendations as to the course of study and examinations to be required of candidates for degrees or licences in dentistry or dental surgery, pp. 201-207. Appendix III, pp. 1-7.
101. Ibid.
102. Ibid.
103. Ibid, pp. 202-203.
104. Ibid, p. 203. However Liverpool favoured a combined course of pathology and bacteriology and an additional course in dental pathology. [Ibid, p. 202.]
105. Ibid, p. 205.
106. There were more practical courses in anatomy, physiology, general pathology, bacteriology, medicine, surgery, dental mechanics, metallurgy and prosthetics; general pathology had been moved from the dental to the general curriculum and there were new courses in histology (previously part of the physiology course), in bacteriology

(previously part of general pathology) plus instruction in "venereal diseases with any bearing on dentistry". [Ibid.]

107. Ibid.
108. Ibid, p. 207.
109. The recommendations regarding anaesthesia remained imprecise and did not specify examination of administration of local or general anaesthetics. [Ibid, p. 207.]
110. Ibid, p. 206.
111. GMC Minutes. 1938. Appendix II. Report by the Dental Education and Examination Committee. Recommendations on the Course of Study and Examinations for Licences in Dentistry, pp. 190-192.
112. Those who had spent two or more years in an apprenticeship in dental mechanics after the age of sixteen, could count six months as part of their period of registration. [Personal communication. Professor A.D. Hitchin. May 1990.]
113. Personal communication. Professor A.D. Hitchin. May, 1989.
114. The grants available only covered the LDS years. [Interview. Professor A.D. Hitchin. May, 1989.] This was also a significant factor in medical education. For instance in Glasgow Carnegie Trust grants from 1901 helped to overcome the financial barrier to university medical education. [JENKINSON, J., MOSS, M. and RUSSELL, I., 1994, p. 152.]
115. LEIGHTON, B.C. "The Dental Education Advisory Council: 50 Years". BDJ, v.149, 1980, pp. 267-268.

CHAPTER 10: 1940-1957: DENTISTRY AND THE ADVENT OF THE NATIONAL HEALTH SERVICE

After the Second World War dental services and professional education continued to suffer the effects of the profession's long history of neglect and compromise. This chapter will analyze the effects of this legacy on dentistry within the National Health Service (NHS), with reference to government reports, university curricula, General Medical Council (GMC) recommendations, contemporary periodical literature and detailed analysis of The Dentists Register. In particular, examination of the reports of three government-sponsored departmental committees will show that, long disadvantaged in these respects compared with medicine, dentistry suffered acutely from inadequate funding and failure to implement recommendations to make good the deficiencies and that, within the NHS, dental services and the dental profession continued to be victims of compromise. However, in the long term, changes in government policy and improvements in funding contributed to better career prospects and higher standards of professional education.

This chapter will examine the impact of the government's increased commitment to funding health, education and welfare during the nineteen-forties and

nineteen-fifties on the dental profession and on professional education for dentists. [1] During this period there were more school-leavers qualified to enter the universities and, owing to the need for an adequate supply of appropriately qualified dentists to provide a public dental service, the government provided more funds for professional education. The establishment of a subsidised dental service within the NHS offered better career prospects and this in turn impacted on demand for professional education.

The chapter will conclude by examining new legislation, The Dentists Acts, 1956 and 1957, which established autonomy for the profession and also created new technical and auxiliary grades of dental personnel which reflected the increasing specialisation of dental practice made possible by higher standards of professional education. During this period, for the first time the majority of dental practitioners were qualified and dentistry became established as a graduate profession. Detailed analysis of The Dentists Register, 1957 will show the impact of this period of rapid change on demand for university dental education and qualifications.

10.1. THE DENTISTS REGISTER 1947

Analysis of The Dentists Register 1947 (a complete analysis is shown in Appendix 10.1) provides a picture of professional qualifications on the eve of the establishment of the NHS. Of the total number of registered dentists shown in the "Table Showing the Numbers and Original Qualifications of Persons Registered on January 1, 1947", the percentage of unqualified practitioners had dropped to 31% but, of those qualified, only 20% held university qualifications, and only 2% had taken the degree as their first qualification (Table 10.1). However, 17% held a university LDS as their first qualification compared with only 3% in 1923. Thus, although the majority of registered dentists still held a college LDS and the Royal College of Surgeons of England's LDS was still the favoured qualification, the number taking university qualifications was increasing.

TABLE 10.1: THE DENTISTS REGISTER 1947. FIRST QUALIFICATIONS

| | | |
|-------------------------------------|---|----------------------|
| <u>TOTAL REGISTERED</u> [2] | : | 15,025 |
| <u>TOTAL UNQUALIFIED</u> [3] | : | 4,723 |
| "Dentists, 1878" | : | 54 |
| "Dentists, 1921" | : | 4,669 |
| <u>COLLEGE LDS</u> | | |
| RCS, Eng. | : | 4,693 |
| RCS, Edin. | : | 1,115 |
| RFPS, Gla. | : | 1,237 |
| RCS, Irel. | : | 272 |
| <u>TOTAL</u> | : | <u>7,317</u> |
| <u>UNIVERSITY LDS</u> | : | <u>2,608</u> |
| <u>BDS</u> | : | <u>326</u> |
| <u>TOTAL QUALIFIED</u> | : | <u>10,302</u> |

Source: "Table Showing the Numbers and Original Qualifications of Persons Registered on January 1, 1947. The Dentists Register 1947", p. xv.

This picture of continuity in uptake of professional qualifications is endorsed by entry-by-entry analysis of The Dentists Register 1947. Of those who had qualified since 1921 (Table 10.2), 4% had taken the BDS as their first qualification, and a further 3.5% had taken the BDS after qualifying LDS. The majority of the latter had a university LDS as their first qualification (Table 10.2). Thus, the

number of dentists holding the BDS was still insignificant compared with the number qualifying LDS and the number holding a college LDS was double that with a university LDS. [4]

TABLE 10.2: THE DENTISTS REGISTER 1947. QUALIFICATIONS TAKEN 1921 OR LATER

| | |
|--|-----------------------|
| <u>TOTAL QUALIFIED SINCE 1921</u> | : <u>6,747</u> |
| BDS | : 251 |
| College LDS and BDS | : 72 |
| University LDS and BDS | : 150 |
| University LDS, BDS and College LDS | : 18 |
| <u>TOTAL BDS</u> | : <u>491</u> |
| | |
| <u>UNIVERSITY LDS</u> | : <u>2,093</u> |
| | |
| <u>COLLEGE LDS</u> | : <u>4,163</u> |
| Edin., Gla., or Irel. | : 1,341 |
| RCS, Eng. | : 2,822 |
| [5] | |
| <u>TOTAL LDS</u> | : <u>6,256</u> |

Source: Entry-by-entry analysis of The Dentists Register 1947.

Of those who had taken university qualifications since 1921, 152 had also taken the LDS of the RCS, Eng., several having qualified LDS, RCS Eng. after having

graduated BDS. [6] So, although the number of university qualifications was increasing, the prestige of the RCS, Eng. LDS was still a significant factor in determining demand for university qualifications.

There was little demand for a research degree in dentistry. The long-established MDS remained unpopular. However, the demand from those qualified LDS for higher clinical qualifications was increasing. The late establishment of dental degrees in the Scottish universities may have contributed to the demand for the Higher Dental Diploma (HDD) awarded by the Scottish colleges. Those with a college LDS were more likely to take the HDD: 90 had taken the HDD in addition to a college LDS whereas only 38 had taken a university LDS followed by the HDD (Table 10.3). Only four had taken the HDD following a BDS. [7] The HDD may have been attractive compared with the expense of full-time study to qualify BDS. The HDD which emphasised clinical practice may also have been preferred to the emphasis on medical science in university dental education. Demand for the HDD therefore highlights two factors - the continuing appeal of college qualifications and also the demand for clinical qualifications.

TABLE 10.3: THE DENTISTS REGISTER 1947. HIGHER DENTAL QUALIFICATIONS [8]

MDS

| | | |
|----------------------------------|----------|------------------|
| College LDS and MDS | : | 3 |
| University LDS, BDS and MDS | : | 7 |
| BDS and MDS | : | 2 |
| University LDS, BDS, MDS and HDD | : | 1 |
| <u>TOTAL MDS</u> | : | <u>13</u> |

HDD

| | | |
|--------------------------------------|----------|-------------------|
| College LDS and HDD | : | 90 |
| University LDS and HDD | : | 38 |
| College LDS, university LDS and HDD: | | 2 |
| BDS and HDD | : | 4 |
| University LDS, BDS and HDD | : | 1 |
| <u>TOTAL HDD</u> | : | <u>135</u> |

Source: Entry-by-entry analysis of The Dentists Register 1947.

Some dentists also held medical qualifications (Table 10.4). The diversity in patterns of qualification suggests the absence of a clearly defined career path measured out in professional qualifications. Unlike medicine where the qualifications required for the post of Medical Officer in public institutions influenced the uptake of professional qualifications from the late nineteenth century onwards, in dentistry, prior to

1947, there was no structured career path.

By 1947 there was more demand for the BDS than for medical qualifications: 491 held the BDS compared with only 203 with both dental and medical qualifications (Table 10.4). Although a significant number of those qualifying LDS had taken medical qualifications, of whom the majority held a college LDS followed by the college MRCS, LRCP, few dental graduates went on to take a medical degree. [9] For the majority, the BDS was an end in itself rather than a step in the process of becoming a medically qualified dentist.

TABLE 10.4: THE DENTISTS REGISTER 1947. MEDICAL QUALIFICATIONS

LDS AND MEDICAL QUALIFICATION

| | |
|-----------------------------------|---------------------|
| College LDS and MRCS/LRCP | : 152 |
| College LDS and MBChB | : 6 |
| University LDS and MRCS/LRCP | : 6 |
| University LDS and medical degree | : 5 |
| College LDS, MRCS, LRCP and HDD | : 9 |
| College LDS, MDS and MRCS | : 2 |
| University LDS, HDD and MRCS | : 1 |
| LDS, MRCS and MBChB | : 5 |
| LDS, MRCS, MBChB and DPH | : 1 |
| <u>TOTAL</u> | <u>: 187</u> |

BDS AND MEDICAL QUALIFICATION

| | |
|---|--------------------|
| BDS and medical degree | : 5 |
| BDS and college med./surg. qualif. | : 4 |
| BDS, MDS and MBChB | : 1 |
| College LDS, BDS, MDS and MBChB | : 2 |
| College LDS, BDS, MDS, MRCS and MBChB | : 2 |
| University LDS, BDS, MBChB and MRCS | : 1 |
| University and College LDS, BDS, MDS, MBChB and MD | : 1 |
| <u>TOTAL</u> | <u>: 16</u> |

TOTAL DENTAL AND MEDICAL QUALIFICATIONS : 203

Source: Entry-by-entry analysis of The Dentists Register 1947.

Since 1923 there had been a substantial increase in the number taking a university LDS, but the number qualifying BDS was still small. However, henceforth all candidates for LDS or BDS would be taught in the universities.

10.2. POSTWAR RECONSTRUCTION: THE GOODENOUGH AND TEVIOT REPORTS

In the period following the Second World War government policy and funding completely altered access to health and education at all levels. The National Health Service Acts of 1947 and 1948 established the NHS as part of the post-war programme of reconstruction and the government became more directly involved with staffing levels, recruitment and qualifications for the professions of medicine and dentistry. It also became more widely accepted in government circles that the high standards required in medical and dental practice were directly related to standards of professional education and research.

The government's White Paper on Educational Reconstruction was followed by The Education Act, 1944 which laid down the principle of secondary education for all. [10] This promised a large increase in the number of school leavers qualified for university education. In 1941 the Norwood Committee recommended simplification of the machinery for awarding grants

and placed the responsibility for funding professional education firmly with the government:

the medical schools and other institutions concerned will be unable to incur the necessary additional expenditure unless they receive much larger government grants. [11]

No longer "the exclusive concern of the medical schools and the medical profession", medical education and research became increasingly dependant upon and subject to central government control and thus less subject to rivalries between universities and colleges in the administration and staffing of education for the professions of medicine and dentistry. [12]

The effect of these reports was double-edged. On the one hand the implementation of committee recommendations regarding facilities, resources, staffing levels and remuneration in universities and the NHS promised better career prospects for graduates in state employment and more candidates for places in universities which would be better resourced and better staffed. On the other hand professional education and career opportunities would rely more than ever before on the will and the ability of the government to provide the necessary resources and were consequently affected by the vicissitudes of national economy and government policy. [13] Furthermore, dentistry was not the only profession to require substantial government expenditure in order to

implement the recommendations made by committees reporting during the nineteen forties.

A series of reports (the McNair Report on Teachers and Youth Leaders, the Second Loveday Report on Veterinary Education both in 1944 and the Percy Report on Higher Technological Education in 1945) recommended a large expansion of university education for the professions. [14] The report produced by the Association of University Teachers (AUT) in 1944-45 recommended that university education should be open to all with maintenance grants for undergraduate and postgraduate students. The same report recommended that staff should be able to devote 50% of their time to research. Similarly, the Nuffield College Report in 1948, which recommended that the number of full-time university students should increase from 50,000 to 80,000, was followed by a substantial increase in the number of students and awards from state and local authorities. [15]

Universities enjoyed almost uninterrupted growth for twenty-five years following the end of the Second World War. However, when government resources were over-subscribed the universities and the Health Service were subjected to a "stop-go" policy of "generosity alternating with parsimony". [16] Nevertheless, the overall increase in government funding for education in schools and universities and for health care services, including a dental service,

had a profound effect on education for and career prospects in the dental profession.

The Goodenough and Teviot Committees were appointed by the government to investigate recruitment and professional education for medicine and dentistry and their reports, issued in 1944 and 1946, informed government policy regarding professional education for these professions in the decades following the Second World War. [17] The first of these, The Inter-departmental Committee under the chairmanship of Sir William Goodenough, was appointed in 1942, the same year that Beveridge issued his scheme for a national health service. [18] Goodenough's remit was to examine the organization of medical schools, their facilities for clinical teaching and research and how they should relate to the future hospital service. Goodenough, and its dental equivalent, the Teviot Committee Report, emphasised the need for better funding to improve accommodation and equipment in hospitals and universities, salaries, teaching staff and student grants. With respect to professional education, Goodenough emphasised two factors. Firstly, the quality of services provided by the NHS was directly related to standards of medical education. Secondly, undergraduate medical education based on a "clear understanding of the constantly developing scientific basis of medicine", should take place in "the recognized centres of higher learning -

the universities". [19] Goodenough also drew attention to "the slow maturing of the necessary educational reforms and the assistance from public funds that will be needed for medical education." [20] University medical schools would need to be able to accommodate more students and grants, sufficient to cover the cost of training and maintenance throughout the whole period of training, would be needed to assist recruitment. [21] The importance of post-graduate education and research was also emphasised: teaching and research should receive equal emphasis since medical research depended on "men who have the ability and impulse for scientific enquiry". [22]

Goodenough stressed the urgent need for more professors, readers, senior lecturers, higher salaries, and sufficient junior staff to allow "substantial" time to be devoted to reading, research and post-graduate courses. [23] Schools would need to be rebuilt. The expansion of undergraduate and post-graduate education on the scale envisaged would require "greatly increased financial support from public funds". [24]

Goodenough's recommendations highlighted areas in which dental schools were disadvantaged compared with their medical counterparts. Whereas medicine was provided for by a wide range of grant awarding bodies, dentistry was less fortunate. The Dental Board, the

Medical Research Council (MRC) and the Nuffield Foundation provided some funds, but there was no state funding exclusively allocated to dental research. Similarly, whereas a co-ordinated and comprehensive system of post-graduate medical education was in place, there was little or no provision for post-graduate dental education. Finally, although more doctors would be needed to staff the NHS, existing staffing levels in medicine did not give cause for concern, whereas there was a shortage of entrants to the dental profession.

There was general consensus amongst those teaching dentistry that, compared with their medical equivalents, dental schools were underfunded and understaffed. [25] Student fees which should have been available for teaching were often used to support the hospital; instruction was "totally inadequate"; research had suffered and, owing to the low expectations of dental care and the underfunding of dental facilities, there was not the demand in Britain for the clinical procedures being developed in the United States. [26] The shortage of teaching staff, particularly in anatomy, physiology and pathology, had delayed the development of the undergraduate dental curriculum and dental research. A drastic revision of salaries was needed as well as grants and bursaries to cover the expense of training. [27]

The Inter-Departmental Committee on Dentistry,

which reported in 1946, addressed recruitment, legislation, the government of the profession, the appointment of dental auxiliaries and the measures necessary to promote and co-ordinate research into the causes, prevention and treatment of dental disease. [28] Although dental education was, strictly speaking, not within the Committee's remit Teviot noted that:

it is a subject which bears so closely on the measures to be taken to secure an adequate number of entrants to the profession, that we cannot discharge our reference on that subject without considering ... some of the educational problems.

[29]

Indeed, the Committee's Final Report had much to say regarding dental education and research, provision for both in the universities and the standard of education and qualification appropriate for dentists. Unlike the previous government Committee to investigate standards in dental practice (the Acland Committee) the dental profession formed the majority on Lord Teviot's Inter-Departmental Committee on Dentistry. Eleven of the total of twenty members were dentally qualified and although only one was a dental graduate, five were qualified in both medicine and dentistry. In particular Professor R.V. Bradlaw's influence was subsequently noted in his obituary. [30] The role of the elite of the dental education establishment was an

increasingly significant factor in promoting the case for dental services and high educational standards for those providing such services.

The Report confirmed that, when compared with other professions and particularly medicine, dentistry was relatively unattractive to candidates of graduate calibre. Dentistry did not "offer adequate attractions", nor was it "generally recognised as of importance". [31] Training was long and expensive and considerable capital was required to set up in practice. Yet working conditions and financial rewards were poor compared with medicine, particularly in salaried posts such as public dental officer appointments and the dental branches of the armed forces. Furthermore, the dentist was "not fortified by public estimation of his value to the same extent as his medical colleague". [32] In order to increase the numbers of students substantially there would need to be plenty of work, adequate remuneration, good conditions of service, good buildings and equipment, reasonable hours and vacations and opportunities for further study.

Little had changed since 1919 regarding attitudes to and the delivery of dental care, the general public were not well informed and remained apathetic to dental health. The dental condition of male recruits to the army had not improved significantly since the First World War and a survey of elementary school

children in 1938 had revealed that 50% of those inspected needed dental treatment. [33] The cost of treatment was a significant factor since National Health Insurance dentistry and the treatment provided in dental hospitals and schools were the only public dental services available to the less affluent. Teviot therefore recommended that "a comprehensive dental service should be instituted as an integral part of the NHS at its inception". [34] Crucially, however, the Interim Report's recommendation that the service should be "equally available to all [and] paid for by the community as a whole", was dropped. [35] This meant that, within the NHS, dental services were not established on the same terms as the equivalent medical services.

The Final Report addressed the means to recruit and train the quantity and quality of dentists required to deliver dental services within the NHS. Existing provision was inadequate. Dental schools were seriously understaffed, poorly resourced and could not accommodate the proposed increase in student numbers. Teviot therefore recommended that:

The Government, the universities and the dental teaching hospitals should make available better educational facilities than at present exist.

[36]

Emphasising that professional education was a public responsibility, Teviot stressed the need for

"government assistance on the most generous scale."
[37] Earmarked UGC grants to dental schools should be made available. There should be more intermediate and junior posts, adequate remuneration for part-time posts, a national scale of remuneration for teachers in dental schools and additional chairs in dental subjects. Thenceforth dental education would be conducted by full-time professional teachers. Equipment and accommodation to cater for an increase in undergraduate and post-graduate students was also needed. In short, dentistry should be treated "not less favourably than subjects of the oldest standing".
[38] In these recommendations Teviot was guided by a submission from the Dental Education Advisory Council, which was also represented on the recently formed Joint Advisory Committee on Postgraduate Medical Education. [39]

Teviot's emphasis on the need to improve recruitment to the profession, recognition that "dental appointments should compare with those available to medical personnel" and the need to remedy "discrepancies between dental and other professions as regards both the number of higher posts available and levels of remuneration generally", were milestones in professional status and recognition. [40]

The Teviot Report was also a milestone in terms of professional education. In the short term a graduate profession was not realistic, since the

number of entrants was still falling, despite relatively low entrance qualifications. [41] Yet, Teviot was committed to the establishment of a graduate profession in the longer term. To overcome the financial obstacle which caused many aspiring dentists to shun the longer degree course, Teviot recommended the introduction of state bursaries to cover the whole cost of the course, including maintenance. [42] The report recommended that "all dental schools should be integral parts of universities" and that entrance standards should conform to those for degree courses in other subjects. [43] Furthermore, reviews of curricula should be directed towards achieving a degree standard and "any lower standard hitherto allowed should ... cease to apply as soon as practicable". [44]

Teviot also echoed Goodenough's emphasis on the need to improve post-graduate education for research scientists, clinical specialists and general practitioners and Teviot maintained that this was the responsibility of the state:

the encouragement of dental research is the duty of the whole community rather than the profession, and the necessary funds should therefore be provided by Parliament. [45]

The Report's emphasis on the link between good teaching and research and the importance of "a proper appreciation of the scientific basis of training"

further endorsed the value of university dental education. [46]

Teviot also addressed the repetitive and technical nature of some dental work which meant that dentistry was less attractive as a profession when compared with medicine. The committee recommended that certain duties be delegated to skilled dental technicians and attendants to enable dentists to develop conservative, surgical and preventive dentistry. This would enhance conditions within the profession, improve standards of dental care and provide a stimulus to recruitment and to professional education. Finally, endorsing the Acland report twenty years previous, Teviot recommended that the GMC's supervisory role should be transferred to a reconstituted Dental Board or Council. [47]

The Goodenough and Teviot Reports highlighted the inadequate staffing and resources for university medical and dental education. Both reports had recommended substantial increases in funding and recruitment. The crucial differences highlighted by the respective reports were that recruitment to and opportunities in the dental profession and staffing and resources for university dental education were considered much worse than in medicine.

