The Development of Dentistry:

A Scottish Perspective
circa 1800-1921.

by

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ABSTRACT

Having established the antiquity of dentistry and its relationship to medicine, this thesis examines its development in Scotland from the unique origins in Glasgow of the Royal Faculty of Physicians and Surgeons and the Royal College of Surgeons, Edinburgh, to the legitimization of the profession by State intervention in 1921.

Although an LDS qualification was available in 1860 from the Royal College of Surgeons, England, the introduction of the Dentists Act of 1878 and the establishment of a Register, brought about through the efforts of the Reform Movement, did not eradicate the practice of dentistry by the unregistered. Their numbers continued to multiply as a result of urban migration, socio-economic changes and industrialisation. Changes in the dietary habits of the Scottish people and in the methods of food production, contributed to an increase in the prevalence of dental caries as well as in the demand for dental treatment among all classes of the population, as epidemiological surveys and Government inquiries showed.

The introduction of a school dental service resulted, when attention was focused on the poor dental standards of the recruits following the defeats of the British Forces in the Boer Wars. The resultant Government inquiry into the state of dentistry revealed the deplorable state of the nation's teeth and the inability of the Scottish working classes and the disadvantaged to afford dental treatment from qualified practitioners.

In the aftermath of the 1914-18 War, public opinion was conducive to the idea of social welfare and public health thus paving the way for the legalization by the State of the dental profession by virtue of the Dentists Act of 1921.

A Dental Board and a single Register were established for both the qualified and the unqualified; thus dentistry became a closed occupation and a semi-autonomous profession making the practice of unregistered dentistry illegal.

PREFACE

Although a number of historical studies have been written on the aspects of the development of dentistry in Great Britain, none have dealt with the subject based on a socio-economic approach from a Scottish perspective. Although dentistry developed on a United Kingdom basis, dentistry in Scotland, in many respects, took a distinctive route due to differences in social, economic, cultural and geo-political conditions. Accordingly, the object of this thesis is to identify the factors involved and trace their relationship, so that we may better understand the complex evolution of dentistry and appreciate the role played by Scots in its development.

Radical industrial transformation and urban migration during the eighteenth and nineteenth centuries, combined with demographic changes, produced complex situations unique to the Scottish scene. The consequences of these changes left the provision of dental treatment in what was approaching a state of anarchy. The period under review was dominated and shaped by a handful of public-spirited and visionary people. Amongst them were many Scots, whose significant contributions to the development of dentistry are often overlooked in dental histories of the United Kingdom.

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Abbreviations

A.D.A.	American Dental Association.
A.S.P.D.S.	Association of Surgeons Practising Dental Surgery.
Am.J.Dent.Sci.	American Journal of Dental Science.
B.D.A.	British Dental Association.
B.M.A.	British Medical Association.
B.M.J.	British Medical Journal.
Br.Dent.J.	British Dental Journal.
Br.J.Dent.Sci.	British Journal of Dental Science.
Br.Q.J.Dent.Sci.	The British Quarterly Journal of Dental Science.
Car.Res.	Caries Research.
Dent.Mag.Oral Top.	Dental Magazine and Oral Topics.
F.R.C.S.E.	Fellow of the Royal College of Surgeons England.
F.R.C.S.Ed.	Fellow of the Royal College of Surgeons Edinburgh.
F.R.C.S.G.	Fellow of the Royal College of Surgeons Glasgow.
F.R.S.	Fellow of the Royal Society.
G.A	General Anaesthetic.
G.D.C.	General Dental Council.
G.M.C.	General Medical Council.
H.C.	House of Commons.
H.L.	House of Lords.
I.D.S.	Incorporated Dental Society.
I.S.E.A.T.	Incorporated Society of Extractors and Adaptors of Teeth.
J.Am.Dent.Assoc.	Journal of the American Dental Association.
J.Br.Dent.Assoc.	Journal of the British Dental Association.
J.Dent.Res.	Journal of Dental Research.
J.Hist.Med.	Journal of the History of Medicine.
L.A.	Local Anaesthetic.
L.D.S.	Licentiate in Dental Surgery.

M.C.C.	Menzies Campbell Collection of 1173 Odontological Advertisements.
M.C.D.E.	Membership of the College of Dentists of England.
R.C.P.S.G.	Royal College of Physicians and Surgeons Glasgow.
R.C.S.E.	Royal College of Surgeons England.
R.C.S.Ed.	Royal College of Surgeons Edinburgh.
R.C.S.I.	Royal College of Surgeons in Ireland.
R.F.P.S.G.	Royal Faculty of Physicians and Surgeons Glasgow.

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Introduction

I am aware that there are a number of areas in dentistry which, in this work, are only referred to *en passant* and sometimes omitted entirely. The reason for this is that my predominant and basic theme has been an examination of the social and economic conditions prevailing in Scotland and their effects on the development of dentistry.

A further feature which has emerged, is the identification of a number of areas where little or no research has been carried out. One which springs to mind is the development of the Schools Dental Service in Scotland, another is the history of the Chemists Dental Society whose members played an important role in the provision of some form of dental treatment in many Scottish towns and rural areas.

Another area which would repay research, is the role of the dental companies who manufactured and supplied equipment, materials and instruments and provided through their catalogues, a valuable source of information on the development of dentistry from the nineteenth century. The requirements of the dentists resulted in a whole new industry, spearheaded by the Dental Manufacturing Co., S.S. White and Claudius Ash. The latter company was probably the only reliable source of the numbers of practising dentists (whom they supplied, nation-wide) before the publication of the Dentists Register in 1879.