The message was clear. Dental education could not be financed by fees from patients, students or dental practitioners. Government funding, in the form

of increased UGC grants, was needed. Teviot's recommendations drew attention to the need to establish dentistry as an autonomous profession, the need for generous government funding and the desirability of establishing the university degree as the appropriate training for dentistry. The recommendations promised better university education and better career prospects which suggested that dentistry might shortly be placed on an equal footing with medicine in terms of resources, standards and status. However, implementation would require a massive injection of government funds at a time when other professions also required substantial additional funding and the Exchequer was burdened by the cost of the National Health Service.

10.3. PROFESSIONAL EDUCATION, 1945-1956

Implementation of several of Teviot's recommendations was swift. In 1947 the UGC assumed responsibility for funding dental schools attached to universities, UGC recurrent grants were substantially increased and earmarked for dental schools. The profession was thus released from its obligation to finance professional education and "a new epoch in the financing of British universities commenced". [48] As Professor Hitchin, Dean of the University of Dundee's Dental School pointed out, this "belated, but

decided, encouragement to dental education" established a sounder financial footing and provided staff and facilities which would enable dentistry to catch up with medicine in training and research. [49]

To be eligible for UGC funding dental schools had to amalgamate with universities, a process which was complete by 1947, notably in Glasgow where the University of Glasgow assumed responsibility for dental education in 1946 and, two years later, the degrees of BDS and MDS were approved. [50] Students commencing study were enrolled for the degree course and new full-time teaching appointments were made. At the same time, under the terms of the NHS (Scotland) Act, 1947 the Glasgow Dental Hospital was transferred to the State and the number of departments and specialist services increased.

However, lack of accommodation for an increase in student numbers persisted during the 1950s and 1960s and made a nonsense of Teviot's recommendations regarding increased recruitment. [51] For instance, the new Dental School in Newcastle was not completed until 1967 and, in the interim, the intake of students had to be limited. Although in medicine staffing levels in some hospitals were also "woefully inadequate", the staffing crisis was more acute in dentistry. [52]

Following the establishment of the NHS, staffing

in the university dental schools became a subject of concern outwith the profession. [53] The Inter-departmental Committee on the Remuneration of General Dental Practitioners (the Spens Report), which reported in 1948, endorsed Teviot's recommendations regarding the need for more teaching staff and recommended that salaries should exceed those for non-teaching consultants. [54] Implementation of these recommendations enabled universities to recruit teachers and researchers who would otherwise have found better-paid opportunities as consultants within the hospital service. [55] The appointment of whole-time teachers and professors was regarded by Sir Wilfred Fish as "the most important factor in the evolution of a more scientific and conservative approach to our professional responsibilities". [56] From 1948, dental schools experienced a period of continued, if inadequate, expansion. The UGC's recurrent grants increased, substantial capital grants were made to rebuild or extend dental schools, the UGC raised the salaries of full and part-time lecturers and new full-time lecturers were appointed. [57] From 1945 Nuffield Foundation dental fellowships and scholarships promoted undergraduate dental education and postgraduate dental research. Substantial Nuffield Foundation grants to university dental schools promoted dental research, particularly in the biological sciences and led to the appointment of

dental lecturers with degrees in dentistry, medicine or science. [58] The Nuffield Chair in Oral Medicine and the Lectureship in Physiology, established in Newcastle in 1945, are examples of the beneficial effects of this new source of funding. [59]

Although strictly speaking beyond the terms of reference of this study of undergraduate dental education, the history of university dental education in the United Kingdom during the twentieth century cannot be seen in isolation from dental research. The status, reputation and influence of the dental profession and dental education was sustained by dental research. From the 1930s onwards the appointment of dental scientists as university professors had provided a stimulus to both university teaching and research. Problems encountered in teaching clinical dentistry prompted research which in turn stimulated and nourished teaching. Professional university dental educators actively engaged in or working alongside those undertaking dental research, and thus extending understanding of dental disease and of methods of treatment and prevention, would produce dental graduates competent in the current state-of-the-art. Thus, although in general the dental profession, represented by the majority of general dental practitioners, had not the interest in or opportunity for dental research, the elite of the dental education establishment actively promoted the

development of both teaching and research. Their efforts would bear fruit in the improved financial conditions of the period following 1956.

As dentistry became more firmly established as a university discipline, with a hierarchy comprising general dental practitioners, hospital clinicians, consultants, university lecturers, professors and research scientists, increasing specialisation was accompanied by changes in the structure of the profession at the lower level. Following Teviot's recommendations, in 1946 the BDJ's "Educational Supplement" included a new section specifically devoted to the training of dental technicians. This new grade relieved dentists of some technical functions and the dental curriculum could be extended without lengthening an already long course.

The introduction of a dental hygienist grade would also relieve general practitioners of routine tasks, promote dental health education and reduce the cost of dental treatment. The appointment of ancillary staff to relieve dentists of routine functions appealed to the government as a solution to the shortage of dentists and waiting lists. However, the introduction of dental operative assistants was perceived by the profession as "panic legislation", a cost-cutting exercise, a second-rate solution to the manpower shortage, an unsound response to the sudden and unreasonable expectations of NHS dentistry and an

attempt to "deprive the profession of a monopoly it has held for thirty years" which would damage recruitment. [60] More teachers and more schools were needed rather than "a class or classes of operating technicians". [61] Even the BMA questioned the decision to train "semi-skilled workers rather than fully qualified dentists". [62] Professional opposition to the appointment of dental hygienists delayed new dental legislation for ten years, from 1947 until 1957. [63] Indeed, the amalgamation of the IDS, PDSA and BDA in 1949 to form a new BDA in 1950 was an expression of the need for solidarity amongst members of a profession confronted by a challenge to their status and a threat to their earnings. [64] However, in the long term technical and auxiliary grades were a realistic response to increasing professional specialisation and the cost of the services of qualified dental practitioners.

At a time of significant change in government commitment to funding dental education, change in the GMC's curricular recommendations was less marked. In 1951 the recommendations, which had been in operation since 1933, were described as "old and obsolete". [65] The GMC acknowledged that a medical council was ill-equipped to regulate the dental profession and had in 1943 recommended that its duties be transferred to a Dental Board or Council, a recommendation endorsed by the Teviot Report. [66] In the meantime, the GMC

had co-opted more dental representatives than the terms of The Dentists Act, 1921 permitted and had appointed a Special Committee to assist with revision of the curriculum. The profession's elite intended that:

the practice of the future shall be preventive and conservative and not as at present so heavily preoccupied with these makeshift alternatives to nature's own provision. [67]

As dentistry embarked on an era of conservative and preventive dentistry, the curriculum's emphasis on biological and medical sciences provided the foundations necessary to effect this change. [68]

University curricula continued to evolve beyond the standard required for the diploma, which remained the standard required for admission to the Register. For instance in 1946-47 the University of Liverpool's LDS curriculum included biology, biochemistry, pathology, bacteriology, odontology, medicine and orthodontics. [69] Similarly, the St. Andrews LDS included dental radiology, dental jurisprudence, oral hygiene and diseases of the ear, nose and throat which do not appear in some BDS curricula. [70]

New GMC recommendations issued in 1951 were more detailed and were divided into pre-clinical and clinical studies. [71] The place of the biological sciences was assured - an extra term of physiology being added to the pre-clinical studies and whereas

3,000 hours were devoted to clinical instruction, the teaching in dental mechanics was reduced from 2,000 to 800 hours. [72] Thus by the 1940s the dental curriculum's emphasis had shifted from craft to science. [73] During the nineteen-fifties the clinical curriculum was most affected by change. The number of lectures, classes, demonstrations and examinations was rigidly specified and included periodontal disease, the pathology of the teeth, preventive dentistry, conservative dentistry and legal and ethical obligations. [74]

Delay in improving the quality and quantity of teaching staff had delayed improvement in the curriculum. Indeed, the GMC suggested that higher standards owed more to "an efficient and adequate staff" than curricular recommendations and noted that variation in the scope of the curricula and examinations were directly related to the number of whole-time teachers. [75] Standards "generously exceeding" the minimum requirements for the licence were reported in schools with "a large, efficient, and capable whole-time staff" and "scientific subjects, with a laboratory background" (dental anatomy, physiology, pathology and bacteriology) were markedly superior in schools directed by a whole-time professor or reader. Conversely, the shortage of appointments in the basic sciences meant that the examination in dental physiology was often less than adequate. [76]

The GMC recommended the use of external examiners and whole-time status for at least one examiner, a recommendation which speaks volumes in terms of the lack of a full-time teaching establishment in many dental schools. To upgrade dental education to a truly university standard long-standing deficiencies in accommodation, facilities, equipment and staff establishment would need to be remedied and, although UGC funds had been made available, it would take years to implement the necessary changes.

10.4. DENTISTRY WITHIN THE NATIONAL HEALTH SERVICE

During the Second World War, for the first time dental treatment of a high standard was available free of charge to the substantial section of the young adult population serving in the armed forces. This helped to raise expectations and demand for dental treatment. [77] The National Health Service Acts, 1947 and 1948 established in principle a free and full medical and dental service financed by a state insurance scheme. It was intended that:

every person in the country, whether they are or are not paying an insurance contribution, will be entitled to claim treatment under the Act. [78] Teviot had anticipated that better access to dental treatment would promote demand for a wider range of dental treatment which would in turn stimulate

recruitment to the profession and demand for training. The establishment of the NHS impacted on the number and quality of staff required. Whereas much had been done to improve teaching facilities in the universities, less had been done to implement Teviot's recommendations regarding recruitment. In 1948-49 the number of registered dentists fell by 251. A large number of registered dentists were nearing retirement - owing to the huge influx of "dentists, 1921" - and it was anticipated that the retirement rate would increase to 800 per year in the decade 1945-55. [79] Whereas Teviot had urged an increase in the workforce from 12,000 to 20,000 and an increased entry to dental schools from 400 to 900, intake actually fell from 650 in the late 1940s to 470 in the mid-1950s. [80]

Several factors contributed to the decline in entrants. Firstly, the first generation to reap the benefits of wider access to secondary school education did not reach university entrance age until the 1950s. [81] Secondly, university dental schools could not accommodate a substantial increase in student numbers and, since all university faculties were undergoing a period of expansion following recommendations that the numbers of graduates in, for instance, engineering, teaching and medicine should be increased, the funds needed to rebuild or extend university dental schools were in short supply. Thirdly, despite an initial improvement in the status of dental officers and a

"marked improvement" in their salaries, in the short term NHS dentistry did little to improve prospects and working conditions, particularly for general dental practitioners. [82] Career positions within the NHS at the hospital level were few and the scope of general practice was limited and repetitive. Overwhelmed by the demand for extractions and dentures, which were initially free of charge, general dental practitioners were faced with the "dismal task" of providing "a make-shift service for those who have neglected their dental health, and for whom, he may begin to fear, the profession ... has nothing better to offer." [83]

In the early years of the NHS, recruitment was also affected by the government's heavy-handed treatment of remuneration for general dental practitioners. [84] Whereas doctors were paid on a capitation basis, dentists were paid according to an item of service scale of fees decided by the government, a power which the government "would not dream of claiming over doctors". [85] The limited range of treatment covered by the scale of fees meant that initially NHS dentistry focused on a "mechanical rather than a biological attitude towards the living tissues". [86] And, since treatment required the prior approval of the Dental Estimates Board (DEB), dentists were harassed by a multitude of petty restrictions and their clinical freedom was

restricted. [87] This system did little to broaden or raise perceptions of dentistry in the public estimation and the limited range of treatment approved by government and demanded by the general public scarcely justified a university dental education. Indeed, the restrictions on treatment provided by the NHS, led some undergraduates to question the justification for certain courses. [88] The cost and length of training were similar to medicine: career prospects were not. This had contributed to the lack of competition for places in university dental schools which was necessary if standards were to be raised.

Worse was to follow. In 1949 the government imposed a ceiling which reduced earnings over £400 per month by 50% and further "arbitrary and unilateral action" which was "wholly unacceptable to the profession" reduced fees by 20% from June of that year. [89] By the 1950s the "idea of a comprehensive health service was consigned to the realm of utopian dreams". [90] The NHS proved "vastly more costly than had been projected" and the government's economic difficulties led to "a return to an uncertain financial environment that the NHS was supposed to have finally dispelled". [91] In 1949 a professional editorial suggested that:

The ultimate success of the dental part of the Health Service depends on the active co-operation of a profession whose members are satisfied with

the standard of their remuneration and on its consequent power to attract a steadily increasing flow of recruits. These conditions cannot obtain if the scale of fees is to be liable to arbitrary or frequent revision. [92]

The profession agreed to accept the report of the Working Party on the Chairside Times Taken in Carrying Out Treatment, as a basis upon which to calculate a scale of fees. [93] The Committee found:

clear evidence that the majority of dentists who took part in the survey were working at a punishing pace which could not be sustained owing to the great demand for dental services evoked by the National Health Service. [94]

The report, based on a random sample of 500 dental practitioners (which amounted to about 5% of NHS general dental practitioners) reported that high earnings often resulted from the need to work long hours to cope with the increased demand for treatment. It was estimated that 64% of general dental practitioners were working chairside hours 25% longer than the 33 hour week recommended by Spens. The profession concluded from the report and that there was "no shadow of justification" for the cuts. [95]

Despite Penman's findings, the government imposed a further cut in earnings of 10% from 1 May 1950 and dealt a further blow to NHS dentistry by introducing charges for dental treatment for all but the priority

classes - expectant and nursing mothers and persons below twenty-one. [96] Since, unlike medicine, NHS dental treatment was not completely free of charge, this "altered the basis on which practitioners entered the service to their disadvantage". [97] Even The Times commented that the new charges amounted to "financial tactics" rather than "medical or social strategy". [98]

In evidence to the Guillebaud Committee appointed in 1953 to examine the cost of the NHS, the BDA pointed out that expenditure on the general dental service had been arbitrarily and steadily reduced since its inception and that by 1953 dentists average earnings were 22% below the level recommended by Spens. [99] Guillebaud recommended that reductions in charges for treatment "should have the highest priority when additional funds become available" and endorsed the BDA's proposal that charges should be refunded to those who received comprehensive and regular treatment. [100] Yet Guillebaud conceded that a fully comprehensive health service was not feasible "in the foreseeable future, whether it was provided free or otherwise". [101] Guillebaud also recommended fluoridation and the employment of dental ancillaries: the priority was to reduce the cost to the Exchequer.

Thus dentistry remained peripheral to the NHS, reinforcing the public's perception of dental care as

a luxury. Initially, NHS dentistry favoured mediocrity which would "inevitably tend to lower the standard of dentistry and hinder the advancement of dental science". [102] Good recruits would only be attracted by "certainty of employment and the opportunity of reasonable reward". [103] Instead, the profession suffered from the demoralising effects of "economy cuts and bureaucratic hindrance". [104] A profession which had been subjected to "violent fluctuations in the demands for its services and arbitrary reductions in the standard of its remuneration" and in which prospects appeared to "diminish in quality as they expanded in quantity" was unlikely to attract the best candidates. [105] In 1956, The Financial Times endorsed dentists' grievances:

The most disturbing fact about dentists' earnings is the way they have fluctuated over the past few years. The knowledge that pay is subject to arbitrary cuts at the whim of the responsible Minister is probably one of the reasons contributing to the shortage of dentists.

[106]

An editorial in the BDJ asked "What dentist, under the present conditions ... can honestly recommend dentistry as a career?" [107] Thus, in the short term the NHS did little to promote demand for higher standards of professional education for general dental

practitioners.

The shortcomings of early NHS dentistry were twofold. Firstly, the dental establishment was inadequate to provide dental treatment on the scale required. Secondly, "handicapped by its ancestry", the dental service was assigned a low priority within the NHS and it was easier for the government to effect economies in this area than in other areas of health care. [108] Although, in the longer term the charges undermined the economic advantage of denture work and effected a shift towards conservative dentistry, demand for the latter increased only gradually and was less lucrative. In the short term the sudden drop in demand for dentures brought hardship to many dentists. [109] Many were ill-equipped for this change. Indeed, doubts were expressed regarding the quality of conservative work and "the probity of practitioners" by the Comptroller and Auditor General - an indictment of professional competence and thus of professional education. [110] Thus, despite wider opportunities for university education and better career opportunities in universities and in dental hospitals generally prospects in medicine, similar to dentistry in terms of entrance qualifications, standard and duration of training, remained more attractive.

10.5. THE MCNAIR COMMITTEE REPORT, 1956

Concern within and beyond the profession regarding the lack of candidates and the anticipated shortage of dentists led to the appointment of the Committee on Recruitment to the Dental Profession "to ascertain the reasons for the lack of candidates of suitable calibre for training as dentists and to indicate possible directions in which remedies might be sought". [111] Dental representation on the Committee on Recruitment to the Dental Profession chaired by Lord McNair amounted to almost 50% (five of a total of eleven members). Crucially, Sir Wilfred Fish and Professor F.C. Wilkinson were members. Both were dental graduates, university professors and eminent, active and vocal advocates of university education and research.

The report, which was published in 1956, confirmed that "the vigorous measures" recommended by the Teviot Committee had not been implemented and that by 1956 the problems which had been identified by Teviot were much worse. [112] The shortage of dentists, which affected all sections of the dental service with the exception of consultant and specialist grades, was "deep-rooted and of long-standing". [113] Dental treatment was perceived as an optional rather than an essential part of the NHS and the needs of dental education had been

subordinated to those of the medical faculties.

During a period in which the government had improved funding for health care, dentistry had not been a priority. Whereas demand for treatment had increased, recruitment to the profession had not. An aged profession was not being replaced and the per capita ratio of dentists compared poorly with other countries. [114] McNair reported low morale and "financial uncertainty" among dentists. [115] There had been three reductions in earnings since 1948 at a time of high inflation. Several factors - the cost of training for a profession which was of low status compared with other professions, the attitude of the public (content to have their teeth treated by untrained practitioners and to remedy toothache by extraction), the dissatisfaction of dentists with inappropriate conditions of service and the profession's "bad press" owing to the high earnings of some dentists in the early days of the NHS had contributed to the shortage of dentists. [116] Dentistry lacked:

the appeal and perhaps even the glamour attached to medicine and some other professions, so that it has not been able to attract recruits in sufficient numbers to meet the calls which the nation is about to put upon it. [117]

McNair endorsed dentistry's key role within the NHS. The Report's "Digression on the Contribution of

Dentistry to Health" concluded that "bodily health will be incomplete if dental health is lacking" and stressed that "in a civilized community an effective dental service is an essential". [118] Yet the level of recruitment reflected the low priority assigned to dental treatment within the NHS. Indeed, in 1955 the government was accused of failing to establish dental health education programmes for fear that increased demand for treatment would raise the cost to the Exchequer. [119] McNair stressed that:

The status of any profession is directly dependent upon the value which the public puts upon its services, the quality of work which the members of the profession do and the way in which it is undertaken. The knowledge and the skill required and the training required to produce them, have a direct bearing. [120]

The report therefore recommended "a thorough review of the whole system of remuneration" and, since dentistry was "a preventive science", the report recommended "a comprehensive programme of dental health education" and "continuous publicity on dental health". [121] Funds should be made available to put dental treatment on the same footing as the general medical practitioner service. In the relative prosperity of the period the crux of the matter was not whether "the Nation can or cannot afford to provide comprehensive dental treatment free of charge

to every member of the population", but whether it was willing to do so. [122]

With regard to professional education, McNair noted that whereas the number of appropriately qualified applicants had increased, "relatively little had been done" to implement Teviot's proposed increase in the number of places in dental schools. [123] Schools would need to expand staff and accommodation to accept an increased entry of 60%, which would raise the numbers from 650 to 1,000. [124] Like general dental practitioners, university dental schools had been subjected to a stop-go funding policy. UGC grants to universities had enabled them "to raise the standard of dental education to that more approaching the level of other older established departments in their universities". [125] However, from 1952 UGC grants to dental schools, which had been earmarked since 1946, were left to the discretion of the universities. University dental schools had to compete for funds with other departments and faculties with the consequent danger that "the dental school might be starved of the necessary money" and become "the Cinderella in medical planning". [126] The Faculty of Dental Surgery of the RCS Eng. also noted with "concern" that:

being departments of the faculty of medicine,
[dental schools] must vie with other departments
in the faculty for increased staff and

accommodation and for improved facilities for research. [127]

With regard to dental research, despite Teviot's recommendations, McNair noted that opportunities in research were still "all too rare". [128] There were few consultant or research positions and therefore little incentive to take a higher qualification. [129] McNair recommended that the number of consultant posts should be increased and that facilities for research be improved substantially:

It seems to us essential that there should be better facilities for research ... in the proper university atmosphere. [130]

This would stimulate university teaching departments, enhance the status of the profession and improve standards of dental care.

In the short term the incorporation of dental schools into universities had not remedied the deficiencies in dental education. An editorial in the BDJ observed that without appropriate facilities and staff "the incorporation of the school in a university, degrees, academic dress and titles, are hollow bombast". [131] In some schools standards bore little resemblance to other university subjects, particularly in dental research which "more than anything ... distinguishes a technical school from a university department". [132] The need for quantity

rather than quality of education had delayed progress. By the 1950s the schools could neither accommodate an increased intake nor improve teaching methods and it was suggested that rather than enlarge schools or increase student numbers, conditions for staff should be improved. [133]

Progress in dental education was more adversely affected than medicine by political and economic expediency. [134] As so often in the past medical schools received priority and dental schools were obliged to employ "make-shift reconstructions" to accommodate new subjects. [135] However, in the longer term, university affiliation, UGC funding, professional autonomy, better prospects and conditions for dental graduates in dental hospitals, in university dental schools and in general dental practice would remedy many of the deficiencies which the McNair Committee's Report had underlined.

10.6. THE DENTISTS ACT, 1956 and 1957 AND THE FIRST GDC RECOMMENDATIONS, 1956

New legislation to establish the General Dental Council and regulate the terms of employment of the new grades of dental ancillaries, had been delayed by "strenuous opposition" from the BDA to the clause establishing dental operative assistants as recommended by Teviot ten years earlier. [136]

Although the introduction of dental auxiliaries was regarded by the profession as a substantial concession, restrictions on the clinical duties of ancillary staff enabled the BDA to climb down. It was also anticipated that the newly autonomous profession would be more able to ensure that the Act was applied strenuously and to the benefit of the profession. [137]

The most significant clause of The Dentists Act, 1956 replaced the Dental Board with the General Dental Council (GDC), which became responsible for maintaining The Dentists Register and assessing and monitoring standards of education and examination in the universities and colleges. [138] The DBUK had been "a half-way house" which had left dentistry in "an intermediate state as an appendage of medicine and surgery, neither an integral part nor divorced from it". [139] The transition from a substantially unqualified to a qualified profession, with the retiral of the "dentists 1921", and the profession's new responsibilities under the NHS endorsed the case for professional autonomy. The establishment of the GDC established the dental profession as the "separate and responsible profession" envisaged by Acland, more than forty years earlier. [140] However, dental laboratories remained beyond the jurisdiction of the GDC. [141]

Revised recommendations on education and

examinations, delayed pending the new legislation, were issued by the newly constituted General Dental Council in 1956. [142] These endorsed developments in dental education which had been evolving in the universities over several decades and for the first time set out the minimum requirements for both degree and licence.

All subjects were examined and there were more written examinations in practical and clinical subjects. Courses in the biosciences, designed specifically for dental students, were firmly established in first year of the curriculum. Dental material science and dental mechanics were taught early in the clinical curriculum. General pathology and bacteriology became part of the clinical curriculum and new subjects were added: oral pathology, pharmacology and therapeutics, parodontal (sic.) disease, preventive dentistry and the legal and ethical obligations of dental practitioners. The course in orthodontics was extended from ten to fifteen lectures. It is perhaps a measure of the standard of teaching in conservative dentistry that teaching of "operative technique" still had to be spelt out. The University of Liverpool's curriculum is an example of the way in which universities had extended the curriculum beyond the minimum GMC requirements. Many of the changes recommended by the GMC in 1956 had been adopted in

Liverpool at least ten years previously and, although the course was not divided into pre-clinical and clinical, the curriculum for session 1955-56 was similar to the GDC's recommendations. There was no reference to apprenticeship, the curriculum for LDS and BDS were the same and courses in anatomy and physiology exceeded GDC recommendations by two terms. The course in maxillo-facial surgery suggests a local specialisation in this field. Thus, in the universities the foundations for modern dentistry as a graduate profession had been laid prior to 1956.

10.7. THE DENTAL PROFESSION AT THE END OF THE PERIOD

Analysis of The Dentists Register 1957 (shown in full in Appendix 10.2) shows that, although much remained to be done, the effects of government policy and funding for both education and health were beginning to be noticeable in terms of demand for professional qualifications, particularly the degree. Better school education, the availability of student grants and the integration of dental schools in the universities meant that the demand for qualifications was changing. The number of universities offering the BDS had increased (from 9 in 1947 to 14 in 1957). And, whereas the number of universities offering the BDS doubled between 1923 and 1957 (from 7 to 14), the number offering LDS (10) had remained relatively

constant. [143] The Dentists Register's "Table Showing the Numbers and Original Qualifications of Persons Registered on January 1, 1957" (Table 10.5) shows that, with the retiral of "Dentists, 1921", the number of unqualified practitioners had fallen from 4,726 (31%) in 1947 to 2,553 (17%) in 1957 and the number of graduate entrants, although still small compared with the number of licentiates, had increased substantially since 1947.

TABLE 10.5. DENTISTS REGISTER 1957: FIRST QUALIFICATIONS

| | |
|---|----------|
| TOTAL UK DENTISTS | : 15,431 |
| TOTAL UNQUALIFIED ("Dentists, 1921") | : 2,553 |
| TOTAL QUALIFIED | : 12,878 |
| COLLEGE LDS | : 8,062 |
| UNIVERSITY LDS | : 3,364 |
| BDS | : 1,428 |

[144]

Source: "Table showing the numbers and original qualifications of persons registered in The Dentists Register on 1 January, 1957", p. lviii.

Analysis of the qualifications registered since 1947 (Table 10.6) shows that in the decade following

1947 the demand for qualifications changed in favour of university qualifications, particularly the degree. Firstly, the proportion taking university qualifications (61%) was predominant. Secondly, the number taking a BDS as a first qualification (24.3%) had increased substantially since 1947 and accounted for a significant proportion of new entrants. The number qualifying BDS after qualifying LDS (17.6%) was also increasing and the number taking a university LDS as their first qualification (19%) was less than the number taking degrees. The number taking a college LDS (39%) had fallen significantly in the period 1947-1957 and was less than the total number taking university qualifications. However, the number taking a college LDS in addition to a university qualification had changed little since 1947. [145] Some dentists still chose to endorse their university qualification with a college LDS. The number holding the LDS, RCS Eng. and a University of London BDS (8%) was equivalent to the number holding a university LDS and BDS from all other universities in the United Kingdom (8.1%). This is a measure of the prestige of London qualifications which emphasises the way in which the long delay in establishing a University of London BDS helped to maintain the prestige of the Royal College of Surgeons of England's LDS and its virtual monopoly of dental qualification in London and depressed demand for the dental degrees established in

universities elsewhere in the United Kingdom.

**TABLE 10.6. THE DENTISTS REGISTER 1957. QUALIFICATIONS
TAKEN SINCE 1947: BDS AND LDS**

| | |
|---|-------------------------------|
| <u>NUMBER QUALIFIED SINCE 1947</u> | <u>: 4,523</u> |
| <u>BDS</u> | <u>: 1,102 (24.3%)</u> |
| <u>BDS AS A SECOND QUALIFICATION</u> | <u>: 798 (17.6%)</u> |
| RCS, Eng. LDS and Univ. | |
| of London BDS | : 366 (8%) |
| Univ. LDS and BDS | : 315 (7%) |
| Univ. and College LDS and BDS | |
| | : 54 (1.1%) |
| College LDS and BDS | : 63 (1.3%) |
| <u>TOTAL BDS</u> | <u>: 1,900 (42%)</u> |
| <u>UNIVERSITY LDS</u> | <u>: 850 (19%)</u> |
| <u>COLLEGE LDS</u> | <u>: 1,773 (39%)</u> |
| Edin., Gla., or Irel. | : 614 |
| RCS, Eng. | : 1,159 |
| <u>TOTAL LDS (UNIV. AND COLLEGE)</u> | <u>: 2,623 (58%)</u> |

Source: Entry-by-entry analysis of The Dentists Register 1957

By 1957 there was more demand for higher dental qualifications (Table 10.7). Demand for the HDD fell following the establishment of degrees in Glasgow and Edinburgh in 1947 and the establishment of the RCS,

Eng. Fellowship in Dental Surgery (FDS RCS, Eng.) in 1948. [146] The FDS quickly became established as a prestige higher qualification as shown by the number holding the fellowship in 1957 which is large considering that the qualification had only been available for nine years (Table 10.7). As with the degree, delay in establishing the London fellowship delayed demand for postgraduate dental qualifications. Demand for qualifications in London remained distinctive in that licentiates who had qualified in colleges or universities outside London were less likely to take a FDS (90 compared with 123 qualifying LDS, FDS in London). Although the largest number of dental fellows were qualified LDS, FDS, RCS Eng., (123), 101 had qualified BDS, FDS. Indeed the fellowship would become essential for university and dental hospital appointments throughout the UK.

TABLE 10.7. THE DENTISTS REGISTER 1957. HIGHER DENTAL
 QUALIFICATIONS: HDD and FDS

LDS and HDD [147]

College LDS, HDD : 70

University LDS, HDD : 27

TOTAL : 97

BDS and HDD [148]

BDS, HDD : 12

LDS, HDD, BDS : 5

TOTAL : 17

LDS and FDS [149]

RCS, Eng. LDS, FDS : 123

College LDS and FDS : 46

University LDS and FDS : 44

LDS, HDD, FDS : 61

TOTAL : 274

BDS and FDS [150]

BDS, FDS : 25

BDS, HDD, FDS : 3

LDS, BDS, FDS : 55

LDS, HDD, BDS, FDS : 2

TOTAL BDS and FDS : 85

TOTAL FDS : 359

Source: Entry-by-entry analysis of The Dentists
Register 1957.

The number with a higher degree in dentistry (70) had increased substantially since 1947 (19) (Table 10.8) but demand for a research degree in dentistry was slight compared with the demand for the college fellowship. Thus, at the post-graduate level the colleges retained their place as qualifying bodies for medicine, surgery and dentistry. College membership and fellowship qualifications opened the door to promoted posts in the NHS and, surprisingly, in the universities. The colleges' success in this respect indicates their remarkable resilience despite trends in education for the medical professions which might otherwise have completely eroded their role.

TABLE 10.8. THE DENTISTS REGISTER 1957. HIGHER DENTAL QUALIFICATIONS: MDS AND DDS

| | | |
|-------------------------|----------|------------------|
| LDS, MDS | : | 6 |
| BDS, MDS | : | 15 |
| LDS, BDS, MDS | : | 9 |
| LDS, FDS, MDS | : | 7 |
| LDS, BDS, FDS, MDS | : | 12 |
| LDS, HDD, BDS, MDS | : | 1 |
| LDS, HDD, FDS, MDS | : | 1 |
| BDS, FDS, MDS | : | 15 |
| BDS, HDD, FDS, MDS | : | 1 |
| LDS, BDS, DDS | : | 1 |
| BDS, DDS | : | 1 |
| <u>TOTAL MDS</u> | : | <u>66</u> |
| <u>TOTAL DDS</u> | : | <u>2</u> |

Source: Entry-by-entry analysis of The Dentists Register 1957.

Whereas the number of college licentiates with medical qualifications had decreased substantially since 1947, the number holding degrees in both dentistry and medicine had increased from 5 to 23 in ten years (Table 10.9). Some also held a dental fellowship. Those so qualified were and remain the elite of the dental profession. The small number of college licentiates with both college and university medical qualifications had remained the same.

TABLE 10.9. THE DENTISTS REGISTER 1957. MEDICAL QUALIFICATIONS TAKEN SINCE 1947

LDS AND MEDICAL QUALIFICATIONS

| | |
|---|--------------------|
| College LDS and College med. qualif. | : 33 |
| College LDS and Univ. med. qualif. | : 3 |
| College LDS, College and Univ. med. qualif. | : 5 |
| Univ. LDS and College med. qualif. | : 3 |
| Univ. LDS and Univ. med. qualif. | : 3 |
| Univ. LDS, College and Univ. med. qualif.: | 2 |
| <u>TOTAL</u> | <u>: 49</u> |

BDS AND MEDICAL QUALIFICATIONS

| | |
|---|--------------------|
| BDS and Univ. med. qualif. | : 23 |
| BDS and College med. qualif. | : 8 |
| BDS, College and Univ. med. qualif. | : 7 |
| BDS, MDS and med. qualif. | : 4 |
| College LDS, BDS, MDS, MRCS and MBChB | : 2 |
| University LDS, BDS, MBChB and MRCS | : 1 |
| University and College LDS, BDS, MDS, MBChB and MD | : 1 |
| <u>TOTAL</u> | <u>: 46</u> |

Source: Entry-by-entry analysis of The Dentists Register 1957.

The pattern of qualification beyond entrance level was still varied and those with higher qualifications remained a small minority of the total

qualified. However, the availability of promoted posts in the dental hospital service had generated some demand for higher college qualifications which emphasised clinical practice and also for medical degrees. At the same time dentistry was gradually establishing itself as a graduate profession in which some specialties required dual qualification.

Thus, by 1957, university dental qualifications and the degree in particular had challenged the supremacy of college diplomas: the BDS was becoming established as the standard entrance qualification to the profession (almost 50% of those qualified in dentistry since 1947 were dental graduates) and university dental schools were full to capacity. [151]

During the 1950s and 1960s intake was limited by lack of accommodation and inadequate teaching staff and dental schools continued to encounter "very special difficulties in offering a university education to their students". [152] However, the increase in UGC funding for teaching and research in the late 1960s led to the appointment of teachers (for instance, at the London Hospital Medical College where several new appointments were made between 1958-66), expansion of schools and grants to students. [153] New dental hospitals were opened during the 1960s and 1970s by members of the royal family: a measure of the rise in status of the dental profession. For

instance, following a UGC recommendation that the intake of dental students in the University of Dundee should be doubled, the new hospital was opened in 1967. [154] The government imposed restrictions on the number of places available in medical faculties, based on estimates of the number of personnel required to staff the NHS, which also boosted recruitment to dental schools. [155] So much so that, by the 1970s dental student numbers were checked by government quotas. Henceforth both medical and dental students would become a declining proportion of the undergraduate population. [156] From 1953 universities also benefitted from increased government interest and funding for dental research. [157]

The degree became the standard qualification for dental practice in the period following The Dentists' Act 1956 when the GDC, with the universities and the Royal Colleges, assumed responsibility for regulating standards in training and qualification. Whereas the GMC had been primarily concerned with maintaining statutory requirements to ensure fitness to practise, the GDC was able to look more broadly at standards, not just for producing the best general dental practitioners but also consultants, research scientists and administrators. The increase in the number of suitably qualified candidates with state grants to support them through the longer degree course and the administrative and economic

difficulties of teaching LDS and degree candidates in the same school, led to the demise of the LDS as a university qualification.

This chapter has shown the persistence after the Second World War of factors which had delayed the establishment of dentistry as a graduate profession throughout the first half of the twentieth century. The appeal of college qualifications, which were perceived as prestigious, delayed uptake of university dental qualifications until dental education was firmly established as a university discipline in the period following 1947. Indeed, the resilience and influence of the royal colleges was such that, despite the advent of university education for dentists, the colleges retained their role as prestigious qualifying bodies by awarding higher qualifications for promoted posts in the NHS and in university dental schools. Restricted accommodation and the shortage of teaching staff in under-resourced dental schools limited the impact of university dental education until the more general expansion of university education during the 1950s and 1960s. Poor conditions of service and limited opportunities for career development in the early years of the NHS also deterred candidates for a five-year degree course, especially when medical students and graduates qualified for admission to The Dentists Register in less time than was required for the full dental curriculum. [158]

Nevertheless, this chapter has also shown considerable change in patterns of qualification following the establishment of the NHS. By the late 1950s dentists embarked on a period of greater stability in relation to earnings and conditions of employment. Gradually NHS dental treatment, irrespective of the patient's ability to pay, and the weighting of item of treatment payment in favour of restorative dentistry increased the demand for the services of dentists trained to carry out a broader range of therapeutic and preventive procedures. [159] Curricular change continued to be led by the universities and government policy made possible changes which effected a transition to a graduate profession. In the long term, the establishment of the NHS, the incorporation of dental schools into the universities and UGC funding, provided the vital stimulus and resources necessary to extend university dental education. The massive injection of government funding for both the universities and the NHS was the single most significant factor in widening access to and demand for university training. This enabled the universities to extend the higher standards of training, which they had pioneered, to all dental practitioners.

Those directing dental education were unanimous as to the benefits of the most complete and thorough training in pre-clinical and clinical subjects for

creating dental practitioners with potential for the greatest professional development. However, this standard of professional education depended to a great extent on the government's ability and willingness and to finance dental services staffed by personnel trained to this standard. The consolidation of this achievement would depend on the government's ongoing commitment to funding dental services, university dental schools and student grants.

APPENDIX 10.1. ANALYSIS OF THE DENTISTS REGISTER 1947

| | |
|---|-----------------------------|
| <u>TOTAL REGISTERED</u> | <u>:15,025</u> |
| <u>TOTAL UNQUALIFIED</u> | <u>: 4,726 (31%)</u> |
| "Dentists, 1878" | : 54 |
| ditto with dental qualif. | : 21 |
| "Dentists, 1921" | : 4,672 |
| ditto with med. or surg. qualif. | : 3 |
| ditto with dental qualif. | : 26 |
| <u>TOTAL QUALIFIED</u> | <u>:10,299 (69%)</u> |
| <u>COLLEGE LDS AS FIRST QUALIFICATION</u> | |
| RCS, Eng. | : 4,693 |
| RCS, Edin. | : 1,115 |
| RFPS, Gla. | : 1,237 |
| RCS, IREL. | : 272 |
| <u>TOTAL</u> | <u>: 7,317 (71%)</u> |
| <u>UNIVERSITY LDS AS FIRST QUALIFICATION</u> | |
| Belfast | : 173 |
| Birmingham | : 337 |
| Bristol | : 188 |
| Dublin | : 7 |
| Durham | : 163 |
| Leeds | : 281 |
| Liverpool | : 581 |
| Manchester | : 563 |
| St. Andrews | : 179 |
| Sheffield | : 136 |
| <u>TOTAL</u> | <u>: 2,608 (25%)</u> |
| <u>BDS AS FIRST QUALIFICATION</u> | |
| Birmingham | : 0 |
| Bristol | : 22 |
| Dublin | : 44 |
| Durham | : 31 |
| Leeds | : 12 |
| Liverpool | : 91 |
| London | : 41 |
| Manchester | : 5 |
| Nat. Univ. Ireland | : 80 |
| <u>TOTAL</u> | <u>: 326 (3%)</u> |

Source: "Table showing the numbers and original

qualifications of persons registered in The Dentists Register on January 1, 1947", p. xv.

APPENDIX 10.2. ANALYSIS OF THE DENTISTS REGISTER 1957

| | |
|----------------------------|----------------|
| <u>TOTAL U.K. DENTISTS</u> | : 15,431 |
| <u>TOTAL UNQUALIFIED</u> | : 2,553 (17%) |
| <u>TOTAL QUALIFIED</u> | : 12,878 (83%) |

COLLEGE LDS AS FIRST QUALIFICATION

| | |
|-----------------|----------------------|
| RCS, Eng. (LDS) | : 5,355 (35%) |
| RCS, Edin. | : 1,160 |
| RFPS, Gla. | : 1,286 |
| RCS, Irel. | : 261 |
| <u>TOTAL</u> | : <u>8,062 (52%)</u> |

UNIVERSITY LDS AS FIRST QUALIFICATION

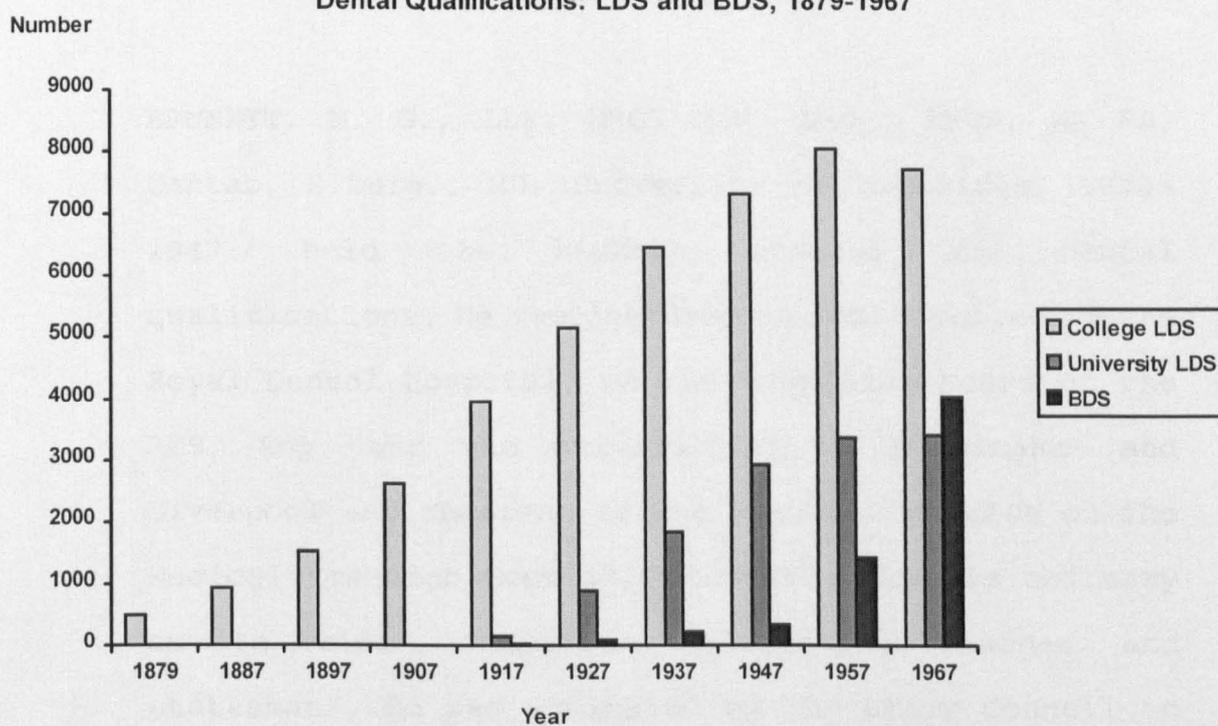
| | |
|--------------|----------------------|
| Belfast | : 246 |
| Birmingham | : 478 |
| Bristol | : 211 |
| Dublin | : 6 |
| Durham | : 328 |
| Leeds | : 374 |
| Liverpool | : 645 |
| Manchester | : 632 |
| St. Andrews | : 243 |
| Sheffield | : 201 |
| <u>TOTAL</u> | : <u>3,364 (22%)</u> |

BDS AS FIRST QUALIFICATION

| | |
|------------------|---------------------|
| Belfast | : 37 |
| Birmingham | : 41 |
| Bristol | : 61 |
| Dublin | : 52 |
| Durham | : 249 |
| Edinburgh | : 51 |
| Glasgow | : 169 |
| Leeds | : 91 |
| Liverpool | : 137 |
| London | : 139 |
| Manchester | : 139 |
| Nat. Univ. Irel. | : 239 |
| St. Andrews | : 21 |
| Sheffield | : 2 |
| <u>TOTAL</u> | : <u>1,428 (9%)</u> |

Source: "Table showing the numbers and original qualifications of persons registered in the Dentists Register on 1 January, 1957", p. lviii.