In the period covered by this thesis, the art and craft of dentistry - an occupation - became the science and art of dental surgery and was given official recognition as a profession. Although this status was achieved by a single Parliamentary Act in 1921, it marked the culmination of a long history stretching back nearly 5,000 years to Ancient Egypt where the first 'toothpullers' were identified.[1]

Dental restorations, such as crowns and recognisable bridges, utilising principles in use today, were constructed

of gold and silver by the Etruscans, whilst the Greeks and Romans were familiar with the commoner dental diseases.[2] Having established the antiquity of dentistry, the work attempts to trace the growth of dentistry through the barren Dark Ages to the Middle Ages of Scotland, identifying a number of contributing causes which were thrown up by purely Scottish conditions and relating these to the overall development of dentistry in Great Britain. Dentistry has always been closely identified with the practice of medicine, especially surgery, and an exploration of some fundamental differences between English medical practices and Scotland is a necessary pre-requisite to a proper understanding of subsequent events. Whereas, in England there was a long-standing tradition of separation between the Physicians, the Apothecaries and the Surgeons, Scottish medicine had two main branches, namely Physicians and Surgeons. Glasgow was unique in Great Britain, in that its medical jurisdiction was governed by a single faculty of Physicians and Surgeons set up in 1599.

In the sixteenth and seventeenth centuries, apart from a singular allusion to the surgical ability and dental skills of James IV, there is little evidence of the provision of dental treatment, at least not as it is known today. [3] A source of information which indicated the presence of itinerant dentists in Scotland was to be found in the pages of Scottish newspapers around the latter part of the eighteenth century. These dentists, usually based in Edinburgh or Glasgow, travelled what were then arduous journeys, to the smaller towns, where they would stay for a few days before moving on. Many of their names were also entered in the local Scottish trade directories, a valuable source of information on the distribution of dentists throughout Scotland.

Scotland in the nineteenth century witnessed social, economic and industrial changes which accompanied by urban migration and demographic re-distribution, contributed to an urban society, dominated by overcrowding, ill-health and

under nourishment. Epidemics of virulent diseases were prevalent, whilst medical and dental treatment was based mainly on traditional knowledge and folk-lore passed down through the ages; recipes, charms and concoctions were popular and the practice of blood-letting common-place. [4]

The industrial and economic upheavals experienced towards the latter part of the nineteenth century, were accompanied by huge increases in urban populations. These centres became magnets for the ever-increasing numbers of unqualified itinerant dentists, some of whom became established in many of the larger Scottish towns and cities.

Agitation for dental reform was now orientated nationally and focussed on London, where it had been possible to obtain a Surgical Diploma issued by the Royal College of Surgeons, England. Dento-political activity by a handful of concerned surgically trained dentists eventually led to the establishment of the Diploma in Dental Surgery of the Royal College of Surgeons of England in 1859. The differences of opinion which arose at this time determined the path that dentistry would take as a branch, rather than a specialty of medicine.[5]

As the number of unskilled practitioners continued to multiply, action was directed to Parliament and in 1878, the Dentists Act was introduced. The aim of the Act had been to stop unauthorised practising; this was to be achieved by means of a Dentists Register which would contain the names of those who were qualified and those who had been in *bona fide* practice prior to the Act. Subsequent events proved that the Act was fundamentally flawed as it only prohibited the use of certain titles.

Following the introduction of the Dentists Act 1878, both Edinburgh and Glasgow were authorised to grant diplomas in Dental Surgery through the Royal College of Surgeons and the Royal Faculty of Physicians and Surgeons respectively, thus

enabling Scottish students to acquire their training in Scotland.

Research of the period 1851-1901, from Census returns, wages and cost of living surveys, showed that the majority of the people of Scotland could not afford the fees charged by qualified dentists. This led to the setting-up of dental dispensaries in many Scottish cities and eventually dental hospitals in Glasgow, Edinburgh and Dundee. The minutes and records of the Scottish dental hospitals revealed a great deal of information on their role as providers for the poor and the working classes during this period. This is an aspect of dental history which requires further research.

Meanwhile,the rise in the number of qualified dentists as measured by the Dentists Register was insignificant compared to the increase in the population. Accompanying the population rise was a decrease in infant mortality rates and increase in the average life-span. A further factor contributing to the increase in the prevalence of dental caries in this period, was the introduction of the multiple grocer bringing for the first time to the working classes the ability to purchase a range of food-stuffs hitherto reserved for the more affluent. An examination of changes in dietary habits in Scotland, and in the production of staple foods, strongly suggests that along with an increased sugar consumption, these factors increased both the prevalence of dental decay and the subsequent demand for dental treatment.

The law of demand and supply was now amply demonstrated by the increase in unregistered dentists and companies providing cheap dentistry for the masses. Although attempts were made to curb this activity, the state of the law was such that no action could be taken, as long as the practitioner did not claim to be a dentist or a dental surgeon.

Throughout the period under review,the development of dentistry in Great Britain was spurred on by a handful of men who distinguished themselves by their tireless campaigning for dental reform and advancement of the profession. The scientific researches by William and John Hunter, from East Kilbride in Scotland, set the pattern for a scientific approach to modern British dentistry, whilst the indefatigable campaigning of William MacPherson Fisher of Dundee laid the foundations for the treatment of school children.

Although the anaesthetic properties of nitrous oxide had been described by the English scientist, (Sir) Humphrey Davey in 1800, it was not until the 1840s that it was first used as a general anaesthetic for tooth extraction by an American dentist, Horace Wells, on 11 December 1844 in Hartford, Connecticut USA, although shortly afterwards, ether became more popular.[6] The importance of this new discovery was quickly realised and within weeks it was being used in London, and possibly earlier in Dumfries. The circumstances surrounding the Scottish claim is examined in some detail. Within weeks of the discovery, Glasgow dentists were competing with one another through advertisements placed in contemporary Scottish newspapers, for the distinction of being the first to use the new discovery in the City.

The introduction of anaesthesia must rank as one of the greatest benefits to mankind in general and dentistry in particular. Both ether and chloroform were widely used in surgery and dentistry, although the use of chloroform became less frequent throughout the United Kingdom, except in Edinburgh, where it continued to be used long after it had been discontinued elsewhere.

Edinburgh had strong connections with Sir James Y. Simpson - pioneer of chloroform - and a staunch publicist of the benefits of anaesthesia. The advent of anaesthesia made surgery in general and dentistry in particular a relatively

painless experience, and was yet another factor which contributed to the increasing demand for dental treatment.