Dental Qualifications: LDS and BDS, 1879-1967



Sources: "Table Showing the Numbers and Original Qualifications of Persons Registered", The Dentists Register for 1879, 1887, 1897, 1907, 1917, 1927, 1937, 1947, 1957, 1967. These figures are based on the Tables which record the first registered qualifications and do not include university or college LDS or BDS taken as additional qualifications.

APPENDIX 10.3: BIOGRAPHIES

BADCOCK, J.H., LDS, MRCS RCS, Eng., LRCP, 1864-1953, lecturer at Guy's Dental School, London, founded the British Society for the Study of Orthodontics (BSSO) and was President of the Odontological Section of the Royal Society of Medicine. [160].

BENNETT, N. G., LDS, MRCS RCS, Eng., LRCP, MB BS. Cantab, B.Surg., MD, University of Cambridge, 1870-1947, held the highest medical and dental qualifications. He was lecturer on orthodontics in the Royal Dental Hospital, on the examining board of the RCS, Eng. and the universities of Birmingham and Liverpool and chairman of the Dental Committee on the Medical Research Council. Described in his obituary as "a wise counsellor, scientist, teacher and statesman", he was nominated by the Privy Council to succeed Sir Charles Tomes on the GMC. He was knighted in 1930 and became President of the BDA in the same year. [161].

BRADLAW, Sir R., CBE, LDS, MRCS RCS, Eng., LRCP, MDS, 1903-1992, was the first to be appointed in 1936 to the Chair of Dental Surgery in the Newcastle Dental School where, under his "daemoniac" leadership the School expanded "in quality and complexity" and several new whole-term professors and lecturers were

appointed. He was awarded the John Tomes prize of the RCS, Eng. in 1939-42 for his research into the microscopical structure of the dental tissue. He also played an active role in the politics of dental services and dental education. He was a member of the DBUK, promoted the establishment of the GDC, served as its President from 1964-74 and became President of the BDA in 1974. Bradlaw actively promoted the place of dentistry in the NHS, influencing both the Beveridge and Teviot Reports. He founded the Faculty of Dental Surgery of the Royal College of Surgeons of England in 1947, became Dean of the Institute of Dental Surgery, Director of the Eastman Dental Hospital and Professor of Oral Surgery in the University of London. He was awarded the CBE in 1950 and was knighted in 1965. [162].

CAMPBELL, J. M., LDS RFPS, Gla., DDS, LLD University of Toronto, 1887-1974, the eminent dental historian, author and collector was a Fellow of the Royal Society of Edinburgh and became in 1958 the first dentist to become an Honorary Fellow in Dental Surgery of the Royal College of Surgeons of England which subsequently instituted a lectureship in his honour. He was President of the OdontoChirurgical Society of Scotland, 1939-1945. He vociferously opposed The Dentists Act, 1921 and declined to participate in NHS dentistry. He was however very concerned to improve

the dental health of the general public, was a member of the DBUK panel of speakers on dental health education, served on the FDI Commission on Hygiene, gave the first BBC radio broadcast on oral hygiene in 1923, published Those Teeth of Yours: a popular guide to better teeth, aimed at the general public in 1929, and carried out charitable work while running a successful private practice. [163].

CAMPION, G. G., LDS RCS, Eng., 1862-1946, Honorary and consulting dental surgeon to the Manchester Dental Hospital was President of the Odontological Section of the Royal Society of Medicine in 1918, President of the BSSO and of the BDA in 1923. On his retirement he was awarded an honorary M.Sc. from Manchester University. [164].

CUNNINGHAM, G., MA, Cantab., LDS RCS, Eng., DMD, Harvard, 1852-1919, lecturer in dental surgery at the National Dental Hospital and dental surgeon to the London Hospital was among the first dentists to study in the U.S. qualifying DMD at Harvard University in 1876, and only subsequently qualified LDS RCS, Eng. His obituary described him as always asserting the right of the dentist "qua dentist" to full recognition in government departments, medical or educational authorities. He was a member of the Committee appointed by the Representative Board which presented

seven detailed reports on the condition of the teeth of schoolchildren, 1891-97 and persuaded Cambridge to appoint a school dentist in 1907. He was also a founder member of the FDI and with Sir Michael Foster organised its first meeting in London in 1901. [165]

DOLAMORE, W.H., LDS, FRCS, LRCP, 1864-1938, was Dean of the Dental Hospital of London, examiner for the RCS, Eng., and the universities of Leeds and Liverpool. He was nominated by the Privy Council as one of the original members and Treasurer of the Dental Board in 1921 and was President of the BDA during the First World War. [166]

DONALDSON, J.A., OBE, BA, FDS, LDS RCS, Eng., 1914-1993, was a former editor of the BDJ, honorary curator of the BDA Museum, founder of the Lindsay Club (now Society) for the History of Dentistry, author of a chapter on the history of the profession in The Advance of the Dental Profession, lecturer on dental history in the University of Edinburgh, 1970-84, Menzies Campbell lecturer at the RCS, Eng., guest lecturer to the University of Glasgow, the Royal Society of Medicine, and the Royal Institute, secretary of the FDI, chairman of the FDI sub-committee on dental history and of the editorial committee of the Revue d'Histoire de l'Art Dentaire.

[167]

FISH, Sir E. W., CBE, LDS, MBChB, MD Manchester, Dsc. London, FDS RCS, Eng., DSc. Melbourne, 1893-1974, honorary graduate of the University of Durham and Trinity College, Dublin and honorary fellow of the four Royal Colleges and of the RSM, winner of the John Tomes Prize of the RCS Eng., author of dental textbooks which became international standards, was a teacher, scientist and periodontologist. He was President of the FDI Scientific Commission, 1931-1936 and of the International Dental Congress held in London in 1952, a founder member and Dean of the Faculty of Dental Surgery in the RCS Eng., 1956-1959. He emphasised the scientific foundations of clinical dentistry and used his position and influence, as Chairman of the DBUK, 1939-1944, of the Dental Committee on the GMC, first President of the GDC, and as a member of the McNair Committee, to ensure the place of the basic sciences in the dental curriculum, to improve recruitment, training, research and public dental health education. [168]

GILMOUR, W.H., LDS RCS Eng., MDS, 1869-1942, was honorary Director of Dental Education in the University Liverpool and became the first UK dental Professor when he was appointed to the chair in Dental Surgery in the University of Liverpool in 1920. A

superb craftsman in gold foil work he also did much to establish the biological sciences in the dental curriculum. He was nominated by the Privy Council as one of the original members of the Dental Board in 1921, became one of the three dental representatives to the GMC and was a founder member of the DEAC in 1931. [169]

GOADBY, Sir W.H., LDS RCS, Eng., MRCS, LRCP, DPH, 1873-1958, was a lecturer in bacteriology at the National Dental Hospital. He was described by J.A. Donaldson as an "interesting and sound man", who had offered to run a post-graduate course in bacteriology for former students of the National Dental Hospital and School. [170]

GUY, W., LRCP, HDD, FDS RCS, Eng. and Edin., FRCS, LDS, RCS, Edin., 1859-1950, was President of the BDA in 1914, Honorary Vice-President of the FDI, Dean of the Edinburgh Dental Hospital and School from 1899 to 1933 and examiner to the RCS, Edin. between 1895 and 1935, nominated by the Privy Council as one of the original members of the Dental Board in 1921 and an Additional Member of the GMC, 1921-29. [171]

HEPBURN, D., LDS RCS, Eng., 1821-1905, was a dental surgeon and lecturer in mechanical dentistry at the Dental Hospital of London, President of the

Odontological Society of Great Britain and member of the Odonto-Chirurgical Society of Scotland. [172]

HITCHIN, A.D., CBE, LDS, BDS, MDS, DDSc University of Durham; FDS RCS, Edin., FFD RCS Irel., FDS, RCPS Gla., D.Odont., Lund, Hon. FDS RCPS Gla., born 1907, was Professor of Dental Surgery in the University of St Andrews and Dean of the University of Dundee Dental School. Professor Hitchin is an example of one of those who qualified LDS in 1931 to supplement his income while continuing his studies, qualifying BDS in 1932 and MDS in 1935. He is also an example of one for whom dentistry was a second choice. Well qualified for medicine his choice was influenced by ill-health. [173].

HOPSON, M., LDS RCS, Eng., 1869-1943, was the first dental student, house surgeon, lecturer and governor at Guy's Dental School, London. He was examiner for the universities of London, Birmingham and Sheffield and President of the British Society for the Study of Orthodontics. [174]

MASON, Sir D. K., CBE, BDS, FDS, MD, FRCPath., Hon. FFD, Hon. FDS, RCPS, Hon. DChD, Hon. LLD, born 1928, Professor of Oral Medicine and former Dean of Dental Education in the University of Glasgow Dental School was Charles Tomes lecturer, 1975 and won both the John

Tomes prize and the Colyer Gold Medal of the RCS, Eng. He has held several travelling Professorships and chaired numerous international meetings and national medical and dental bodies, most notably in the UK context as President of the GDC from 1989-94. During his period of office he campaigned vociferously for increased collaboration between general medical and dental practitioners in the delivery of primary care and for the establishment of compulsory vocational training. [175]

MATHESON, L., LDS RCS Eng., 1856-1927, was lecturer in dental surgery at Owens College, Manchester and was subsequently on the teaching staff of the Dental Hospital of London. [176]

PRESTON, C.H., MD, BS, Lond., FRCS, LRCP, LDS RCS, Eng., 1868-1923, was actively involved in dental education as a lecturer in dental anatomy and physiology and tutor for LDS examinations in Manchester. He had turned to dentistry after a bicycle accident ended a promising medical career. [177]

RUSHTON, W., LDS RCS, Eng., 1864-1940, was a prize-winning dental student who had studied dentistry in the United States where clinical dentistry was further advanced than in the United Kingdom, particularly in

conservative dentistry and orthodontics. He was co-founder of the BSSO in 1908, its President in 1911, assistant editor of the British Journal of Dental Science, editor of the Dental Record and President of the Odontological Section of the Royal Society of Medicine. [178]

SMITH, J., FRCS, Edin., MD, University of Edinburgh, 1825-1910, was examiner to the RCS, Eng., Surgeon-Dentist to Queen Victoria in Scotland, president of the Odonto-Chirurgical Society of Scotland and a Fellow of the Royal Society of Edinburgh. With Robert Nasmyth, Peter Orphoot and Francis B. Imlach, Smith founded the Edinburgh Dental Dispensary in 1860. He recommended separating mechanical from surgical dentistry and emphasised the need to separate the trade from the profession. He proposed two grades, the dentist whose training emphasised the mechanical and the surgeon-dentist or dental surgeon whose training was wider. [179]

SPOKES, S., LDS RCS, Edin., LDS, MRCS RCS, Eng., 1853-1939, was Dean of the National Dental Hospital, dental surgeon and lecturer at University College Hospital, examiner for the RCS, Eng., Fellow of the Royal Society of Medicine and President of the Odontological Section. [180]

STONES, H. H., MD, MDS, FDS RCS Eng., 1892-1965, succeeded Gilmour as Professor of Dental Surgery in Liverpool. He was a graduate in dentistry and medicine of the University of Manchester with experience as dental surgeon at the Royal Dental Hospital of London and a keen interest in research into periodontal disease. [181]

THOMPSON, F. H., MD (Jena), LFPS Gla., FFPS, Gla., 1814-1870, was medically qualified and had been pupil to a surgeon-dentist in Edinburgh and to a dentist in Yorkshire. He established a dental practice in Glasgow in 1843. He joined the Odontological Society of Great Britain shortly after its formation and in 1856, was elected one of eight Vice-Presidents of the College of Dentists of England and was instrumental in founding the Odonto-Chirurgical Society of Scotland in 1867, of which he was President from 1868 until his death in 1870. His assistant and successor James Rankine Brownlie maintained close links with the reformers in London, becoming president of the British Dental Association in 1887, supported the Odonto-Chirurgical Society of Scotland and became first Dean of Glasgow Dental Hospital and School, illustrating the way in which standards and practices adopted by the reformers of the mid-nineteenth century were adopted by some reputable dental practitioners. [182]

TOMES, Sir C. S., FRS, FRCS, MRCS, LDS RCS, Eng., 1846-1928, a comparative and dental histologist, followed his father John Tomes into dental practice, lectured on dental anatomy and physiology, published a textbook on Dental Anatomy and revised his father's textbooks. He was an examiner for the LDS, RCS Eng., was appointed first Crown nominee in dental surgery to the GMC, served as chairman of the GMC's Dental Committee from 1899-1920 and was a Trustee of the Dental Fund of the DBUK. [183]

TOMES, J., FRS, FRCS, LDS RCS, Eng., 1815-1895, one of the leading dentists of his day and a "Memorialist", was an unstinting campaigner for the reform of the dental profession and for standards of dental education equivalent to medical and surgical practitioners. The establishment of the LDS, RCS Eng. in 1858 was due largely to his determined efforts. His leadership of the campaign for dental registration was instrumental in achieving The Dentists Act, 1978, dental registration and the establishment of The Dentists Register. He was dental surgeon to King's College and Middlesex Hospitals where he delivered a course of lectures in dental surgery which was subsequently published in book form in 1848. His textbook System of Dental Surgery, first published in 1859, became a standard dental text which ran into several editions. He did much to develop and improve

the dental forceps and was an original scientific investigator. He was awarded the FRS for his "acquaintance with the sciences of anatomy and physiology". The Sir John Tomes prize awarded by the RCS, Eng. was established in his honour in 1894.

[184]

WILKINSON, Professor F. C., BDS, MD, University of Liverpool, FDS RCS Eng., 1889-1979, was appointed in 1933 as first Professor of Dental Surgery and Dean of the Dental School of the University of Manchester. There he established a common course in preliminary science, comprising anatomy, physiology and biochemistry, for medicine and dentistry. He was also instrumental in establishing preliminary science in the first year of the dental curriculum, while mechanical and clinical dentistry were relegated to later years. He thus did much to secure the scientific foundations of clinical dentistry in the United Kingdom. In 1950 he was appointed Dean of the Eastman Institute and Director of the Eastman Dental Hospital. He was Dean of the Faculty of Dental Surgery of the Royal College of Surgeons of England 1954 and 1955, a member of the Dental Committee of the UGC and of the MRC and a member of the McNair Committee. [185]

10.8. ENDNOTES

1. Between 1940 and 1950, university spending increased by 2.7% and secondary education by 8.3%. LOWE, Roy. Education in the Post-War Years: a social history. London, Routledge, 1988.
2. Excluding colonial dentists (0.44%).
3. Excluding those with additional medical or surgical (3) or dental qualifications (47).
4. The disruption to dental education during the Second World War when staff and students were called may in part account for the small number of dental graduate in the years immediately following the War.
5. Some had provincial (univ. or college) LDS and RCS, Eng. LDS. [Entry-by-entry analysis of The Dentists Register 1947.]
6. For instance, R.L.B. Rollick LDS, University of Birmingham 1935, LDS, RCS Eng. 1936; A.C. Campbell BDS, University of London 1944, LDS RCS, Eng. 1945; R.H. Coates BDS, University of Liverpool 1942, LDS RCS, Eng. 1944; G.B. Elphicke BDS University of London 1945, LDS RCS, Eng. 1946; R.J. Gething BDS University of Bristol 1939, LDS RCS, Eng. 1939; H.G. Griffith BDS University of London 1938, LDS RCS, Eng. 1939 and others. [Entry-by-entry analysis of The Dentists Register 1947.]
7. For example D. MacLachlan, LDS 1933, HDD 1941, RFPS, Gla. 1941; J.N. Mansbridge, LDS 1936, HDD 1946, RCS Edin.; W.S. Matheson, LDS 1938, HDD 1945, RCS Edin. and others. [Entry-by-entry analysis of The Dentists Register 1947.]
8. Excluding those with medical qualifications shown in Table 10.4.
9. Medical Faculty selection policy may also have favoured first degree candidates which affected the number of dental graduates being admitted to medicine.
10. Educational Reconstruction. Session 1942-43. Cmd. 6458. Education Act, 1944. (7 & 8 Geo.6) c.31.
11. Norwood Report on Secondary School Education: curriculum and examination in secondary schools. London: HMSO, 1941.

12. Glasgow is one example of the damaging effect of these rivalries in the administration and delivery of medical and dental education. [JENKINSON, J., MOSS, M. and RUSSELL, I. The Royal: the history of the Glasgow Royal Infirmary 1794-1994. Published by the Bicentenary Committee on behalf of Glasgow Royal Infirmary NHS Trust, 1994. pp. 39, 48, 74-77 and 124.]
13. KELLY, Thomas. For Advancement of Learning: the University of Liverpool 1881-1981. Liverpool: Liverpool University Press, 1981. p. 289.
14. Teachers and Youth Leaders. Report of the Committee to consider the supply, recruitment and training of teachers and youth leaders. London: Ministry of Education. 1944; Veterinary Education in Great Britain. 2nd Report of the Committee. Session 1943-44. London: HMSO, 1944. Cmd. 6517; Higher Technological Education. Report of a Special Committee. London: Ministry of Education. 1945.
15. KELLY, T., 1981, p. 285.
16. KELLY, T., 1981, p. 289.
17. Report of the Inter-Departmental Committee on Medical Schools. Chairman: Lord Goodenough. London. HMSO. 1944. Interim report of the Inter-Departmental Committee on Dentistry. London: HMSO, 1944. Cmd 6565 and Final Report of the Inter-Departmental Committee on Dentistry. Chairman: Lord Teviot. London: HMSO, 1946. Cmd. 6727.
18. Social Insurance and Allied Services. Report. Chairman, Sir William Beveridge. London: HMSO, 1942. Cmd 6404.
19. Report of the Inter-Departmental Committee on Medical Schools. 1944, pp. 43 & 46.
20. Report of the Inter-Departmental Committee on Medical Schools. 1944, p. 9.
21. Report of the Inter-Departmental Committee on Medical Schools. 1944, p. 21.
22. Report of the Inter-Departmental Committee on Medical Schools. 1944, p. 36.
23. Report of the Inter-Departmental Committee on Medical Schools. 1944, p. 16.

24. Report of the Inter-Departmental Committee on Medical Schools. 1944, p. 11.
25. WILKINSON, F.C. "Dental education - the Problem of Staffing the Schools". BDJ, v.77, 1944, pp. 121-126. See Biographical Appendix for details of his career and positions held.
26. Ibid.
27. Ibid.
28. Interim Report of the Inter-Departmental Committee on Dentistry, 1944 and Final Report of the Inter-Departmental Committee on Dentistry, 1946.
29. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 10.
30. BRADLAW, Sir Robert. Dental Update, v.19, 1992, p. 238. Obit.
31. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 6.
32. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p.6.
33. 90% of male army recruits in the age group 18-30 needed treatment. In 1947 it was reported that 96% of twenty-thousand army recruits, of average age nineteen and a half, years needed dental treatment and showed very little evidence of having experienced any form of conservative dentistry. [FISH, E. W. "The Future of Dentistry". BDJ, v. 82, 1947, pp. 35-45.]
34. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p.5.
35. Interim Report of the Inter-Departmental Committee on Dentistry, 1944, p.15.
36. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 11.
37. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 18. Although DBUK subsidies were inadequate and had fluctuated owing to reduced income during the war years, by 1947 the DBUK was subsidising the salaries of forty-five teaching posts. DBUK grants to dental students, which had been reduced since 1927 when the Board committed a larger proportion of its income to support teaching in the schools, were

discontinued in 1939 through lack of funds. [GDC Minutes. 1986. Report to the General Dental Council. Appendix IV: Memorandum on Dental Education and Research. p. 107.]

38. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 11.
39. LEIGHTON, B.C. "The Dental Education Advisory Council: 50 Years". BDJ, v.149, 1980, pp. 267-268.
40. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p.8. In medicine, University posts were relatively unattractive compared with private practice and, especially in London, it was more difficult to get suitably qualified people to fill academic posts. [Personal Communication. David Hamilton, 1988.]
41. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 16.
42. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 46.
43. Final Report of the Inter-Departmental Committee on Dentistry, 1946, pp. 11 and 46.
44. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 14.
45. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 27. Although professional associations arranged lectures and study groups and the Dental Board had organised and assisted post-graduate teaching since 1923 in London and the provinces, aimed particularly at the general practitioner, response had been poor. By 1947 Nuffield Foundation grants to dental schools, dental fellowships and scholarships to dental graduates and licentiates and graduates in medicine and science to train them to undertake teaching and fundamental research in dental health and disease, were available but there had been only a small number of awards "partly due to the high standard of ability rightly demanded". Even where funds were available, suitable candidates were not. ["The Nuffield Foundation". BDJ, v.83, 1947, p. 129. Edit.]
46. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 16.

47. Final Report of the Inter-Departmental Committee on Dentistry, 1946, p. 20. In a late submission, reminiscent of objections to the establishment of an independent dental profession a century before, Major-General John Percival Helliwell made a case for continued supervision by the medical profession on the grounds that: "treatment of the part of any living organism is essentially the treatment of the whole organism and it is in the public interest that professional education, training and examinations in all branches of medicine should be under the control of one statutory body." [Final Report of the Inter-Departmental Committee on Dentistry, 1946, pp. 49-52.] Major-General Helliwell trained in dentistry in Manchester and was one of the first commissioned dentists. In 1918 he was appointed Inspector of Dental Services at the War Office and, "so great was his belief in the value of a medical training that he took the conjoint diploma at the age of 42". [BRADLAW, Sir Robert. "The Royal Army Dental Corps". BDJ, v.130, 1971, pp. 173-176.]
48. Dental News. Dental Board of the United Kingdom. Chairman's Address. BDJ, v.83, 1947, pp. 222-223. GOSDEN, P.H.J.H. and TAYLOR, A.J. Studies in the History of a University 1874-1974: to commemorate the centenary of the University of Leeds. Leeds: E.J.Arnold, 1975. p. 123. Before 1945 the state had no responsibility for the capital development of university dental schools which led to uneven and slow development. [HETHERINGTON, Sir Hector. "The British Universities in the Post-War Era". Proceedings of the Royal Philosophical Society of Glasgow, v.75, 1950-51, pp. 39-53.]
49. HITCHIN, A.D. "The Trend in Dental Education". BDJ, v.83, 1947, pp. 91-93.
50. Glasgow University Calendar. 1948-49, p. 319.
51. KELLY, Thomas. For Advancement of Learning: the University of Liverpool 1881-1981. Liverpool: Liverpool University Press, 1981 and GOSDEN, P.H.J.H. and TAYLOR, A.J. Studies in the History of a University 1874-1974 to commemorate the centenary of the University of Leeds. London: E.J. Arnold & Son Ltd., 1975.
52. JENKINSON, J. et al., 1994, p. 202.
53. For instance The Manchester Guardian commented on the need for more entrants to the profession, in particular the need for more teachers, and observed that "the academic side of dentistry has

- long been starved financially". ["The Penman Report". BDJ, v.87, 1949, pp. 188-189. Edit.]
54. Report of the Interdepartmental Committee on the Remuneration of General Dental Practitioners. Chairman: Sir Will Spens. London: HMSO, 1948. Cmd 7402.
 55. This section on the University of Dundee is derived substantially from SOUTHGATE, Donald. University Education in Dundee: a centenary history. Published for the University of Dundee by Edinburgh University Press, 1982. pp. 254-258.
 56. FISH, E. W. "The Future of Dentistry". BDJ, v.82, 1947, pp. 35-45.
 57. In dental metallurgy, operative dental surgery, dental anatomy and histology parodontal disease and preventive dentistry and a technical instructor in dental mechanics. Previously, staff and resources were often inadequate.
 58. "The Nuffield Foundation". BDJ, v.83, 1947, p. 129. Edit.; FISH, Sir E. W. "Designing Dental Education". BDJ, v.97, 1955, pp. 1-11; RUSHTON, M.A. "The Entry to Dental Research". BDJ, v.97, 1955, pp. 11-13.
 59. FISH, E. W, 1947, pp. 35-44.
 60. FISH, E. W. "The Dentists' Bill and Ancillaries". BDJ, v.92, 1952, pp. 42-44; "The Future of the Schools". BDJ, v.93, 1952, pp. 136-137. Edit.
 61. FISH, E. W., 1952, pp. 136-7. Edit.
 62. BMJ Dec. 8, 1951. Quoted in "The B.M.J. on the Bill". BDJ, v.91, 1951, p. 331. Notes and comments.
 63. "The Joint Meeting". BDJ, v.82, 1947, pp. 263-264. Edit.
 64. "Extraordinary General Meeting". BDJ, v.87, Supplement, Dec. 16, 1949, pp. 63-66. In 1947 "Dentists 1921" became eligible for membership of the BDA. ["Another Chapter is Opened". BDJ, v.82, 1947, pp. 75-76. Edit.]
 65. "Dental Education". BDJ, v.91, 1951, pp. 126-127. Edit. For instance, reinstating preliminary examinations in physics, chemistry and biology for the LDS. Dental Executive Committee. [GMC Minutes. 1947. Dental Executive Committee, pp. 152-154. President's Address to the GMC. GMC

- Minutes. 1951, p. 71.]
66. GMC Minutes. 1951. President's Address to the Council, Nov. 27, 1951, p. 71.
 67. FISH, E. W., 1947, pp. 35-45.
 68. Ibid.
 69. University of Liverpool. Calendar, 1946-47. pp. 262-279.
 70. University of St. Andrews. Calendar, 1947-48, pp. 462-503. The University Archives.
 71. GMC Minutes, 1951. Appendix X. Special Committee on the Dental Curriculum. Report. May 1951, pp. 1-5. E. Wilfred Fish was chairman of the Committee.
 72. FISH, Sir E. W. "Designing Dental Education. The first F.C. Wilkinson Commemoration lecture, Manchester, 1954". BDJ, v.97, 1955, pp. 1-13.
 73. HENRY, C. Bowdler. "Dentistry or Stomatology?" The Lancet, v.i, 1945, pp. 26-27.
 74. "The Dental Curriculum". BDJ, v.92, 1952, pp. 296-297. Edit.
 75. GMC Minutes, 1955. Visitation of dental examinations, 1948-50, pp. 48-64.
 76. In the universities of Durham, Manchester, Liverpool, Belfast, Birmingham and the National University in Ireland, the degree and the diploma differed in the standard required and courses for the LDS were shorter. Some universities, for instance Manchester, Liverpool, Ireland and Birmingham, were deficient in pathology and hospital practice but Birmingham's BDS, which required an additional final examination in "advanced operative technique", was regarded as superior to the LDS in science and clinical dentistry.
 77. NORMAN, D.H. "Public Health Dentistry Before 1981". In SLACK, G.L. and BURT, B.A. Dental Public Health: an introduction to community dental health. 2nd ed. Bristol: J. Wright, 1981, pp. 325-331.
 78. "Eligibility for dental treatment under the Health Act". BDJ, v.84, 1948, p. 129. Notes and comments.

79. BDJ, v.86, 1949, p. 257. Notes and Comments; FISH, E.W. "Chairman's address at the opening of the sixty-fourth session of the Dental Board of the United Kingdom". BDJ, v.94, 1953, pp. 275-77; GDC Minutes. 1986. Report to the General Dental Council. Appendix IV: Memorandum on Dental Education and Research.
80. WEBSTER, Charles. Health Services Since the War. Vol. 1: Problems of Health Care: the National Health Service before 1957. London: HMSO, 1988. pp. 364-365.
81. GOSDEN, P.H.J.H. and TAYLOR, A.J. Studies in the History of a University 1874-1974 to commemorate the centenary of the University of Leeds. London: E.J. Arnold & Son Ltd., 1975, p. 298.
82. BDJ, v.82, 1947, p. 171. Notes and Comments Section.
83. "1947-1948". BDJ, v.84, 1948, pp. 14-15. Edit. and FISH, E. W., 1947, pp. 35-44.
84. "The Spens Report". BDJ, v.84, 1948, pp. 219-220. Edit.
85. "Dentists and the Health Service". BDJ, v.84, 1948, pp. 127-128. Edit. Although the BDA recommended a NHS boycott, most dentists were accustomed to scale-of-fees payment, initially the NHS scale was considerably better than the NHI scale and 95% of dental practitioners joined the general dental service. [WEBSTER, Charles, 1988, pp. 119 and 358.]
86. FISH, E. W., 1947, pp. 35-44.
87. "Dentists and the Health Service". BDJ, v. 84, 1948, pp. 127-128. Edit. One fifth of all treatment provided by general dental practitioners required "prior approval" and, of 15,000 registered dentists practising in the United Kingdom, 11,500 were employed in general dental practice. [Report of the Committee on Recruitment to the Dental Profession; Chairman: Lord McNair. London: HMSO, 1956. Cmd. 9861, p. 47.]
88. "The Future of the Schools". BDJ, v.93, 1952, pp. 136-137. Edit.
89. DEB investigations suggested excessive earnings: in the period October 1948-March 1949 59% earned more than the £1,778 recommended by Spens, 22% earned twice this figure with average net

- earnings about 20% in excess of Spens. [WEBSTER, C., 1988. pp. 201 and 359-361; "Association notices. Report of the Representative Board". BDJ, v.89, 1950. Supplement. August 4, 1950, p. 19.]
90. WEBSTER, C., 1988, pp. 359-360.
 91. JENKINSON, J. et al., 1994, p. 202. Compared with an estimated cost of £10 million per annum, in the first nine months 1948/49 payment to dentists in England and Wales amounted to £19.5m, rising to £46.5 million in 1949/50. [WEBSTER, C., 1988, pp. 359-360.]
 92. "The Proposed Cuts". BDJ, v.86, 1949, pp. 256-257. Edit.
 93. Dental Practitioners. Report of the Working Party on Chairside Times Taken in Carrying Out Treatment by General Dental Practitioners in England, Wales and Scotland. (Chairman: W. Penman). London: Ministry of Health. 1949.
 94. Report of the Working Party on Chairside Times Taken in Carrying Out Treatment by General Dental Practitioners in England, Wales and Scotland. 1949, pp. 7-8.
 95. "The Penman Report". BDJ, v.87, 1949, pp. 188-189. Edit.
 96. Half the cost of dentures in 1951 and in 1952 the first pound of any treatment carried out. [Association notices. Report of the Representative Board. BDJ, v.89, 1950 Supplement. August 4, 1950, p. 19.]
 97. "The Charges and Remuneration". BDJ, v.92, 1952, pp. 127-128. Edit.
 98. The Times, March 27, 1952. Quoted in "Remodelling the Dental Service". BDJ, v.92, 1952, pp. 216-217. Edit.
 99. Committee of Inquiry into the cost of the National Health Service. Evidence Submitted by the BDA. BDJ, v.97, 1954. Supplement, pp. 54-59.
 100. Report of the Committee of Inquiry into the cost of the National Health Service. Session 1955-56. Cmd. 9663; "Guillebaud Committee Report". BDJ, v.100, 1956, pp. 86-87. Edit.
 101. WEBSTER, C., 1988, pp. 35, 133 and 398-399.

102. "The Penman Report". BDJ, v.87, 1949, pp. 188-189. Edit.; "Dentists and the Health Service". BDJ, v.84, 1948, pp. 127-128. Edit.
103. "Recruitment". BDJ, v.95, 1953, p. 312. Edit.
104. "Retreat from Spens". BDJ, v.95, 1953, p. 69. Edit. The profession accepted the inevitability of charges: "it has to be assumed that charges of some kind are for the time being to remain a feature of the dental service, and that only a limited amount of money is available for that service", but waged a persistent campaign for restoration of the 10% cut in fees. ["The Worst of Both Worlds". BDJ, v.94, 1953, pp. 188-89. Edit. Association News Sheet: Searchlight on Committees III. BDJ, v.94. NS 5, February 1953.]
105. "Remodelling the Dental Service". BDJ, v.92, 1952, pp. 216-217. Edit.
106. The Financial Times, December 30, 1956. reported in Notes and comments. "Dentists in Demand". BDJ, v.100, 1956, p. 54.
107. "The Ten Per Cent Cut". BDJ, v.94, 1953, pp. 240-41. Edit.
108. "Remodelling the Dental Service". BDJ, v.92, 1952, pp. 216-217. Edit.; WEBSTER, C., 1988, pp. 364-5.
109. A 66% fall in the number of dentures supplied between 1950-51 and 1953 was accompanied by a 40% increase in fillings.
110. WEBSTER, C., 1988. pp. 362-363.
111. Report of the Committee on Recruitment to the Dental Profession, 1956, p. 3.
112. Report of the Committee on Recruitment to the Dental Profession, pp. 9 and 10.
113. Report of the Committee on Recruitment to the Dental Profession, p. 10.
114. The "dentists 1921" accounted for about 25% of the profession in 1955. Whereas in Great Britain the ratio was 1:3,273, Norway had 1:2,000 and the United States 1: 1,667. [Report of the Committee on Recruitment to the Dental Profession, p. 11].
115. Report of the Committee on Recruitment to the Dental Profession, p. 23.

116. Report of the Committee on Recruitment to the Dental Profession, pp. 14-15. J. Menzies Campbell suggested in evidence to the Committee that dental treatment was still "unpopular with the working man".
117. Report of the Committee on Recruitment to the Dental Profession, p. 28.
118. Report of the Committee on Recruitment to the Dental Profession, pp. 12 and 28.
119. "Oral Hygiene and the School Child". BDJ, v.98, 1955, pp. 91-92. Edit.
120. Report of the Committee on Recruitment to the Dental Profession, pp. 12-13.
121. Report of the Committee on Recruitment to the Dental Profession, pp. 25, 28, 38 and 39.
122. "The Charges and Remuneration". BDJ, v.92, 1952, pp. 127-128. Edit.
123. Report of the Committee on Recruitment to the Dental Profession, p. 31.
124. Report of the Committee on Recruitment to the Dental Profession, pp. 30-31.
125. £150,000 in 1947, rising to £300,000 in 1952.
126. Report of the Committee on Recruitment to the Dental Profession, p. 14. In the University of Dundee Professor Hitchin made a case in 1954 for separating the Dental School from the Medical Faculty in order to prevent this. [SOUTHGATE, D., p. 372.]
127. BRITISH DENTAL ASSOCIATION. Memorandum on Dental Research in the United Kingdom, 1958. Appendix J. Submission by the Faculty of Dental Surgery of the Royal College of Surgeons of England, pp. 26-27.
128. Report of the Committee on Recruitment to the Dental Profession, pp. 23-24.
129. Ibid.
130. Report of the Committee on Recruitment to the Dental Profession, pp. 23-24 and 38.
131. "Dental Education". BDJ, v.95, 1953, pp. 112-113. Edit.

132. "Dental Education". BDJ, v.91, 1951, pp. 126-127. Edit.
133. FISH, E. W. "The Dentists' Bill 1951 and Ancillaries". BDJ, v.92, 1952, pp. 42-44; "Dental Education". BDJ, v.91, 1951, pp. 126-127. Edit.
134. AMIES, Arthur B.P. "A Liberal Approach to Dental Education: the Ernest James Goddard oration, 1955". The Australian Journal of Dentistry, v.59, 1955, pp. 317-326.
135. "Thirty Years of Progress". BDJ, v.90, 1951, pp. 292-293. Edit.; "The Dental Schools". BDJ, v.97, 1954, p. 125. Edit.
136. "The Health Service". BDJ, v.97, 1954, pp. 19-20. Edit. In 1917 the GMC had granted a request from the City of Birmingham that dental nurses be entrusted with certain duties in assisting school medical officers. A similar recommendation from Derby recommended the more widespread employment of dental dressers. [GMC Minutes. 1917. Report by the Dental Education and Examination Committee ... adopted on December 1, 1917. Appendix XVI, pp. 409-413.]
137. "The Bill". BDJ, v.91, 1951, pp. 329-330. Edit.
138. The Dentists Act, 1956. (4 & 5 Eliz. 2, Chap. 29). The President's address to the GMC referred to the several previous recommendations to this effect. [GMC Minutes. 1951, p. 71.]
139. FISH, E. W. "Chairman's address at the opening of the seventieth session of the Dental Board of the United Kingdom". BDJ, v.100, 1956, pp. 305-309. "Past and Future". BDJ, v.100, 1956. p. 53. Edit.
140. FISH, E. W. "Chairman's address at the opening of the 60th session of the Dental Board of the United Kingdom". BDJ, v.90, 1951, pp. 275-280.
141. Despite the attempts of reformers since the mid-eighteenth century to regulate all aspects of dental practice, dental laboratories remained beyond the jurisdiction of the GMC and the GDC. In 1993 concern was expressed at the lack of regulation of dental laboratories and it was suggested that there should be a compulsory register and the introduction of product standards. [KNOTT, N.J. "The Future of Dentistry". BDJ, v.174, 1993, pp. 74-75.]

142. GENERAL DENTAL COUNCIL. Recommendations of the General Dental Council concerning I. General and Pre-Dental Education, II. Professional Education, III. Professional Examinations adopted by the Council on 26 September, 1956. London: GDC, 1956.
143. "Table showing the numbers and qualifications, with percentage of the total, of persons registered in The Dentists Register, 1923", p. xxx; "Table showing the numbers and qualifications, with percentage of the total, of persons registered in the Dentists Register, 1947", p. xv (which erroneously omits the Birmingham BDS); "Table showing the numbers and qualifications, with percentage of the total, of persons registered in The Dentists Register, 1957", p. lviii.
144. Of the total College LDS more than 50% (5,355) held the LDS, RCS, Eng.
145. 117 compared with 152 in 1947.
146. The HDD was discontinued in the 1950s following the establishment of the FDS by the colleges in Scotland and Ireland.
147. Those who also held the BDS and/or FDS are shown below; those who also held the MDS are shown in Table 10.8.
148. Those who also held the FDS are shown below. Those who also held the MDS are shown in Table 10.8.
149. Those who also held the BDS are shown below; those who also held the MDS are shown in Table 10.8.
150. Those who also held the MDS are shown in Table 10.8.
151. FISH, Sir E. W. "Designing Dental Education. The first F.C. Wilkinson Commemoration lecture, Manchester, 1954". BDJ, v.97, 1955, pp. 1-13; GDC Minutes, 1986. Report to the General Dental Council. Appendix IV: Memorandum on dental education and research. p. 121. Whereas in 1954 a shortfall of entrants meant that there were 105 empty places in dental schools throughout the United Kingdom (495 compared with 600 available), by 1956 all places were filled. [Report of the Committee on Recruitment to the Dental Profession, 1956.]

152. HERBERT, W.E. "The Training of the Dental Surgeon". BDJ, v.112, 1962, pp. 162-166.
153. Chair of Dental Surgery in 1959; Sub-Dean in 1958; reader in Dental Anatomy in 1961; reader in Oral Surgery in 1962; Professors in Prosthetic Dentistry and in Child Dental Health in 1965; readers in Oral Medicine, Oral Pathology, and Conservative Dentistry in 1966. [ELLIS, Sir John. LHMC, 1785-1985: the history of the London Hospital Medical College. London Hospital Medical Club. 1986, p. 134.]
154. SOUTHGATE, D., p. 376. By 1958 plans for new or extended dental schools in the universities of Birmingham, Dundee, Glasgow, Belfast, Liverpool, Manchester, Guy's Dental School, the Royal Dental Hospital and University College, London were in place. [BRITISH DENTAL ASSOCIATION. Memorandum on Dental Research in the United Kingdom, 1958, p. 7.]
155. KELLY, T., 1981, p. 406.
156. KELLY, T., 1981, p. 329.
157. BRITISH DENTAL ASSOCIATION. Memorandum on Dental Research in the United Kingdom, 1958, pp. 4-5.
158. Report of the Committee on Recruitment to the Dental Profession, 1956, p. 34.
159. MESSING, J.J. "Changes in Conservative Dentistry Since the Second World War: a personal view". Dental Historian, no. 28, May, 1995. pp. 12-19.
160. COHEN, R.A. and SPENCER, E.M. The British Dental Association. The advance of the dental profession: a centenary history 1880-1980. BDA, 1979, p. 250.
161. BDJ, v.83, 1947, pp. 156-158. Obit.; COHEN, R.A. and SPENCER, E.M. (eds.), 1979, p. 242.
162. RENSON, C.E. Dental Update, v.19, 1992, p. 238. Obit.; MURRAY, J.J. MURRAY, I.D. and HILL, B. Newcastle Dental School and Hospital: an illustrated history, 1895-1995. University of Newcastle Upon Tyne: Medical Faculty, 1995, pp. 51, 62 and 86-87.
163. CAMPBELL, J. Menzies. BJDS, v.64, 1921, p. 63. Cited by RICHARDS, N.D., 1979, p. 553; Oral Surgery, Oral Medicine and Oral Pathology, v.38, 1974, pp. 708-9. Obit.; Bulletin of the History of Dentistry, v. 22, 1974, pp. 71-75; BDJ, v.137,

- 1974, pp. 108-110. Obit.
164. COHEN, R.A. and SPENCER, E.M. (eds), 1979, p. 250; CAMPION, G.G. "The Need of a Higher Qualification in Dental Surgery". JBDA, v.11, 1890, pp. 565-575.
165. BDJ, v.40, 1919, pp. 217-223. Obit.
166. COHEN, R.A. and SPENCER, E.M. (eds), 1979, p. 249 and "Names and Periods of Appointment of the Chairmen, Members, Treasurers, Trustees, and Registrars of the Dental Board of the United Kingdom from its formation in 1921 to January 1, 1924". The Dentists Register, 1924, p. ix.
167. BDJ, v.174, 1993, pp. 303-304. Obit.
168. Mss Obit. supplied by the BDA; BDJ, v.137, 1974, pp. 147-148, 257 Obit. and Appreciation.
169. BDJ, v.72, 1941, pp. 232-234. Obit.; The Dentists Register, 1924, p. ix; FISH, E.W. "Designing Dental Education", BDJ, v.97, 1955, pp. 1-11; LEIGHTON, B.C. "The Dental Education Advisory Council: 50 Years". BDJ, v.149, 1980, pp. 267-268.
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CHAPTER 11: CONCLUSION, IMPLICATIONS AND AVENUES FOR FURTHER STUDY

11.1. CONCLUSION AND IMPLICATIONS

This concluding chapter will draw together the strands of the thesis. With the help of comparison and contrast with other "new" medical and non-medical professions, the chapter will speculate about the roles of the state and the universities as arbiters of standards for the professions in the United Kingdom during the twentieth century. The chapter will conclude by suggesting avenues for further study.