The establishment of professional associations and dental journals were evidence of evolutionary changes, if not always of progress; their role in the development of dentistry should not be minimised. Scottish branches of the British Dental Association were soon established and many of the leading figures in the national movements were Scots.

Around the beginning of the twentieth century, the results of various epidemiological surveys and Government reports showed not only the condition of the nation's health but also the poor state of the nation's teeth. Reports on the rejection rate for Army recruits due to bad teeth came as something of a shock to Government, but not to the dental profession. Allied to the set-backs suffered in the South African Wars, a rash of reports and inquiries disclosed the deplorable state of the teeth of school children.

The numerical strength of the Armed forces was now being affected by recruits with defective dentitions and poor oral hygiene. The outbreak of War in 1914, drew attention to the lack of provision of dental treatment for British troops as compared with the enemy, a fact which was highlighted by the arrival of the American forces in 1917 accompanied by well-equipped dental units.

Examination of the Dentists Registers from 1879 to 1921 shows only a small increase in the numbers of qualified dentists. The reasons for this are examined in the thesis and the increasing demand which accompanied the social, economic and industrial changes was now reinforced by political considerations due to changes in Government policies. After the 1914-18 War, a climate of opinion conducive to the idea of state intervention in matters hitherto considered to be the responsibility of the individual, now became acceptable. Public health and welfare were now accepted as rights and the introduction of

old age pensions and National Insurance set the scene for further changes in dentistry.

The findings of an unique inquiry into the state of dentistry in Great Britain are discussed and their significance examined. [7] This particular report led to the Dentists Act of 1921 and the closing of the door to all but qualified dentists. The events leading up to this and the temporary resolution of the divisions affecting the professional dental bodies are the subject of the last chapter. Finally, a reassessment of the status of dentistry and the repercussions of the 1921 Act are examined.

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Chapter 1

Dentistry Before 1800

1.1 Dental and Medical Care in the Ancient World.

Historically speaking, the art and craft of dentistry is not a recent development. There is strong evidence to support the view that the construction of dental appliances was widespread in Egypt in the Third Dynasty, circa 3,000 B.C. Junker in his investigations into graves near the pyramids of Geza, found inscriptions on the steles or tombstones which described the deceased as 'toothdrawers' and 'toothers'.[1] This named speciality can be traced through the Fourth and Fifth Dynasties when *Ny-An-Seket* was designated 'Chief of the Toothers of the Royal Palace'.[2]

In Greek times, from around 2,500 B.C., Aesculapius, Hippocrates, Galen and Aretaeus the Cappodocian are all mentioned as having written on and treated dental as well as medical conditions.[3] Hippocrates - 'The Father of Medicine' - is described by Plato as a professional trainer of medical students and, according to Campbell, wrote extensively on the dental organs and their development. He also dealt with dental disease, extractions and the instruments required as well as with the effect of defective teeth on health. [4] It should be noted in passing that there is some scepticism among modern scholars as to whether Hippocrates was an actual person, or whether from vague beginnings the name came to be applied to all the writings of the group, possibly the products of numerous disciples of a school of thought. [5]

Aesculapius is believed to have been a living person who was subsequently deified to become the Greek God of Health. He was worshipped in the temples to which the sick came for treatment, generally administered by the priests who, apart from their other qualifications, were trained in the use of

drugs and manipulation.[6] Aesculapius is also credited with the introduction of tooth extraction.[7]

The Etruscans, (1,000-400 B.C.), flourished in what is now the province of Tuscany in Italy. Archaeological finds in Etruscan tombs have been positively identified as primitive dental bridges and partial artificial dentures.[8] Some of these bridges would have been removable, others would have been permanently attached to adjacent teeth. The retainers, (the attachments to the natural teeth) were mostly of gold, generally broad bands covering so much of the tooth, so that it could be assumed that this was deliberate in order to appear visible in the mouth. One such bridge had three pontics (artificial teeth) and was constructed to be held on five abutments (supporting teeth). It would appear that the wearing of these appliances was a sign of wealth and refinement only accessible to persons of means.[9]

Aristotle (384-322 B.C), following in the Hippocratic tradition, applied objective observations to a broad spectrum of scientific subjects which included anatomy. He urged caution when extracting teeth and said that once a tooth had been moved or loosened with forceps, it was better to extract it by hand.[10]

The Roman Empire at the height of its power and in control of most of Europe and parts of Africa, did not lack for material things. The rich and fashionable society in which many of the better-off classes lived, no doubt contributed to the marked deterioration found in their dentition. [11] Aurelius Cornelius Celsus lived in the reign of Tiberius Caesar (42 B.C.-37 A.D.). He wrote in Latin on many subjects including medicine and it was his medical treatise, *De Re Medicinae,* neglected in the intellectual stagnation of the Middle Ages which was resuscitated in the 15th century, being one of the first medical books to be published in 1478. [12]

Celsus offered advice on the successful extraction of teeth using forceps and advocated filling extensively carious teeth prior to extraction in order to avoid fracture of the crown.[13] On the other hand he also suggested that toothache might be cured by applying to the corresponding shoulder a plaster of myrrh, saffron, figs and mustard seed, a fairly innocuous remedy in contrast to the advice of some to use glowing ash wood inserted into the tooth cavity. [14]

Biblical research shows that the Hebrews were well acquainted with the care of the teeth and the construction of dental protheses. Weinberger in his article, *Dental Art in Ancient Egypt,* quotes Absell:

> ...the ancient Hebrews in their medical practices diagnosed and treated diseases of dental manifestation; that the general physician acted as dentist; that dental protheses was not unknown and that certain types of crown and bridgework were made by certain craftsmen and artisans. ...[15]

Further evidence comes from the Talmud itself; the Talmud incorporated the Judaic Law and decisions on all matters likely to affect every-day living. Opinions and interpretations were set forth in the 'Mishna', for example:

> ...A woman may go out [on the Sabbath] with whatever she may be accustomed to have in her mouth, provided she does not put it in her mouth for the first time on the Sabbath, but if it falls out [on the Sabbath] she must not put it back. As far as an inserted tooth or a gold tooth , Rabbis permit it, but the sages forbid it. [16]

Weinberger, an authority on dentistry in Ancient times, agrees that dental restorations were fairly common and suggests that the Rabbis were busy trying to interpret just when and what artificial dental substitutes might be worn,as judged by the various decisions rendered.

From these opinions it can be surmised that gold and silver was used for individual crowns,removable bridgework and other dental restorations. One particular case from the Babylonian Talmud (353-427), concerns a certain maiden lady who had been rejected by a man to whom she had been betrothed, because she displayed an unsightly artificial tooth. Weinberger quotes the following passage from the Mishna:

> ...She had an inserted tooth, but Rabbi Ishmael (1st Century) made [for] her one of gold [to replace the inserted tooth] which so improved her appearance that the man accepted her in marriage.... (Mishna Nedarim 66.6). [17]

In spite of these skills and craftsmanship in fashioning dental appliances, superstition, charms and incantations were the rule in Roman times. Pliny the Elder recorded the contemporary belief that a frog tied to the jaw would make loose teeth firm, that pains in the gums responded to scratching with a tooth taken from a man who had met a violent death, and by inserting drops in the ear composed of oil in which earthworms had been boiled, the toothache would be banished. [18] But medical treatment as late as 1837 offered equally absurd cures, for example consumption and asthma being treated with pills made from cobwebs. [19]

In the later Greek period of the 2nd to the 3rd centuries A.D. Aretaeus the Cappadocian writing about ulceration about the tonsils said:

> ...and if the disease spread outwardly to the mouth and reach the columella (uvula), and divide it asunder, and if it extend to the tongue, the gums and the alveolus, the teeth also become loosened and black. ...[20]

Unfortunately, there is, according to Aretaeus, little likelihood of recovery from this condition and death would ensue in a short time. With the treatment advocated -

opening a vein and drawing off blood - the patient might die sooner.

Between the Greek, Roman and Hebrew civilizations and the cultural atrophy of the Middle Ages, the Arabs alone tended the 'Lamp of Intellect in Europe.'[21] The introduction of zero and Arabic numerals advanced the development of mathematics - operations on Roman numerals do not lend themselves to rapid calculations.

Several Arab physicians and surgeons wrote about the teeth. One of these was Abulcasis, who used gold and silver wires to hold loose teeth in position and described and illustrated instruments for the removal of salivary calculus and extractions. He is also reputed to have been expert in carving substitute teeth out of bone. [22]

Typical of the approach to medical and dental treatment in the Middle Ages are the writings and advice given by John of Gaddesden, who lived from 1280-1361. His book, *Rosa Anglica Practica Medicine a Capite ad Pedes*, is a compendium of medicine in which diseases are discussed under headings: 'Causes', 'Signs','Prognosis' and 'Cure'.

As can be seen from the title, it begins at the head and ends at the feet. It was almost certainly intended as a manual for those who tended the sick. In the Middle Ages the village priest or Abbey or Monastery priest would look after the sick under the direction of the Abbot or Father Superior. He would also be responsible for the people living in the Abbey neighbourhood and on the feudal estate. *Rosa Anglica* was well known in this period, in fact Chaucer mentions it as one of the books in the library of his typical physician. [23] The contents are sometimes rational, but more often include superstitions, charms and incantations. The recitation of the latter being of equal importance to the recipe for the cure. For example, "...whosoever shall say a prayer in honour of St. Apollonia Virgin [February 9], shall have no pain in his teeth on the

day of the prayer."[24] Or again, " ...Draw characters on parchment or paper and let the patient touch the aching tooth with his finger as long as he is drawing and he is cured. " [25] The characters were to be made in the shape of running water by drawing a continuous wavy line. Three lines were to be drawn in the name of the Blessed Trinity, and this was to be done frequently. Another 'cure' was described as follows:

> ...If the many-footed worm which rolls up into a ball when you touch it, is pricked with a needle, and the aching tooth is then touched with the needle, the pain will be eased. ...[26]

The above are just a few examples of the hundreds of remedies recommended during the Middle Ages for the relief of toothache, the cause of which with some notable exceptions, was held to be worms. [27]

The antiquity of dentistry as an art and craft is therefore not in doubt. On the other hand the emergence of scientific dentistry during the nineteenth and twentieth centuries is of recent origin, historically speaking, achieved through a long and slow evolutionary process which is still in progress. It is outwith the scope of this work to follow the convoluted pathways which emerged in various civilizations and through different eras. Showing that the development of dentistry and medicine and the progress of their respective professions depended upon the geo-political, socio-economic and cultural conditions which prevailed, will be one of the main objects of this thesis. Different nationalities developed their medical and dental professions by different routes. It is in relation to this background that attention now focuses on the Scottish scene.

1.2 The Rise of the Medical Profession: The Barbers and Barber-Surgeons

In order to understand the intricate and often contradictory claims made for the origins of dentistry, it is necessary to outline the developments which resulted in the emergence of the medical profession. These as far as Scotland is concerned, arose around the larger centres of population, mainly Glasgow and Edinburgh, although there were other areas outside these cities where the healing arts were practised. [28]

The rise of medicine and dentistry in Scotland was different from that in England. Richards in his comprehensive and searching thesis, does not draw this distinction, although he points out that the emphasis is on the English scene and that his researches are based on "a socio-historical survey" which traces the social and economic conditions prevailing in England, significantly different from the Scottish experience.[29, 30, 31]

The history of the medical profession in Glasgow differs in one respect from that of other medical centres in the British Isles. In London, Edinburgh and Dublin, physicians and Surgeons were organised in separate colleges whereas in Glasgow, the physicians and surgeons were united from an early period in one corporation as in Hippocrates's time.[32]