Previous studies of the professionalisation of dentistry in the twentieth century have focused on the achievement of a professional monopoly and the development of dental services. [1] This thesis has contributed to an understanding of the role of professional education in the process of professionalisation. Larson suggests that a legally enforced monopoly can compensate for lack of public recognition or confidence. [2] Similarly, Dussault argues that control of the market for dental services is "what professionalism is all about" and both Richards and Ross conclude their studies of the professionalisation of dentistry with the achievement of a professional monopoly in 1921. [3] However, this study has shown that, for a variety of long-

established as well as more current reasons, the professional monopoly achieved in 1921 did not improve standards in practice nor did it establish public confidence and demand for professional services in the short term. The registration of large numbers of unqualified dentists under the terms of The Dentists Act, 1921, the exclusion of dental treatment from National Health Insurance, poor educational standards and poor training facilities ensured that in dentistry low standards prevailed through a further three decades.

This thesis has examined the tension between occupational strategy and the professionalising impulse, and the pivotal role of professional education in the ultimate success of legalistic and credentialistic strategies in achieving professional recognition, influence and autonomy. [4] This study has argued that the success of both strategies hinges on high standards of professional education. Professional education invests practitioners and professional bodies with the authority to successfully press the case for professional monopoly and autonomy and promote demand for their services. The development of scientific medicine from the mid-nineteenth century raised expectations of and demand for medical treatment and enhanced medical authority. [5] This thesis has suggested that the status and influence of the professions of medicine and surgery

were based to a large extent on their early association with the universities. This was reinforced by improvements in university medical education which provided the medical professions with a sound theoretical and scientific base at a time of rapid scientific advance. High standards of professional education invested the medical professions with the credentials necessary to influence those directing health care policy at national and local levels. [6] Likewise, measurable standards of competence, demonstrably beneficial treatment based on university dental science and advanced by an elite of the dental establishment, ultimately enabled dentists to speak with authority to those shaping market forces, be they private patients or government bodies.

This study has suggested that expertise based on specialised knowledge, the "monopoly of credibility", was as important as monopoly of practice in the long-term evolution of the dental profession and was essential to the competent provision of dental services. [7] Professional education determines expertise and informs clients' expectations. [8] Regulation of education, training and qualification justifies claims to professional status and privilege, forms the basis of professional accountability and helps to check professional self-interest operating to the detriment of their clients. This study has shown

that professional education was the means by which the dental profession protected itself and the public from the threat posed by poorly trained practitioners. Indeed, professional education was also, arguably, the single most important factor in determining the oral health of the nation.

David R. Jones has suggested that many studies of professional education emphasise the link between education and status, rather than the contribution of professional education to evolving standards. Similarly, G.V. Larkin has drawn attention to the lack of research on the process of "occupational transition" in dentistry. [9] Although theoretically based specialisation has become central to our understanding of professional training, there has previously been no study of the extent to which professional curricula for dentistry met this criterion. Detailed study of the evolution of the dental curriculum has shown that, by the 1950s, university dental curricula had widened the "cognitive dimension" to encompass a high standard of expertise based on standardised institutional training in science, theory and clinical practice. [10] Thenceforth professional education would cultivate the "wide cognitive perspective" which enabled practitioners to develop knowledge and skill and to extend the frontiers of knowledge through research, rather than applying a limited, mechanical or specific

range of skills. [11] New definitions and expectations of dental health, dental care and the transition from substantially prosthetic to conservative and preventive dentistry were brought about by education and research. Professional education conducted in institutions which integrated teaching and research in oral science and clinical dentistry extended the frontiers of both disciplines and ensured that standards in oral health care reflected the state of the art in dental research.

However, this study has also highlighted the contrast between recognition of the need to establish dentistry as a university-trained medical profession and the long delay in realising this goal. Analysis of the contemporary dental press and of unpublished university and college minutes has shown that a dental elite aspired to standards of professional education and qualification different from but equal to those established for other medical professions from the mid-nineteenth century onwards. Advances in science and technique throughout the period studied formed the basis of demands from the profession's elite for standards higher than the system of training and examination for a college diploma. Contemporary professional journalism and GMC reports also stressed the relationship between dentistry and medicine, and between oral and systemic disease. The merger of hospital medical and dental schools with universities

created a teaching environment capable of providing clinical, laboratory, theoretical and research facilities and staff to educate general practitioners, hospital specialists and research scientists. And yet, whereas unqualified practice had largely been eradicated from medical and surgical practice by the late nineteenth century and, despite the existence of both the need and the machinery to establish dentistry as a graduate profession, in 1923 unqualified dental practitioners formed the majority of those registered in The Dentists Register.

Analysis of university and college curricula and GMC reports has shown that until the mid-twentieth century the dental curriculum was "a compromise between the ideal and the possible" and that the minimum educational standard required for registration did not always keep pace with the knowledge-base. Detailed analysis of university registers and of The Dentists Register has shown that demand for professional education, particularly university qualifications in dentistry, was slight and that dentistry was not firmly established as a graduate profession until the 1950s. Examination of government reports issued during the first half of the twentieth century has shown that this gap had detrimental effects on status, professional competence and standards of treatment. Several factors which contributed to the delay in establishing dentistry as

a graduate profession have been identified.

This case study has shown that initially there was a schism between the minority of what may be termed "medical" dentists and the "technical" majority. The low aspirations of the majority of dental practitioners were a significant factor in delaying progress in professional dental education, as was the case with other professions. This study has shown that initially there was little demand for academic training in scientific and medical theory in a profession which required a high degree of manual and technical skill and in which the majority of practitioners had a technical or craft background.

The standards advanced by a professional elite and by university teachers were too high for the perceived requirements of the majority of practitioners. The cost of university dental education was also disproportionate to the general public's ability and willingness to pay for dental treatment, prior to the advent of the NHS. Thus, there was little demand from the majority of entrants to the profession for the scientific and theoretical education which distinguishes professional training from skilled technical training. [12] Indeed, as recently as 1960, Dr. James Scott, lecturer in Anatomy at Queen's University, Belfast attributed slow progress in university dental education to the profession's preoccupation with technical rather than

scientific dentistry, a preoccupation which had created "an excess of spectacle makers and too few Galileos". He continued:

I would wish to see dentistry a profession of trained scientists thinking at their craft, and to bring that about teachers are required, not instructors in lens-making or tooth-carving!

[13]

This study has shown that tension between the technical and medical, practical and theoretical aspects of dental practice was a recurring feature of curricular reviews and recommendations throughout the period studied. It was difficult to achieve the correct balance between medicine and mechanics and to set standards of education and qualification which reflected advances in knowledge without setting a standard which was beyond the educational and financial means of the majority of entrants and their clients.

Delay in convincing the majority of dentists that they should be highly trained medical specialists meant that, prior to the mid-twentieth century, treatment standards for the majority of patients reflected the low standard of professional education of the majority of dentists. In turn, low standards affected client demand. This study has argued that the absence of a highly trained and demonstrably effective profession contributed to the lack of

recognition for the specialty as an essential aspect of health care.

Analysis of the socio-political and economic context has shown that demand for university training and qualifications was also influenced by demand for professional services, access to and cost of treatment, availability and cost-effectiveness of professional education and perceptions of need. The cost of treatment adversely affected demand and contributed to insecurity, poor status and poor prospects in the profession. In short, the cost of training outweighed the benefits. Prior to and during the early years of the NHS dental service, demand was limited to a narrow range of treatment which did not justify four years of university training for a profession whose position in the medical hierarchy was ambiguous.

Deep intra- and inter-professional rivalries also delayed progress in professional education for dentists. Analysis of dental journalism, the Royal Commission on University Education in London and the Acland Committee Report has revealed the opposition from, on the one hand, the medical and surgical professions represented by the Royal Colleges of Surgeons (which unlike dental practitioners were well represented on the GMC) and, on the other hand, the rank and file dental profession (represented by the BDA). The Royal Colleges had nothing to gain from

promoting a university degree which would end their lucrative role in issuing professional qualifications for dentists; the majority of dental licentiates also had vested interests in maintaining the status quo since the establishment of the dental degree would lower the status of their qualifications. Together these opposing factions effectively blocked the establishment of dental degrees in London, Glasgow and Edinburgh and undermined demand for the degrees which had been established elsewhere.

The late establishment of the professional association may also have contributed to the delay in establishing dental education. Twenty years after the first dental examinations had been established there was no professional body to promote the establishment of dentistry as a distinct and autonomous profession. The professional elite who campaigned for higher standards of professional education and qualification from the mid-nineteenth century onwards were a minority whose professional authority was derived from their place in and allegiance to the medical establishment rather than to a separate and autonomous dental profession. Similarly, the late establishment of the GDC - itself a consequence of the low standard of education of the majority of dental practitioners - meant that the standards applied to dentistry at a formative period in its development were those of the medical establishment.

Analysis of the slowly evolving dental curriculum has shown that until 1956 supervision by the medical hierarchy, represented by the GMC, helped to consolidate the medical curriculum and prevented undue emphasis on dental technology. The GMC's reports and recommendations ensured that the scientific foundations of the dental curriculum were firmly established. However, the GMC was less effective in extending the dental curriculum. Therefore, directly and indirectly, medical dominance delayed the establishment of university education for the profession and restricted the profession's development in terms of autonomy and specialisation.

Although government policy ultimately proved instrumental in the establishment of university education for dentistry, for many years government policy contributed to the delay in demand for professional education. Indeed, it was not until 1993 that the scope of the Standing Committee on Postgraduate Medical Education was widened to include postgraduate dental education. [14] Examination of key reports has shown that the government consistently failed to implement the recommendations made by committees which it had appointed. Government policy was characterised by delay and compromise with respect to establishing and funding dental services and professional education for dentists. Throughout the period studied the demands of the dental elite were

met at the expense of considerable concessions to the vested interests of both medical practitioners and unqualified dentists. Analysis of the reports of 1946 and 1956 and of The Dentists Registers of 1923, 1947 and 1957 highlights the consequences of the government's failure to fully implement the recommendations of the Acland Committee in 1919.

The lack of commitment to funding state dental services and university dental education, the isolation of oral health care within the NHS, charges for dental treatment (which was perceived to be relatively unimportant) and the overwhelming demand for a limited range of treatment, all contributed to the poor demand for university dental qualifications which persisted in the NHS period.

What then were the changing conditions which made it possible to establish dentistry as a graduate profession? A key factor in effecting change was the recognition of the need for higher standards of education among those with the authority necessary to influence policy-makers:

Education requires resources. Sufficiently powerful people must believe sufficiently in the worth of allocating resources to education if anything is to change. [15]

The role of universities and professional educators in extending the dental curriculum was therefore an important factor - even although initially university

standards were beyond the educational qualifications, financial means and aspirations of the majority of dentists and disproportionate to the demand for treatment. Dental academics succeeded in persuading the government that delivery of quality dental care was directly related to standards of professional dental education, of the importance of the scientific foundations of clinical dental practice and of the increasing importance of professional education at a time of rapid scientific and technical change.

Ultimately however, the role of the state was crucial in promoting demand for university education for dentists. The National Health Service Acts established teaching and research as essential elements of the NHS. Increased government funding for dental services and university dental education was necessary to realise fully the potential to clients of an effective professional monopoly by establishing both the means and the incentive to attain a graduate standard of professional education.

By the late 1950s a variety of factors boosted demand for university qualifications. Firstly, the state created career opportunities in universities and the NHS and promoted university education as the standard required for appointments therein. Secondly, the expansion in sixth form and university places, the UGC's increased commitment to funding university education, and the availability of student grants

following the Anderson Committee of 1956 widened access to and improved the quality of university education for the dental profession. [16] Thirdly, dentistry's place in the NHS created better career prospects and a professional career structure in general dental practice, in dental hospitals and in university dental schools. [17] Lastly, the establishment of a subsidised public dental service enabled practitioners to provide a more varied and challenging service (albeit on terms less advantageous than other forms of health care within the NHS). Together these factors enhanced the appeal of dentistry as a profession, widened access to university education and increased the number of highly-qualified recruits.

These conditions which were not duplicated in law, engineering, surveying or nursing, account for the earlier establishment of dentistry as a graduate profession. Indeed, it appears that career opportunities in the universities and the NHS, for which degrees were required, were more effective in ultimately promoting demand for university qualifications than demand from within the profession itself. [18]

This study has also endorsed Larson's contention that "the growing supply of educated labor ... determines the upgrading of the requirements for employment, perhaps as significantly as the changing

content of most jobs". [19] Medical qualifications are now required in the highly competitive fields of oral surgery and oral medicine, and entrance requirements for dental undergraduates are higher due to stiff competition for university places which are limited by government quotas based on anticipated demand for qualified dentists. At the other end of the professional spectrum, this study has shown that the new paradigm of professional education with its emphasis on theoretical training excluded those with primarily manual or technical skills. [20] Yet, by the mid-twentieth century increasing specialisation had created new roles for non-graduates. Dentists now lead a team of auxiliary personnel - dental technicians, mechanics, dental surgery assistants and hygienists. [21]

The evolution of professional education for dentistry in the last quarter of the twentieth century has to a great extent realised the aims and objectives expressed by a visionary professional elite from the mid-nineteenth century. By 1975 the cognitive basis of dental education had widened "beyond limited vocational requirements" and the undergraduate curriculum was regarded as the foundation for "continuing study after qualification". [22] By 1993 there were closer links between dentistry and medicine "with regard to clinical practice and education at all its stages". [23]

The substantial realisation of the goal of the early reformers - a system of professional education different in kind though equal in degree to other medical professions - has enabled dentists to play a full part as specialist members of the health care team in a dental health care system which has broadened in scope and range beyond the horizons envisaged by reformers at the turn of the century.

[24] The dentist's role as "an oral physician with highly developed manual skills" with a "broader understanding of his health care role in both the diagnosis and treatment of disease" has been made possible by the evolution of professional education.

[25] The establishment of specialist post-graduate qualifications (awarded by both the Royal Colleges and the universities) and the introduction of mandatory vocational training for dentists entering the General Dental Service from October 1, 1993 accompanied by clinical audit, established the lifelong process of professional education recommended at the inauguration of Leeds School of Medicine in 1831. [26]

However, certain characteristic features of the origins of dental education have proved resilient. Indeed, the continuing role of the Colleges in dental education, particularly in regulating post-graduate training and qualifications for dentists and other medical professions, appears inconsistent with the state's endorsement of undergraduate university

education as the appropriate and necessary education for the professions of medicine, surgery and dentistry. [27] The College LDS remains a registrable qualification, the prestigious FDS is required for promoted posts in both the NHS and in university dental schools and the Colleges have established several specialty postgraduate qualifications. The Colleges thus encouraged the advancement of knowledge within the profession without however providing the institutional educational, clinical or research facilities to support their qualifications. [28] Furthermore, the Royal Colleges, rather than the universities or the GDC, are at the forefront of developments in vocational training and in setting standards for peer review. This indicates the resilience of established and prestigious institutions despite changes which might otherwise have eroded their role.

Traces of the profession's ambivalent relationships with the medical establishment and with the government also remain. Controversy concerning use of the title "Doctor" and the question "why, in this country, the primary health care of one part of the body is provided by a practitioner who is perceived as being less well qualified than the medical practitioner", show that some of the problems identified by the thesis are deeply rooted in the profession and still persist. [29] Similarly,

dentistry's position within the NHS and the government's commitment to and funding for dental health care services remain controversial. Dental care is not provided free of charge and the system of remuneration, particularly for general dental practitioners within the NHS, continues to be a subject of debate and division within the profession. Indeed, in 1993 concern was expressed that the anticipated "demise of NHS dentistry" might result in a shortage of NHS practitioners to act as trainers in the newly mandatory vocational training scheme. [30] Concern has also been expressed that, owing to the cost of dental treatment, patients might bypass dentists and seek prosthodontic dental treatment provided by denturists, with all the attendant hazards associated with prosthetic dentistry in the hands of practitioners who, however technically skilled, do not have a medical training. [31] Such concerns echo the findings of The Acland Committee in 1919 and emphasise that maintenance of the status quo may depend on continued government commitment to funding professional services, career positions in the NHS and in the universities as well as education for the professions. Dentistry's origins on the fringe of the medical establishment influenced the evolution of education for the profession. However, certain features characteristic of the process - both long-lasting problems and factors which eventually raised

standards of professional education for the dental profession - apply also to other professions. [32]

In engineering, as in dentistry, the deficiencies of the empirical tradition and the need for scientific, theoretical and laboratory-based training were evident by the late nineteenth century. The drawbacks of the "haphazard" system of pupillage which produced "mere practical men without scientific knowledge" were also recognised despite the fact that it had become established as part of "the apparatus of the gentlemanly, brass-plate profession". [33] Unlike dentistry, university departments of engineering benefitted from endowments and benefactions from 1884. [34] University education in engineering and architecture was established earlier than the dental equivalent - the first full-time university course in architecture was established in Liverpool in 1895 and "a systematic theoretically-based pattern of engineering education" was in place by 1914. [35] Yet, despite this advantage, as with dentistry, the establishment of university degrees and chairs did not guarantee equipment, staff or student intake.

As in dentistry, the sudden increase in demand for engineers, who increased in number from 1,700 in 1860 to over 23,000 in 1900, combined with the low aspirations and educational qualifications of entrants, outweighed demand for university education

and qualification. [36] Sudden demand attracted the unscrupulous and the incompetent and, as in dentistry, registration and the establishment of minimum standards for the majority of practitioners was a priority for many years, rather than developing university education. [37]

In law, engineering, architecture, surveying, medicine, dentistry and nursing demand for university qualifications was also undermined by the existence of powerful, prestigious London-based professional institutes, societies or colleges founded during the nineteenth century. These bodies resisted change that would adversely affect their role, the income they derived from examination fees and the income their members derived from the apprenticeship system. Their role in awarding qualifications which were regarded as being equivalent to degrees in terms of membership and qualification to practice, was not matched by their role in extending the scope of professional education and research. Whereas university chairs in engineering were established from 1840 and university courses in engineering from 1850, "the institutes showed little interest in university qualifications". [38] Instead, the Institute of Civil Engineers continued to rely on training by apprenticeship until 1897 when it set up its own examinations. [39]

Similarly, the hegemony of the Bar and the Law Society over legal practice in England and Wales meant

that, as in dentistry, university education was perceived by entrants as offering few advantages. [40] Instead, apprenticeship and membership of the professional society or institution continued alongside university training and degrees and, immune from government intervention, the engineering institutes, the Bar, the Law Society, the Royal Institute of British Architects (RIBA) and the Royal Institute of Chartered Surveyors (RICS) preferred their own examinations. The dominance of professional associations over professional qualifications and the consequent isolation of professional education from institutions of higher education and research delayed demand for university qualifications and tended to narrow the focus of professional curricula.