Being able to read Latin, clerics could collect recipes and acquire useful remedies. They treated all manner of diseases not neglecting to exact their fees, indeed, treating the body was more remunerative than ministering to the soul. The monks too, took kindly to medicine often making long journeys for the purpose of finding and treating patients. But the ecclesiastical enthusiasm for medical duties, both in the preparation and practice, gave alarm to the higher authorities and as a result various edicts were issued with a view to limiting the range of their medical work.[33] In 1215, Pope Innocent III, debarred ecclesiastics

from performing any operation involving the shedding of blood - '*Ecclesia abhorret a sanguine*'; this aphorism expressed the pretext rather than the reason for this new departure.[34] Coincident with this pious horror of blood was another factor which prompted the Church to withdraw from surgery, this was the growing spirit of feudalism, which had drawn a dividing line between the gentlemen and the handicraftsman. Manual labour became the badge of the inferior class.[35]

Surgery was now regarded as simply a manual act; its deep and essential relations to medicine were to a large degree lost sight of. But although debarred from surgery, the Churchmen saw no reason why they should not share in the income from surgery, so they decided to use deputies from among their own retainers and servants.[36] The obvious choice was the barber; he was more skilful manually and so with his functions extended he emancipated himself by degrees, thus gaining a position of comparative independence. Thus throughout Europe in the 12th and 13th centuries, there arose a new class of craftsman, men who wielded the lancet and the knife equally with the scissors and razor, cunning in the application of ointments, plasters and baths, blending suppleness and humility often with inordinate conceit. [37] They also were skilled drawers of teeth.[38]

Such appears to have been the evolution of the oddest of all figures in later medieval society, the barber-surgeon, a figure which did not finally disappear from Europe till the beginning of the 19th century. These men, it is claimed, were the progenitors of the dental profession.[39]

By the end of the 12th century, surgery had become separated from medicine and for the next 150 years the barber-surgeons practised both barbery and surgery. Duncan says:

> ...It is probable that the process of resolution would have been considerably accelerated in the British Islands, but for the drag placed on the natural movement of events by the conservative tendency of the trades-guilds or corporations. ... [40]

The guilds of craftsmen appear to have originated partly for the observation of religious rites and partly by the powerful instinct of self-preservation, but as time passed the guilds served as a strong bond or centre of organisation for each calling by means of which the common affairs of the members of the craft could be regulated.[41] It was in this sphere that the development of dentistry was transparently deficient, there being no such guild or corporation to serve as a centre of growth in these early days. The reasons for this are manifold and complex but primarily it was because there was no single occupation which could be identified as a distinct art or craft. Certainly, later on, dental societies appeared, but they were not in response to the causes which were responsible for the rise of the guilds, and it was not until the founding of the Faculties of Surgery in Glasgow that some control on the practice of surgery was exercised.[42]

In England, the barbers of London existed as a guild in 1308 and incorporated with the surgeons in 1462, but there was also a body which comprised barbers who practised surgery only.[43] In Ireland, the barbers were joined with the surgeons in Dublin in 1572. [44] In Edinburgh, a 'Seill of Cause' was obtained by the Provost, Baillies and Council of the Burgh of Edinburgh in July 1505 and confirmed in 1506 by James IV, incorporating the barbers with the surgeons, allowing them to set up their own organisation.[45] But the marriage was not a happy one and gradually the partners drifted apart.

They remained legally joined until 1845. [46] In England a further complication to the story of the development of the medical profession occurred about the time that surgery became split off from medicine with the appearance of a further specialization. Men who had applied themselves to the composition of drugs and the study of Materia Medica became a distinct group - the Apothecaries. In London, the College of Physicians controlled the Apothecaries and the English rigid attitude that medicine and surgery could not be practised together made a union impossible.[47] In Scotland, the case was different. The surgeon and the Apothecary were usually united in one individual - known officially as a Chirurgeon-Apothecary. These surgeon-apothecaries were the early general practitioners. [48]

As regards medicine, even although the cleric was debarred from the practice of surgery, he was permitted and continued at any rate in England, to practise 'physic' and even in 1512, six years before the establishment of the Royal College of Physicians of London, the Bishop of London was still placed at the head of an examining board, albeit he had four physicians to assist him in the task of selecting suitable candidates as doctors.[49] But it soon became clear that the duties of cleric and physician should be kept apart, although it was still recognised that this separation of functions did not exempt the physician from the necessity of having the liberal, academic training enjoyed by the best of the Churchmen. He would therefore be a student at a University from which he took his degree.[50]

Socially, the physician was recognised as superior to the surgeon, the latter was a craftsman, the former a gentleman and a similar distinction marked their qualification to practise within prescribed limits. The physician's degree was an honorary academic distinction implying general culture and a basic scientific knowledge of medicine, but conditioned by no territorial restrictions, he was not legally entitled to recover fees for his attentions.[51]

In Scotland however, although there had been attempts to teach medicine at St Mary's College St Andrews, and also with more success at Aberdeen, there was no proper medical faculty in any of the universities - and virtually no medical teaching until the last quarter of the 17th century.[52]

At the end of the 16th century in Scotland, a few of the larger towns had one or possibly two physicians. They were educated abroad, usually Italy, France or latterly Holland. Most were originally barber-surgeons and were the Consultants of their time - some had apprentices, but to learn the art of medicine it was necessary to go abroad. Fortunately,it was not difficult for the Scottish student to find facilities for his education especially in France as a special law ratified in 1599 by Henry IV enabled Scots to be naturalized in France.[53] The students were often tempted to settle there permanently or for a considerable period and some of them rose to considerable eminence; thus Henry Blackwood, a doctor-regent of the Paris Faculty of Medicine, became Dean of that body, whilst Peter Lowe was one of the Surgeons in Ordinary to Henry IV.[54]

In addition to the recognised physicians, barber-surgeons and the surgery-only barbers, there was a motley array of nondescripts who roamed all over Scotland, many of them self-styled 'specialists' including itinerant tooth-pullers and medical charlatans with their miracle cures; nearly all of them very ignorant, but using their showmanship to attract the public first, then sell them remedies for every ill.[55]

1.3 Peter Lowe and the Founding of the Royal Faculty of Physicians and Surgeons of Glasgow.

The 16th and 17th centuries were a time of immense intellectual and artistic achievement - the names of Galileo, Kepler, Newton and Descartes, of Rubens and Rembrandt, of Shakespeare and Moliere, of Bernini and Wren, are all reminders of the European contributions.[56] But Scotland though, " poor and small and geographically remote ... it was certainly not isolated". [57]

Scots attended universities in France and Holland, the University of Leyden being a particularly popular centre for those wishing to pursue the study of medicine. Scottish merchants imported all kinds of foreign books and sophisticated craftsmanship from England and Europe including Dutch hangings for the bedroom, fine Belgian silks for dresses, all kinds of foods, unknown in Scotland previously and of course wines. But this style of living was not for the majority of Scots. Smout suggests that two out of three of the population could be described under the general description of "peasants". [58] At the other end of the social spectrum the landowners and nobility occupied the rarer atmosphere, whose living standards would have been unimaginable to the peasants. However, there are some who would not subscribe to this view of the Scottish scene. Alexander Duncan, writing in 1896 says:

> ...the intellectual barrenness of Scotland generally during the 17th century has often been made the subject of remark. The chief causes of this mental sterility are indeed not far to seek. The whole country was ablaze with religious and theological zeal. In the fierce heat of ecclesiastical polemics and the political convulsions, which added fuel to the flame, the seeds of literature were scorched and withered. ...[59]

It was in to this kind of society that Peter Lowe first appeared in the Spring of 1598, the first recorded mention of his name appearing in the Burgh Records of the City of Glasgow dated 17th March 1599, implying the renewal of a contract between the town and Dr Lowe.[60] A further item taken from the minutes of 1605 refers to pension arrangements; "... Gifin upone the last day of August to Mr Peter Lowe, Chyrurgin, for his pension in Anno 1608 addedit be the town to him, conforme to ane warrant, liii £ vi s viii d " .[61]

This is a reference to his pension or payment made to him for attending to the poor of the town, the amount being £53.6.8 Scots (the Pound Scots is currently equivalent to $8^1/_2$ pence - 1994), probably a reasonable sum for that period, but certainly it would appear not the reason why Lowe should settle in Glasgow. The organisation of the physicians and surgeons in Glasgow was unusual in two respects. Firstly, Glasgow ranked about fifth in population in Scotland (Smout's figure for this period is between 10,000 and 12,000,rising to about 14,000 by the end of the 17th century). [62] Secondly, as has already been pointed out, the link between the physicians and surgeons was, to quote Hamilton, "...an innovation in those days. ...".
But since there was only one physician, six surgeons, one apothecary and two midwives in the town, one Faculty made sense and a study of Lowe's background helps to explain much.[63]

Peter Lowe was a Scot thought to have been born in the Errol area, the title-pages of his published works all carried after his name the word 'Scottishman' and often 'Arellian', construed by many to be an allusion to his stay at the College in Orleans, but there is no evidence for this; in fact further research shows that Arrol was the ancient name for Errol near Perth.[64] He travelled abroad for his education and like many others chose France which at that time had special links with Scotland; in fact, they were granted citizenship of that country and encouraged to stay

(vide supra). Where Lowe's first degree was awarded is still not certain, but it certainly was *Magister Artium* (Master of Arts), as Lowe seldom omitted the 'Mr' or 'Maister' before his name.

His next place of residence was Paris where he trained in surgery at the College of St Côme, whose surgeons claimed to be 'the Faculty of Surgery' in Paris, enabling Lowe to confer on himself the status equivalent to a University training distinguishing himself from those who trained as apprentices.[65] On his return to Glasgow Lowe wrote to the King on behalf of the Church and magistrates of Glasgow over the number of unskilled practitioners in the city, petitioning for a charter to enable a college to be set up similar to the Faculty of Surgery in Paris. He was scornful of the barber surgeons and particularly their treatment of teeth, "... by which opinion the common Barbor Chyrurgions doe commit great error in plucking out of innumerable teeth which might well serve. ...". [66]

Using his royal connections, a charter dated 29 November 1599 was obtained from the King establishing the Faculty of Physicians and Surgeons of Glasgow duly endorsed by the Magistrates on 9 February 1600.[67] A name which continued for over 300 years until 1962 when "Faculty" was replaced by "College". Lowe's opinion of the barbers is illustrated by a passage taken from A Discourse on the Whole art of Chyrurgerie. He describes the fatal opening of an aneurysm, and continues to relate that the apothecary who saw the case "...sent for an ignorant Barbor like unto himselfe,"or as he puts it more playfully in his first edition,"...he sent for his brother the glorious Barbor. ".[68]

A further passage from the 'Chyrurgerie' relating to extractions reinforces his feelings for the Barbors:

> ... if it so be the best way is to pluck out the tooth like as many now doe but unskilfully and ignorantly for every small dolour or grief-persuading and confirming

> that to be the most sure and soveraigne remedy and oftentimes which is worse,they pluck out one oe two whole teeth and leaveth the corrupt as I have sometimes seen by the unskilful handling of that instrument [the Polycan]. ...[69]

The charter gave the right to three named men (Peter Lowe, Robert Hamilton and William Spang, 'apothecar') and their successors to carry out the registration and supervision of degrees in surgery and medicine, control the sale of poisons, inquire into murders and accidents and report their findings to the magistrates - in other words a form of inquest. Also to give treatment free of charge to the poor thus anticipating the medical relief of the Poor Law Acts. All in all, a most comprehensive and far-sighted document embodying remarkably progressive ideas for its period.

The granting of the charter to Glasgow was not the only remarkable achievement of Peter Lowe; he also had several text books printed in English,one of which was the Discourse on the Whole Art of Surgery first published in 1597; three further editions appeared, the second in 1612, the third in 1634 and the fourth in 1654.

The third edition embodied some twelve chapters dealing comprehensively with the mouth, teeth, gums, throat and associated areas discussing causes and treatments, comprising some thirty pages including a page of illustrations of dental instruments.