Although some far-sighted members recognised that professional expertise required mastery of systematic theory and that the potential for developing new practices, procedures and therapies rested on university-based education and research, for some professions the London hegemony over professional education remained unchallenged until the expansion of university education outside London from the early twentieth century and more particularly from the 1960s onwards. [41]

As with dentistry, the decline of professional bodies as qualifying associations was ultimately determined by the government's higher education policy

which widened access to university education for the professions. The process of transition to a graduate profession was more protracted for professions which did not benefit from targeted government funding for university faculties, grants for students and state-subsidised salaries to the same extent as medicine and dentistry. In the case of law, engineering, architecture and surveying demand for university education was delayed until the expansion in higher education following the Robbins Report in 1963 widened the availability of and improved access to university education more generally. [42]

As with dentistry, the British medical establishment blocked the development of other medical professions - notably general medical practitioners and nurses. [43] Campaigns for better education and training for general practitioners were opposed by the colleges as they had been during the campaign for dental reform. Indeed, Loudon argues that blame for the "degraded position of the general practitioner ... lay fairly and squarely on the Colleges of Physicians and Surgeons whose impenetrable opposition was based on naked self-interest". [44]

The nursing profession presents an example of a medical profession in which the transition to university-based education and emphasis on professional research came even later than dentistry, engineering, architecture or law. [45] The first

British nursing degree was introduced in 1960 and, unlike other professions, nurses do not practice autonomously. Therefore, strictly speaking university education and qualifications for the nursing profession in the United Kingdom falls outwith the scope of the present study. Yet the factors working for and against higher standards of professional education for nurses are similar in several respects to the case of the dental profession and, as an example of a profession in the process of transition to a graduate profession with a current emphasis on research the nursing profession provides a particularly interesting and topical case for comparison with the dental profession.

In the United Kingdom, as for the dental profession, higher standards in nursing education were undermined by lack of support from the medical profession on the one hand and, on the other hand, by divisions within the profession itself. In nursing, as in dentistry, it was difficult to establish university training or professional status for an occupation staffed by a high percentage of relatively untrained personnel. Nurses, like the majority of dentists, resisted "extensive theoretical understanding of biological and social theory". [46] Thus in nursing, as in dentistry, low aspirations delayed the establishment of qualifications equivalent to other professions. [47] Unlike dentistry, the

nursing profession did not benefit from the role-model of university graduates leading the profession, nor did the profession's elite mount a sustained campaign for university education and the medical establishment retained the upper hand. This was a key factor. The deference characteristic of early relations between dental reformers and the medical establishment was perpetuated by the subordinate, almost ancillary role assigned to nurses within the professional team. A professional context "structured by relations of dominance and subordination" blocked attempts by nurses to establish "a distinct and autonomous sphere of competence". [48]

As with dentistry, law, engineering and architecture, the United States was ahead of Britain in establishing university education for the nursing profession. There nurses, like dentists, achieved greater autonomy and status. The role of the nurse practitioner practising a wider range of professional duties and with more autonomy than their UK equivalents indicates the role of high standards of professional education in extending professional roles and enhancing status. [49]

The proliferation of knowledge, skills and services in professions with a science base has been accompanied by an ongoing process of specialisation and delegation. In Britain however, although nurses have been allowed to relieve doctors of routine tasks,

the medical profession has consistently opposed nursing autonomy in care. [50] Whereas specialisation led to the establishment of independent professions such as dentistry which were previously on the periphery of the medical establishment, delegation has been more characteristic of the re-negotiation of the roles of nurses in relation to the medical profession. [51] Lack of autonomy relative to the dental profession, is reflected in the way in which specialism within nursing has followed medical specialisation rather than change being initiated from within the profession itself. [52]

As with dentistry, government policy regarding nursing was characterised by expedience and short-termism and recruitment was adversely affected by low status, low morale and poor career prospects. However, whereas the establishment of the NHS created new career opportunities and boosted demand for university qualifications for dentists, nurses benefitted less from the establishment of the Health Service. Inferior educational standards weakened the profession's negotiating power and enabled the government to solve staff shortages by deskilling the nurse's caring role. Lower paid ancillaries (enrolled nurses, ward orderlies, auxiliary nurses and operating theatre attendants) were employed and nurses' pay levels kept to the minimum. [53]

Nursing's eventual move into higher research-

based education was influenced by recognition within the profession of the need to adopt strategies similar to other related professions to advance standards of practice and extend professional roles. In the nursing profession, as in dentistry, the development of research-based professional education has enabled the profession to challenge the medical establishment, in order to enhance and extend their professional role. [54] Professional education would enable nurses to establish themselves as professional practitioners rather than "handmaidens" to the medical profession. [55]

The recent case in which a surgeon registrar "inappropriately delegated some parts of an appendectomy operation to a theatre nurse" has raised "important issues for the public and professions on the expanding role of nurses". [56] This highlights the way in which the evolution of professional education and training leads to change in professional roles and competencies. [57] Higher standards of professional education and qualification for nurses would establish the credentials necessary to re-negotiate their professional roles or legitimise appropriate delegation. Ultimately, as with dentistry, uptake of university education would depend to a great extent on government education policy.

This analysis of the process of transition to university education and comparison and contrast with

the process of evolving standards of professional education for other professions underpinned by theory or laboratory-based science (engineering, surveying, law, architecture and nursing), has endorsed the more general relevance of several features characteristic of the process of dentistry's emergence as a graduate profession. Once in place, university education and research assisted the process of professional specialisation and the extension of professional roles. This enhanced the university's role in providing professional education. At the same time government education policy extended access to university training. Together these factors eroded the monopoly of professional colleges and associations and, by the third quarter of the twentieth century professional education for law, engineering and nursing has become university-based.

Factors which contributed substantially to the delay in establishing professions as graduate professions were not peculiar to dentistry. Lack of demand from rank-and-file practitioners for theoretical, scientific or laboratory-based university training was characteristic of demand for professional qualifications in engineering, surveying, law and nursing. And, as in dentistry, the existence of alternatives to university degrees for those wishing a professional qualification was a crucial factor in delaying demand for university qualifications.

Without government intervention to regulate entrance qualifications for professions employed in the NHS, the process of transition to a graduate profession took longer, the outcome being determined ultimately by government education policy which made school education available to all and subsidised university education. The crucial feature which distinguished the dental profession from nursing, engineering, law and surveying was its role in the NHS as an autonomous medical profession. This speeded the process of transition to a graduate profession.

In the final analysis, ironically, the dental profession which began in a subordinate position, held at arm's length by the medical establishment for almost a century, was able latterly to claim a fully autonomous position in the state health care system.

This study has suggested that this achievement and its limitations correlate to standards of professional education and research pioneered by a professional elite and promoted by the universities. The enlargement of the scope of dental practice made possible by the establishment of NHS dentistry in 1948 would not have been possible without the existence of a professional vanguard whose professional education and long-term agitation enabled them to demonstrate and promote the benefits of surgical, medical, conservative and preventive oral care. This established the case for including dental care, albeit

on less favourable terms than equivalent medical services, in the NHS. Yet, the emergence of a graduate dental profession depended finally on the stimulus provided by the establishment of the NHS and the related improvements in university education and access to it.

More generally, and allowing for important differences among the professions, this case-study of the dental profession has highlighted the relationship between professional education and standards in practice. Government commitment to professional education, research and government-funded career opportunities has also been shown to be crucial in determining standards of training and qualification particularly for public-sector professions.

This study appears at a time when changes in government policy have threatened dentistry's place in the NHS and access to university education. And there are similar developments in other professions. For instance, despite the establishment of a graduate teaching profession, it has recently been proposed that non-graduates be recruited to teach young children on the basis of a one-year training scheme. It has been suggested that it is "disturbing" that mature students should be denied the opportunity to practise as teachers "because theorists have created classroom methods and curricula too complex for them to master". [58] These recent developments, which

include scepticism regarding the value of professional education, underline the contemporary relevance of this study. For, despite the threat posed by these attitudes, after a century of endeavour to upgrade standards of professional education for dentists, a bedrock graduate profession has been established as part of a state dental health care service which only profound changes in government policy could destroy.

11.2. AVENUES FOR FURTHER STUDY

This thesis has pointed to issues which, although beyond its scope, suggest avenues for further research. These might include a comparative study of dental education in the United Kingdom (UK), the United States of America (USA) and Europe, the development of post-graduate dental education, the relationship between professional qualifications and subsequent professional achievement and the role of gender in career choice and uptake of professional qualifications.

A comparative study of dental education in the USA, Europe and the UK would shed further light on the processes and powers which shape demand for dental care and for professional education, and which determine the status of "new" professions such as dentistry. In some European countries, dentistry did not become established as an autonomous profession

with its own degree and self-regulatory council. Instead, dentistry remained a specialty of medicine. [59] Conversely, in the USA, without the constraining influence of the UK medical establishment, dental education became established as a university discipline much earlier. The first institution to provide systematic teaching for a professional qualification to practise - the Doctor of Dental Surgery (DDS) - was established as early as 1840 and the first university dental school was opened at Harvard in 1863. [60] However, initially, without a GMC equivalent, the absence of regulation at a national level meant that standards in the profession and education for it varied considerably. The proliferation of proprietary dental schools, which were more like technical colleges, indicated a demand for dental education, although not necessarily of a university standard. This reflected the substantial and lucrative demand for dental treatment in the USA, which was such that the dental profession assumed higher status and earning power than in the UK.

Following a series of reports published between 1910 and 1945, dental education was more closely scrutinised and regulated and university dental education proceeded on specialist lines. Standards in clinical dentistry (particularly in conservative, prosthetic and cosmetic dentistry) were regarded, even within the UK dental establishment, as more advanced

than UK equivalents throughout the period studied. [61] Sweden provides another example of a relatively wealthy country where dental education and demand for dental treatment was advanced compared with the UK. The correlation between national wealth, earned incomes, disposable wealth, freedom to advertise and demand for dental care presents a topic worthy of further study. [62]

A study of the development of post-graduate dental education in the UK provides scope for a study of the way in which the Colleges retained a role in the medical establishment despite profound changes in professional education which might otherwise have made them redundant. In the UK undergraduate dental education became a university discipline. Yet, the Royal Colleges retained a significant and powerful role as providers of post-graduate qualifications, taught by university teaching staff in NHS and university teaching facilities. The obituary of Professor F.C. Wilkinson (see Biographical Appendix) provides a graphic example of the ease with which dentists moved in both worlds and the complete intermingling of university, College and NHS in the medical establishment. A study of the role of the Colleges in postgraduate medical and dental education would provide an illuminating adjunct to this study of undergraduate dental education.

A study of career outcomes to examine the

relationship between attainment in professional education and subsequent professional success or achievement is a related theme worthy of further study. A comparative study of the career pattern of licentiates and graduates would present a case-study of the role of university education in career outcomes. Similarly, a study of those with postgraduate qualifications would illuminate the period after 1948 when College Fellowships and other postgraduate qualifications for dental specialties were established. [63]

Although specialist knowledge forms the basis of professional power, other powerful factors influence career choice and outcomes. [64] The role of gender in determining career choice, access to professional education and also the mismatch between early educational accomplishment and subsequent career development, which is characteristic of women dentists and doctors, is an overlapping theme which requires further study. [65]

Women are among those who, for a variety of socio-economic factors, encountered problems in undertaking professional dental education in the period 1858-1957. However, women faced additional gender-specific problems and pressures including preconceptions in the home and at school of the social roles and career choices appropriate for women and the discriminatory policies of dental school selection

boards and employers. Also, prior to the establishment of the NHS, there were few appointments other than in general dental practice and, owing to the poor demand for dental care, less opportunity for part-time work.

Thus, a study of women in dentistry, and in particular of their career development in relation to their professional qualifications in the period 1858-1957 would present an interesting case-study of the link between gender roles, gendered education, occupation decisions and the apparent deeply entrenched inequalities in opportunities for women in the medical and dental professions. These have been attributed at worst to discrimination and at best to ambivalence in the patriarchal governing bodies, professional associations and colleges. Other factors such as career advice in schools and women's choice to divide their time between career and family, rather than single-mindedly pursuing a professional career may have been equally significant.

There were fewer women dentists than doctors, even in the period prior to 1921 when no registrable qualification was required. The 1921 Census shows that of a total of 10,290 persons citing dentistry as their first named occupation, there were only 348 women, and in 1920, there were between 50 and 60 women registered in The Dentists Register. [66] Victorian perceptions of the appropriate roles for women as

daughters, wives and dependants and their dependence on fathers and/or husbands for the means to pursue a professional education placed obstacles in the path of many women who might otherwise have pursued a professional education in the period prior to 1957.

Although there was, prior to 1921, no legal prohibition on women who had trained in pupillage practising dentistry, barriers to qualification and thus to registration and reputable employment would have been a deterrent to middle class candidates with the means to pursue a professional education. The difficulties in obtaining professional education and qualification owing to the bar against women imposed by the medical and dental hospitals and colleges was largely responsible for the small numbers of registered women dentists in the first decades of the twentieth century.

Lilian Lindsay, the first woman to qualify in dentistry in the United Kingdom, qualified LDS, RCS Edin. in 1895 and the FPS Gla. awarded its first LDS to a woman in 1901. But women were excluded from the examinations of the RCS Eng. until 1913. [67] Similarly, although women were admitted to the provincial university dental schools, they were excluded from the London dental schools until the doors were temporarily opened to them during the First World War. [68] Furthermore, candidates for public appointments (for example in school dental clinics

from 1907), positions often regarded as less strenuous and therefore more suitable for women, required a registrable qualification. Thus barriers to women in dental schools deterred candidates at a formative period of the profession's development. [69]

As in other occupations and professions, women - "the reserve army" of labour - were recruited and trained as dentists and dental mechanics to help overcome the shortage of dentists owing to national mobilisation during the First World War. [70] However, the occupation of dental mechanic was subsequently reclaimed by men as an occupation suitable for disabled ex-servicemen, just as the dental schools which had been opened to women during the First World War, were closed to them once the men returned. [71] In medicine, social sex stereotyping may have helped to influence and perpetuate perceptions of medicine as a male domain where subordinate nursing roles were assigned to women. However, the relatively small number of women dentists cannot be explained by their marginalisation in alternative sub-professional grades. Experiments in training and employing women as dental auxiliaries - dental dressers and dental nurses - were abandoned following opposition from the BDA. [72] There was, prior to the Dentists Act, 1956 and the establishment of the auxiliary grades (dental nurse and dental hygienist), no equivalent in dentistry to the role of

nurse. Yet, instead of becoming dentists, women shunned the profession.

Despite its opposition to women dental ancillaries, the BDA did support equal pay for equal work in public appointments - for instance in local authority school dental service. [73] As early as 1913, the BDJ implied that the constraints facing women dentists and their anomalous position was an unreasonable state of affairs which would not long continue. [74] Yet, lack of equal opportunities for employment in the armed forces until the Second World War - another example of "the reserve army of labour" being welcomed on board only when there was a shortage of men - is a measure of the discrimination confronting women dentists throughout the period studied. [75]

This discrimination was based on a variety of perceptions - the shortage of qualified women dentists, accusations that women dentists would take jobs from men, especially at a time of poor prospects in dentistry prior to the establishment of the NHS, and doubts as to the physical suitability of women in view of the "stamina" required to extract teeth. [76] In 1908 Professor Howard, on retiring from the Council of the RCS Eng. spoke out against the College's exclusion of women in terms reminiscent of those used by exponents of the dental degree when criticising the policies of the College and The

University of London:

in sticking to the old order and refusing to accept the new, in spite of conclusive evidence that the new has been irrevocably established...

[77]

As was the case with dental degrees, opposition to women dentists was fuelled by the power, privilege and the vested interests of the patriarchal, male-dominated medical and dental establishments.

Had more women entered the dental profession the shortage of qualified dentists would not have been so acute, and with more competition, demand for university dental education might have been greater during the period studied. However, the changes which this thesis has argued increased the uptake of dental degrees (better access to university dental education, more places in expanded dental schools, student grants and more attractive career prospects in NHS dentistry and university dental schools) opened the door to candidates previously disadvantaged by a variety of socio-economic factors, including gender. These changes were accompanied by an increase in the number of women entering the profession and the dramatic switch to the BDS is underlined by the fact that, whereas in 1950-54, 83% of women dentists took the LDS, 84% gained the BDS in the period 1955-59, and only 9 took the LDS in the period 1960-72. [78] At a time of shortage of dentists in the new NHS dental

service, the "reserve army" of women were again called up. [79]

The advent of student grants, more, better and equal opportunities in public sector employment, notably in community dental health, child dental health and orthodontics (albeit extensions of women's conventional social role in caring for children) meant that by the 1990s women accounted for 50% of the entrants to UK dental schools. [80] However, the increase in the number of women entering dentistry did not happen overnight. Discrimination, or lack of equality of opportunity, would linger long. The first woman FDS qualified in 1963 and, as with the first woman LDS, in Edinburgh not London. The first woman was elected to the GDC in 1976, and the first woman was elected to the Council of the BDA ten years later in 1986, while D.A.M. Geddes, the first woman dental Professor in the United Kingdom, was appointed by the University of Glasgow as late as 1990.

It would seem that in both medicine and dentistry, although not strictly speaking disqualified or debarred from senior professional appointments, women have greater difficulty in attaining such positions. [81] For instance, women have had less success in entering certain high-prestige specialties - surgery and oral maxillofacial surgery being directly equivalent examples. This would suggest that gender role socialisation, gendered education,

discrimination in dental schools, male domination of the medical and dental establishments and men's role as unofficial "professional gatekeepers" through their sponsorship and patronage, are significant factors and present fruitful avenues for further research. [82]

11.3. ENDNOTES

1. RICHARDS, N.D. "A Study of the Development of Dental Health Services in the UK - the profession and treatment services 1840-1921". Ph.D. thesis. University of London. 1979; DUSSAULT, G. "The Professionalisation of Dentistry in Britain: a study of occupational strategies, 1900-1957". Ph.D. thesis. Bedford College, University of London. 1981; ROSS, R.M. "The Development of Dentistry: a Scottish Perspective, 1800-1921". Ph.D. Thesis. University of Glasgow. 1994; NETTLETON, Sarah. Power, Pain and Dentistry. Buckingham: Open University Press. March 1992.
2. LARSON, M.S. The Rise of Professionalism: a sociological analysis. Berkeley: University of California Press, 1977.
3. DUSSAULT, G., 1981, p. 11; RICHARDS, N.D., 1979; ROSS, R.M., 1994.
4. The credentialist strategy aims to establish "a linkage between education and occupation, between theoretical knowledge and its practical application" whereas the legalistic strategies depend on state support of occupational aspirations. [WITZ, A. "The Challenge of Nursing". in GABE, J., KELLEHER, D. and WILLIAMS, G. (eds). Challenging Medicine. London: Routledge, 1994, pp. 24-25.]
5. DIGBY, Anne. Making a medical living: doctors and patients in the English market for medicine, 1720-1911. Cambridge: Cambridge U.P., 1994, p. 85.
6. BERRIDGE, Virginia. "Health and Medicine" in THOMSON, F.M.L. (ed.) The Cambridge Social History of Britain, 1750-1950. Cambridge: Cambridge University Press, 1990.
7. LARSON, M.S., 1977, p. 17.
8. DIGBY, A., 1994, p. 39.
9. JONES, David R. The Origins of Civic Universities: Manchester, Leeds & Liverpool. London: Routledge, 1988; LARKIN, G.G. "Professionalism, Dentistry and Public Health". Social Science & Medicine, v.14A, 1980, pp. 223-229.