The significance of this work, written by a Scot, is that it is arguably the first original, systematic treatise on surgery and also the first corpus on dental treatment to be published in the English language. It pre-dated the book by Charles Allen - Operator for the Teeth - published in York in 1685, by more than fifty years - the latter contains twenty pages of text - and is claimed by most dental historians to be the first volume exclusively on the subject written in the English language.[70]

Mention was made earlier of the barbers and their role in the evolution of the Faculty of Physicians and Surgeons. From time to time they were admitted on an individual basis, but at no time had any real power in the management of the Glasgow body; in fact it was because of this that they finally broke away in 1719.

It was not until 1681 that the physicians of Edinburgh succeeded in founding a College but only after many unsuccessful attempts going back to 1621. [71] The new College was set up with restricted powers limited to Edinburgh only and in return gave an undertaking not to interfere with the work of the Edinburgh apothecaries or surgeons. In addition it took on the responsibility of treating the poor like the Glasgow Faculty.[72]

Although by the end of the 17th century, there were established medical bodies in both Glasgow and Edinburgh, treatment of the sick, including dental conditions, were extremely primitive and haphazard and where orthodox practitioners existed they were heavily outnumbered by travelling healers, mostly quacks and empirics, also known as 'irregulars' and mountebanks. [73]

In his *Caution to the Unwary*, E.Gray,'a Doctor in Physick and Physician to King William III',expressed the following views early in the 18th century:

> ...T'is generally acknowledged throughout all Europe that no nation has been so fortunate in producing such eminent physicians as this Kingdom of ours and t'is as obvious to every eye that no country was ever pestered with so many IGNORANT QUACKS and EMPIRICS....the enthusiastic physic: yesterday a Taylor[sic], Heelmaker, Barber, Servingman, Ropedancer etc., today, PER SALTUM, a learned doctor, able to instruct Aesculapius himself....[74]

Mountebanks were no new feature in Britain when Gray wrote these words. Quacks (quacksalvers, so called because they treated their victims with mercury), Mountebanks and empirics had been active for many centuries; most had their "Zany" or "Merry Andrew" to perform tricks and dances in order to attract an audience for their master's patter before he sold his medicines. Perhaps the most rewarding period for the charlatans were the 17th and 18th centuries, although the travelling seller of medicines at his stall if not on a stage has lasted well into the present century. [75] It was also very common to have an exhibition of tooth pulling as part of the 'warming up' process and mention will be made later of one such personality in the 1890's - the infamous 'Sequah'.

Although the towns of Scotland had a primitive form of medical profession with itinerant healers, the rural areas had few practitioners of any kind, thus the bulk of the people of Scotland either treated themselves or sought the advice of folk-healers; this approach was common at all levels of society and descriptions of these methods were recorded in diaries and day-books. [76] One of the least innocuous of these remedies appears in the diaries of the Rev.Robert Landes of Robroyston,written in 1670; it is typical of the folk-healer approach:

> A Singular Remedie for gout or cramp.
> Take a fat young whelp,scald him like a pige take out ye gutts at ye side therof Then take Netles and stamp them with 2 unces of Brimston with 4 yoks of eggs and 4 unces of Turpentine,Incorporat all together and put in the whelp's bellie,so sowd up that nothing of this composition come out. Then Rost the whelp at a soft fire,keep the dropings that comes from him and anoint the grived place therwith:and in the meanyime Rub the paind place softlie befor you anoint it. ...[77]

A more appetizing remedy comes from the Estate Journal of McNeil of Carskey in Argyll, quoted by Hamilton:

> Take an quart of white wine and take into ane Glass yrof for nine mornings nine slaters being dryed and bruised into powder wt the juice of three ... onions being strained through a clean cloth,also put ane ordinary Dram of brandy into the Glass of white wine qch quantity drink for the sd space of nine mornings and itt will cure yow. [78]

A cure for toothache,of which there were hundreds, comes from the pen of Martin Martin, an early traveller in Scotland and a physician himself; he reported that a green turf was heated and applied to the cheek - a most reasonable palliative the principle of which is still currently in use. [79] Others preferred to use the spoken charm and often the name of the Saints; for toothache the name of St. Bride was invoked. [80]

Healing wells, healing stones and witchcraft were all extensively used at the turn of the century in a search for cures, and although wells and stones were popular, witchcraft was a criminal offence in Scotland until 1734; the last burning took place at Dornoch in 1724. [81,82]

1.4 Social Conditions in Scotland in the 18th Century: A Comparison with England.

There is a considerable uniformity of opinion among historians of Scotland on the importance of events which occurred at the beginning of the century. T.C.Smout,in his History of the Scottish People referring to the Union of the Parliaments, goes so far as to say that the whole history of Scotland since the 17th century has been "overshadowed" by this event.[83] He goes on to say that the Union, "...did not fall like a bolt from the blue. It marked only a stage, though certainly an important one in the long story of

Scotland's absorption into a wider Britain." [84]

T.M.Devine, in his introduction to People and Society in Scotland, points out that in recent years it has become fashionable for historians of English society in the 18th century to argue that economic growth and social change were much slower than was suggested in some classic accounts of the Industrial Revolution. He says, "...Already by c1700, the industrial,trade and urban sectors were well developed...and economic advance in agriculture was very widespread". [85] The process is now regarded as being gradually evolutionary rather than revolutionary. Devine goes on to suggest that the Scottish route to modernisation took a quite different path and over a much shorter period of time than in England, thus Scotland proceeded towards industrialisation by a unique route and, as Devine says, in distinct contrast " ... to the more familiar story of English social change during the Industrial Revolution. ...". [86]

Although these changes took place over the whole spectrum of human endeavour in Scotland, the key areas were in demographic growth, urbanisation and agrarian change and in subsequent chapters it is hoped to show how these factors affected the demand for dental treatment over the next 100 years or so, although many other elements were also involved.