10. Larson identified the "cognitive dimension", a body of knowledge and techniques applied in work and based on training which is necessary to master knowledge and skills, as a key factor in the process of transition from occupation to profession. [LARSON, M.S., 1977, pp. x and 180-181.]
11. DOWNIE, R.S. "Professions and Professionalism". Journal of Philosophy of Education, v.24, 1990, pp. 147-159.
12. CARR-SAUNDERS, A.M. and WILSON, P.A. The Professions. Oxford: Clarendon Press, 1933.
13. SCOTT, James. "The Art and Craft of Teaching". BDJ, v.108, 1960, p. 174. Corresp.
14. CLAYTON, Dame Barbara. "Education and the Quality of Care". BDJ, v.177, 1994, pp. 221-225.
15. DAVIES, Celia. "A Constant Casualty" in DAVIES, Celia (ed.) Rewriting Nursing History, Nurse Education in Britain and the USA to 1939. London: Croom Helm, 1980, pp. 102-122.
16. The number staying on at school increased from 299k in 1951 to 848k in 1964 and the number of university students increased in number from 85k to 126k in the same period. [LOWE, Roy. Education in the Post-War Years: a social history. London: Routledge, 1988; BERTHOUD, R. and SMITH, D.J. The Education, Training and Careers of Professional Engineers: prepared for the Committee of Inquiry into the Engineering Profession by the Policy Studies Institute. London: HMSO, 1980, p. 7, Table 2.2; TOWNER, Elizabeth M.L. History of Dental Health Education. HEA occasional paper no. 5. August 1987] In 1955, after a lengthy Inland Revenue inquiry into practice expenses, the Treasury restored the 10% cut made in 1950. [WEBSTER, C. Health Services Since the War. Vol. 1. Problems of Health Care: the National Health Service before 1957. London: HMSO, 1988.] Although dental schools continued to encounter "very special difficulties in offering a university education to their students" well into the nineteen sixties, an increase in UGC funds for teaching and research from 1962-67 permitted the appointment of more teachers, expansion of schools. This plus more generous grants to students, provided a stimulus to dental education. The effects can be seen, for instance, at the London Hospital Medical College where several new appointments were made between 1958-

- 66: Chair of Dental Surgery in 1959; Sub-Dean in 1958; reader in Dental Anatomy in 1961; reader in Oral Surgery in 1962; Professors in Prosthetic Dentistry and in Child Dental Health in 1965; readers in Oral Medicine, Oral Pathology, and Conservative Dentistry in 1966. [ELLIS, Sir John. LHMC, 1785-1985: the history of the London Hospital Medical College. London Hospital Medical Club. 1986. Chapter 10.] Similarly, following a UGC recommendation that the intake of dental students in the University of Dundee should be doubled, the new hospital was eventually opened in 1967, in a mood of "post-Robbins euphoria" in university circles. [SOUTHGATE, D. University Education in Dundee: a centenary history. Published for the University of Dundee by Edinburgh University Press, 1982, p. 375.]
17. From the early nineteenth century the medical professions benefitted from the variety of salaried state appointments yet even then general medical practitioners were struggling to earn a living prior to the introduction of comprehensive state medical care. Dental practitioners did not benefit from state employment until 1948. [DIGBY, A., 1994, pp. 5-6, 120-121, 244.]
 18. Larson cites a US study which suggests that there is no correlation between academic achievement and success in practice. [LARSON, M.S., 1977, p. 46.]
 19. LARSON, M.S., 1977, p. 240.
 20. VOLLMER, H.M. and MILLS, D.L. Professionalization. Englewood Cliffs, NJ: Prentice-Hall, 1966 and LARSON, M.S., 1977, p. 240. This phenomenon is common to other professions. For instance when, in 1967, the Wells Committee recommended that surveying become a graduate profession and that post-graduate training should emphasise research, it also recommended that a technician grade should be established. [THOMPSON, F.M.L. Chartered Surveyors: the growth of a profession. London: Routledge & K. Paul, 1968.]
 21. By 1993 the rolls of Dental Auxiliaries contained 3,083 dental hygienists and 366 dental therapists. [MASON, Sir David. "President's Address to the General Dental Council". BDJ, v.174, 1993, pp. 347-349.]
 22. Co-ordination and integration of the three strands of the curriculum: subjects common to medicine and dentistry; special dental and oral

- aspects of these subjects; and clinical and technical aspects of dentistry in the 1975 recommendations marked a new departure. [GENERAL DENTAL COUNCIL. "Recommendations concerning the dental curriculum". May 1975. London, GDC, 1975, pp. 2-3.]
23. MASON, Sir David, 1993, pp. 347-349.
 24. TOMES, John. Letter to the President and Council of the Royal College of Surgeons of England from the Odontological Society, April 4, 1857. Quoted by Alfred Hill in The History of the Reform Movement in the Dental Profession in Great Britain during the last twenty years. London Trubner & Co. 1877, pp. 126-127 and reiterated by Tomes in "The Relations of Dentistry to Surgery". BMJ, v.i, 1880, pp. 463-465. Corresp.
 25. MASON, Sir David. "Future Relationships of Dentistry and Medicine in Education and Practice". BDJ, v.173, 1992, pp. 2-4.
 26. Mr Teale giving the presidential address warned that "so far from the act of receiving a diploma being considered the completion of your medical education you must regard it as being the very threshold - the whole life of a medical practitioner is one continued course of pupillage". [ANNING, S.T. and WALLS, W.K.J. A History of the Leeds School of Medicine: one and a half centuries, 1831-1981. Leeds University Press, 1982, pp. 18-19.]
 27. Firstly they are awarded not by the universities but by the colleges and secondly, candidates may sit the examination without having followed courses taught by the examining College - one of the earliest criticisms levied against the system of training and examination for the college LDS.
 28. In 1958 the Faculty of Dental Surgery of the RCS Eng. also emphasised the need for improved research facilities in dental schools, without providing the resources for their establishment. [BRITISH DENTAL ASSOCIATION. Memorandum on Dental Research in the United Kingdom, 1958. Appendix J. Faculty of Dental Surgery-Royal College of Surgeons of England. "Dental Research in the United Kingdom", pp. 26-27.]
 29. "The Title "Doctor". BDJ, v.174, 1993, pp. 46-47. Edit. Sir David Mason's article "Future Relationships of Dentistry and Medicine in General Practice" highlights certain aspects of the ongoing debate regarding the role of

- dentistry in health care. [MASON, Sir David, 1992.]
30. COOPER, J.A. "The Future of Vocational Training". BDJ, v.174, 1993, p. 46. Guest leader.
 31. MacENTEE, M.I. "Biologic Sequelae of Tooth Replacement with Removable Partial Dentures: a case for caution". Journal of Prosthetic Dentistry, v.70, 1993, pp. 132-134.
 32. This comparative section in which the evolution of professional education for dentistry is compared and contrasted with other "new" professions is based on the following sources: ABEL, Richard L. The Legal Profession in England and Wales. Oxford: Basil Blackwell, 1988; BATES, A. K. "Teachers, Nurses, and their Respective Negotiating Behaviours". Unpublished M.Ed. Thesis. University of Glasgow, 1990; BERTHOUD, Richard and SMITH, David J., 1980; BUCHANAN, R.A. The Engineers: a history of the engineering profession in Britain, 1750-1914. London: Jessica Kingsley Publishers, 1989; CARR-SAUNDERS, A.M. and WILSON, P.A. The Professions. Oxford: Clarendon Press, 1933; CLAY, Trevor. Nurses, Power and Politics. London: Heinemann, 1987; CRINSON, M. and LUBBOCK, J. Architecture: art or profession: three hundred years of architectural education in Britain. Manchester: Manchester University Press, 1994; DAVIES, C., 1980; DIGBY, A., 1994; HENDERSON, V. The Basic Principles of Nursing: consultation paper for member countries of the International Council of Nurses. Rev. ed. Geneva: International Council of Nurses, 1969; LOUDON, I. Medical Care and the General Practitioner 1750-1850. Oxford: Clarendon Press, 1986; THOMPSON, F.M.L., 1968; WHITE, R. The Effects of the NHS on the Nursing Profession, 1948-61. King Edward's Hospital Fund for London, 1985 and WITZ, A., 1994.
 33. CRINSON, M. and LUBBOCK, J., 1994, pp. 60 and 64.
 34. In Glasgow, the Chair of Naval Architecture was established in 1884. This was followed by the establishment of chairs in the Universities of Edinburgh, Newcastle, Liverpool, Leeds and University College London. [BUCHANAN, R.A., 1989, pp. 169-175.]
 35. In 1960 only 2% of architectural students were university students. [CRINSON, M. and LUBBOCK, J., 1994, pp. 60 and 139.] In 1980 only 31% of engineers had qualified by degree as a first qualification, with a further 13% taking a degree

following practical training. Although only 28% of those aged 50-59 had a university degree as first or second qualification, 77% of those aged 20-24 were graduates. [BERTHOUD, R. and SMITH, D.J., 1980, p. 7, Table 2.1.] The pattern in transition from practical to university training is similar to dentistry in the period prior to 1945.

36. GOURVISH, T.R. and O'DAY, Alan (eds.). Later Victorian Britain, 1867-1900. London: Macmillan Educational, 1988, p. 30.
37. Ibid, p. 32.
38. GOURVISH, T.R. and O'DAY, A., 1988, p. 30.
39. Ibid, p. 31.
40. In the United States university education in architecture was established in 1869. Similarly, from 1895 Harvard Law school established a tradition of university professional education based on reasoned principles rather than practical experience gained in apprenticeship. The establishment of an Honours School of Jurisprudence in the University of Oxford in 1872 was followed by the introduction of legal studies in other universities at this time, thirty years before university education for dentistry was established. Yet, in England and Wales the Inns of Court and the Law Society retained a monopoly of professional qualifications until the expansion of university education in the 1960s took effect during the 1970s and 1980s. Although, in the United Kingdom, a significant proportion of barristers have always been graduates, barristers were not necessarily graduates in law, just as until the late nineteenth century physicians were seldom medical graduates. From 1975 the Bar insisted on a degree for membership and the proportion of entrants with a degree in law rose from 70% in 1975 to 84% in 1983. In 1988 a university degree was not compulsory for solicitors in England and Wales. But, whereas less than 50% of solicitors had university degrees in 1969, the percentage of graduates admitted as solicitors had risen to 87% by 1984. [ABEL, R.L., 1988, pp. 143, 319 and 388; CRINSON, M. and LUBBOCK, J., 1994, p. 60].
41. DIGBY, A., 1994, p. 13.
42. Committee on Higher Education. Chairman: Lord Robbins. Cmnd 2154. London: HMSO, 1963. By the 1980s the proportion of graduates in law and

engineering had reached 90%. Unlike medicine and dentistry where university places are determined by government quotas based on the requirements of the NHS, the explosion in university places led to a corresponding increase in the supply of lawyers, engineers and surveyors which eroded salaries and created problems of unemployment.

43. BATES, A. K., 1990; DIGBY, A., 1994, p. 102; LOUDON, I., 1986; ROSNER, L. Medical Education in the Age of Improvement: Edinburgh students and apprentices, 1760-1826. Edinburgh: Edinburgh University Press, 1991, p. 165 and WHITE, R., 1985.
44. LOUDON, I., 1986, pp. 171-175 and 188.
45. This section on the nursing profession is based on the works by A. K. Bates, R. White, T. Clay, A. Witz and C. Davies cited above.
46. HENDERSON, V., 1969. Rosemary White suggests that nurses were not educationally minded, resented those with higher qualifications, considered theory to be remote and irrelevant to the everyday practice of their profession and did not have university entrance qualifications. Throughout the 1940s and 1950s "nurses consistently confused skill for knowledge and common sense knowledge for theory" which perpetuated an inflexible but superficial knowledge inappropriate to current scientific theory. [WHITE, R., 1985, pp. 31-32. See also AKESTER, Joyce. "Education of the Nurse". Nursing Times, v.51, 1955, pp. 918-920.]
47. In 1962 the GNC's minimum entrance qualifications were 2 GCE O levels. [WHITE, R., 1985, p. 253.] Although the Reports of the Nursing Reconstruction Committee chaired by Lord Horder had recommended the establishment of a degree course in nursing they stressed that nursing was a practical rather than an academic profession. [Reports of the Royal College of Nursing Reconstruction Committee (Chairman Lord Horder) London, RCN, 1942-49. Cited by Rosemary White, 1985. Introduction, Ref. 7.]
48. WITZ, A., 1994, p. 38. In 1957 Dr Thomas Anderson expressed concern that an elite of nurses would result in patients being cared for by untrained personnel and called for a Lancet Committee to allow the medical profession to redefine the kind of nurse the country required. [ANDERSON, Thomas. "The Future of Nursing". The Lancet. v.i, 1957, pp. 45 and 325-326. Corresp.]

49. University education for the nursing profession was established in the United States in the late nineteenth century whereas the first nursing degree in the United Kingdom was established in Edinburgh in 1960. In 1979 only 5% of the profession were graduates. [BATES, A. K., 1990; Report of the Committee on Nursing. Chairman: Asa Briggs. London: HMSO, 1972 and COMMISSION ON NURSING EDUCATION. (1985) The Education of Nurses: a new dispensation. Chairman: Sir Harry Judge. London: Royal College of Nursing, 1985.]
50. WITZ, A., 1994, p. 25.
51. WITZ, A., 1994, p. 40.
52. WITZ, A., 1994, p. 23.
53. The Inter-Departmental Committee on Nursing Services. Chairman: the Earl of Athlone. Interim Report. London: Ministry of Health, 1938 referred to an urgent shortage of nurses and conditions which were "not always tolerable". However, as in dentistry the 1940s and 1950s were characterised by delay in implementing committee recommendations.
54. WITZ, A., 1994, p. 31. Although in 1992 the United Kingdom Central Council for Nursing, Midwifery and Health Visiting was still struggling to replace a routine, task-oriented role with systematic and analytic problem-solving. [WITZ, A., 1994, pp. 29-30.]
55. WITZ, A., 1994, p. 31.
56. HUNT, Liz. "Appendix Row Surgeon Let Off With Warning". The Independent, 4th February 1995, p. 5.
57. Characteristically, the Royal College of Surgeons declined to comment on the case in question. Existing GMC Guidelines stress that doctors must be satisfied of the competence of those to whom tasks are delegated and improper delegation can lead to disciplinary proceedings. [GENERAL MEDICAL COUNCIL. Professional Conduct and Discipline: fitness to practise. London: GMC, 1992.]
58. GRICE, Elizabeth. "Who Says We're Not Fit to Teach?". The Daily Telegraph, 18th June 1993, p. 21.

59. FARMER, E. D. "Dental Education in Europe". Journal of the Royal Society of Medicine, v.77, 1984, pp. 452-458; GUERINI, Vincenzo. "Dental Instruction in Italy and the Medical Degree. Report to the International Dental Federation, Hanover, August 1905". BDJ, v.27, 1906, pp. 885-890.
60. This section on dental education in the United States is based on a variety of secondary and primary sources: The Baltimore College of Dental Surgery: heritage and history. Pamphlet; TOMES, Charles S. "Address delivered at the commencement exercises of the Dental School of Harvard University, Boston, Mass., February 12th, 1873". BJDS, v.16, 1873, pp. 162-170; PAYNE, J.L. "Dental Education in the United States and Canada". BDJ, v.47, 1926, pp. 239-243; VANN, W.F. "Evolution of the Dental School Curriculum - influences and determinants". Journal of Dental Education, v.42, 1978, pp. 66-73; FLEXNER, A. Medical Education in the United States and Canada: a report to the Carnegie Foundation for the Advancement of Teaching. Washington, D.C. Carnegie Foundation, 1910; GIES, W.J. Dental Education in the United States and Canada: a report to the Carnegie Foundation for the Advancement of Teaching. New York: Carnegie Foundation, 1926; "Dental Education in the United States". BDJ, v.46, 1925, pp. 461-462. Notes; BLAUCH, L.E. et al. Teaching in Colleges and Universities with Special Reference to Dentistry. Indianapolis, Indiana: American Association of Dental Schools, 1945; HOOK, Sara Anne. "Early Dental Journalism: a mirror of the development of dentistry as a profession". Bulletin of the Medical Library Association, v.73, 1985, pp. 345-351; TRUEMAN, W.H. "A Vacancy in Dental Journalism". Dental Cosmos, v.49, 1907, pp. 466-468.
61. FLEXNER, A. Medical Education in the United States and Canada: a report to the Carnegie Foundation for the Advancement of Teaching. Washington, D.C. Carnegie Foundation, 1910; GIES, W.J. Dental Education in the United States and Canada: a report to the Carnegie Foundation for the Advancement of Teaching. New York: Carnegie Foundation, 1926; "Dental Education in the United States". BDJ, v.46, 1925, pp. 461-462. Notes; BLAUCH, L.E. et al. Teaching in Colleges and Universities with Special Reference to Dentistry. Indianapolis, Indiana: American Association of Dental Schools, 1945.

62. HITCHIN, Professor A.D. Personal Communication. May, 1988.
63. Studies of subsequent career patterns of dentists with medical degrees would provide a starting point. For instance, HENDERSON, D., LIVERSEDGE, R.L. and JAMES, P.L. "A Study of Medically Qualified Dental Graduates". British Journal of Oral Surgery. v.15, 1977, pp. 173-184 and LEVERS, B.G.H. et al. "Careers of Dentists Undertaking a Medical Qualification". British Journal of Oral and Maxillofacial Surgery. v.26, 1988, pp. 443-451.
64. LORBER, J., 1984, pp. 10-16.
65. The surveys of professional qualifications, career choices and employment patterns among women dentists conducted by E.M. McEwen and M.H. Seward relate to the period post 1940. Elizabeth M. McEwen's "The Fate of the Female Dental Graduate in Scotland". M. Med. Sci. thesis, University of Dundee, 1976, a modified version of which was subsequently published as McEWEN, J.D. and McEWEN, E.M. The Career Pattern of Scottish Dental Graduates, 1940-1972. Dundee: Department of Orthodontics and Child Dental Health, University of Dundee, 1984, provides an excellent and comprehensive study of these issues in the period following the establishment of the NHS. SEWARD, M.H. The Provision of Dental Care by Women Dentists in England and Wales in 1975. British Postgraduate Medical Federation, 1976 and SEWARD, M.H. and McEWEN, E.M. The Provision of Dental Care by Women Dentists in England and Wales in 1985: a ten year review. London: The London Hospital Medical College Dental School, 1987.

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66. Compared with 500 women doctors in 1911.
67. "Women in Dentistry". BDJ, v.34, 1913, pp. 35-38.
68. SILVERSTONE, R. and WARD, A., 1980, p. 86. Since the London medical schools contained 40% of medical students their virtual exclusion of women

- dental students was a significant factor. Ibid, pp. 105-106.
69. SILVERSTONE, R. and WARD, A., 1980.
 70. "Women as Dental Mechanics". BDJ, v.37, 1916, pp. 330-331.
 71. "Women Dental Mechanics for the Rhine". BDJ, v.41, 1920, p. 431; COHEN, R.A. and SPENCER, E.M. (eds.). The British Dental Association: the advance of the dental profession: a centenary history, 1880-1980. London: BDA, 1979, p. 161 and pp. 169-170.
 72. For instance, women were appointed as dental ancillaries in the school dental service in 1917 to reduce the cost of dental treatment and overcome the shortage of dentists. The scheme was approved by Charles Tomes and by the GMC as long as the "girls" worked under the immediate supervision of a dentist. ["Dental Nurses". BDJ, v.38, 1917, p. 955. Edit.; "Nurses as Dental Operators". BDJ, v.39, 1918, pp. 505-507. Edit.] In 1920 the War Office appointed women dental mechanics. During the Second World War the Air Force carried out an experiment in training and employing dental dressers to overcome the shortage of dentists and/or cost of professional dental care. These schemes were vociferously opposed by the BDA which perceived this as a veiled attempt to deskill the profession. [COHEN, R.A. and SPENCER, E.M. (eds.) , 1979, p. 161 and pp. 169-170.] The BDA did not oppose the training and employment of male dental mechanics.
 73. SILVERSTONE, R. and WARD, A. (eds), 1980, p. 86.
 74. "Women in Dentistry". BDJ, v.34, 1913, pp. 35-38. Special article.
 75. The Sex Disqualification (Removal) Act, 1919 stated that "a person should not be disqualified by sex or marriage from the exercise of any public function" but the courts did not interpret this as entitling women to appointments. [LEWIS, J., 1984, p. 199.]
 76. BARKER, T. "Dental Surgery - Should Females Practise It". Dental Times, v.4, 1865, pp. 54-65; SEWARD, M.H., 1991. In 1986 my father, then in his late seventies, expressed incredulity, scepticism and unbounded admiration that "a mere slip of a girl" - the "girl" in question being a Registrar in Glasgow Dental Hospital and School -

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77. THE BRITISH DENTAL ASSOCIATION. "The Jubilee Book of the BDA". London. 1930, p. 29.
78. McEWEN, E.M., 1976, p. 92.
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80. LINN, E.L. "Professional Activities of Women Dentists". JADA, v.81, 1970, pp. 1383-1387; "Women Dental Students - Women in a Man's World". Millbank Memorial Fund Quarterly, v.49, 1971, p. 63 and LINN, E.L. "Women Dentists - Some Circumstances About their Choice of Dentistry". Journal of the Canadian Dental Association, v.38, 1972, pp. 364-369. Cited by E.M. McEwen, 1976.
81. AHLBERG, Karin. "The Careers of Women Dentists in the University". International Dental Journal, v.40, 1990, pp. 135-138; McEWEN, J.D. and McEWEN, E.M. The Career Pattern of Scottish Dental Graduates, 1940-1972. Dundee: Department of Orthodontics and Child Dental Health, University of Dundee, 1984; SEWARD, M.H. The Provision of Dental Care by Women Dentists in England and Wales in 1975. British Postgraduate Medical Federation, 1976; SEWARD, M.H. and McEWEN, E.M. The Provision of Dental Care by Women Dentists in England and Wales in 1985: a ten year review. London: The London Hospital Medical College Dental School, 1987. Medicine and dentistry are not alone in this respect. The Hansard Society reported in 1990 that in all occupations and professions the higher the rank, the prestige or influence, the smaller the proportion of women. [The Report of the Hansard Society Commission on Women at the Top. London: Hansard Society for Parliamentary Government, 1990 and Women in the Professions: a report compiled by the UK Inter-Professional Group. London: The Law Society, 1990.]
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MCCREA, D. Executive Officer. School of Dentistry. The Queen's University of Belfast. February 1989.

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A.10 Interviews

DONALDSON, J. Archie, OBE, BA, FDS, LDS, RCS, Eng., former editor of the BDJ, honorary curator of the BDA Museum, founder of the Lindsay Club (now Society) for the History of Dentistry, author of an important chapter on the history of the profession in The Advance of the Dental Profession, lecturer on dental history in the University of Edinburgh, 1970-84, Menzies Campbell lecturer at the RCS, Eng., guest lecturer to the University of Glasgow, the Royal Society of Medicine, and the Royal Institute, secretary of the FDI, chairman of the FDI sub-committee on dental history and of the editorial committee of the Revue d'Histoire de l'Art Dentaire. [BDJ, v.174, 1993, pp. 303-304. Obit.]

HITCHIN, Professor Alwyn D., CBE, LDS, BDS, MDS, DDSc University of Durham, FDS RCS, Edin., FFD RCS Irel., FDS RCPS Glasg., D.Odont. Lund, Hon. FDS, RCPS Glasg., former Dean of the University of Dundee Dental School.

MASON, Professor Sir David, BDS, FDS, MD, FRCPath., CBE, Hon. FFD, Hon. FDS RCPS, Hon. DChD, Hon. LLD, Professor of Oral Medicine and Dean of Dental Education in the University of Glasgow, President of the GDC from 1989-94.

NOBLE, Henry, LDS, HDD, FDS RCPS, Gla., Ph.D., Senior Research Fellow, University of Glasgow Dental School.

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