The problem of attempting to assess the quality of life in Scotland in the 18th century, is that it varied from region to region and also according to occupation, the latter, to a great extent also determined the social standing of the individual. This was reflected in a self-awareness of one's position in Society, a philosophy developed later on in Victorian times and used to 'regulate' and justify the squalid and poverty stricken conditions of a considerable section of the population.

During the 17th and 18th centuries, Scotland suffered a succession of disastrous years in which disease and famine were prominent. These often culminated in periods of acute starvation. [87] One such period occurred towards the end of the 17th century in the last years of King William's reign when famine struck and it was reported that in one district, so many families perished from want that for six miles formerly well inhabited, "... there was not within the year an inhabited house remaining ".[88]

Women were found dead on the roads and babies died suckling at their mothers' breasts. "...In the parish of Duthel, many feeling the near approach of death crawled to the churchyard so that their bodies might not long be left exposed ". Many were "... buried where they died as the few surviving relations had neither the strength nor means of carrying them to the common burying place ". [89] Even when food was available, it usually was so tainted that it resulted in severe outbreaks of dysentery and other diseases, and it was reckoned that there were 200,000 people out of a total population of just under one million, begging from door-to-door.

Although there was another famine in the 1740s,it was not so severe, but again many died of starvation and it was not unusual to find dead bodies on highways and in the fields. Scarcity was so great that many offered to work just for bread and it was reported that in the parish of Monquitter a number of men were, "...glad to accept twopence each day in full for their work. ...". [90]

Due to a freak spell of severe weather, there was another crop failure followed by famine in the years 1782-1788. The municipalities of Glasgow and Edinburgh imported grain for the public benefit. A government committee was appointed to inquire into the state of Highland districts and the prospect of supplying them with grain, and on 6 June 1783 the House of Commons resolved to present an address:

> ...beseeching his Majesty to be graciously pleased to give such directions as may tend most effectually to avert the evils that are to be apprehended from the calamitous state of the northern state of Scotland and assuring his Majesty that this house would make good such expenses as shall be incurred by his Majesty in relieving the misery to which his Majesty's unhappy subjects may be reduced by so deplorable a calamity. [91]

The sum raised, £15,259 was used to buy meal and grain which was distributed in the counties of Inverness, Aberdeen, Perth, Argyll, Dumbarton and Forfar. Hamilton comments that this was the first entry of government into famine relief and remarks that the intervention was partly the result of compassion and partly reaction to the increasing political power of the working class manifested by the riots during the famines of 1740. Also there was the realisation of the military and economic value of a healthy work force in the increasingly sophisticated manufacturing sector and in the armed forces. A more cynical interpretation might be that causes of the French Revolution had not gone unnoticed.[92]

Meal of one kind or another formed the staple diet of most of the population,the best wheat being grown in the Lowlands.[93] The Highlanders depended upon their crops of oats, barley, pease and bear (an inferior kind of barley), but distribution was by no means uniform and on several occasions meal had to be shipped from Inverness around the north of Scotland to the western Highlands and islands.[94]
The meal was served according to the time of day as pottage, brose, bannocks, kale or sowans.

Pottage, porridge or hasty pudding as it was variously called, was oatmeal which was added to boiling water and allowed to thicken; most people ate it cold, either alone or with milk or kale. 'Brose' was made the other way round, by stirring boiling water into a bowl of meal.
'Sowans' was yet another oatmeal-and-water dish, made by

stirring them together and leaving the mixture to stand for a few days until it was turning sour, then the thinner parts were drained off and boiled, making a light pudding best eaten with milk.[95]

The most savoury dish based on meal was kale, containing a large proportion of greens. It was a broth made from groats, boiling water, cabbage, and sometimes with the addition of a little meat boiled for several hours and once again often eaten cold. Additional to this list were bannocks (meal cakes cooked over the fire on a bakestone). It is not surprising to learn that it was customary for the university student of this period to take with him enough meal to last a term.[96] As far as the poorer classes were concerned, meals consisted of porridge or brose for breakfast,with milk or ale, kale and bannocks for dinner (with meat for those who could afford it) and for supper either porridge or sowans or more kale. It was not until about the end of the eighteenth century that potatoes found a place on the ordinary menu.

Bread as we know it today was not yet part of the Scottish diet; wheat was not obtainable in many parts of the country and loaves would only be available where there were ovens in which to bake them. Most Scottish houses depended upon open fires to do do all their cooking and it was only in the homes of the affluent that wheaten bread appeared and then only on special occasions such as the New Year when loaves full of aniseed were part of the traditional fare; the demand for bread was so poor that many bakers in the towns limited their baking to two days a week.[97] However in England at this period, there was such a demand for white bread (following the improvements in wheat growing) that bakers were adulterating their flour with alum or chalk to make it whiter still, a practice which was to become common in Scotland in the nineteenth century.

Milk was one of the items which was in most parts, easy to obtain being supplied from the home farms of the great estates, but in the southern part of the country, milk had to be sparingly used as the yield from the ill-conditioned cows was low, "... about two Scot's pints a day," [98] not surprising as the cattle were regularly reduced to skin and bone by lack of winter fodder.[99] But there were other compensations and around the long Scottish coastline and inland lochs there was an abundance of herring, haddock, mackerel and whiting and in the Inverness district over a hundred salmon were often caught at one haul; in fact, in Aberdeenshire the rivers Dee and Don were so full of salmon that the servants refused to eat them more than twice a week.[100]

By the end of the century all kinds of sea food, game and fresh meat were available in many parts of the country replacing the salted beef eaten during the winter months. In some areas it was still difficult to buy small quantities and so any one who wanted beef had to buy the whole animal, but once again there were exceptions and the village of Galston in Ayrshire had two butchers to serve a population of six hundred. By 1750, Glasgow had two market-places where housewives could buy meat by the pound. The rural areas fared better in many respects than the towns since kitchen gardens ensured a year long supply of fresh vegetables and fruits, many of which were conserved for later consumption along with barrels of home made drinks.[101]

The increase in the cost of food and other commodities during the eighteenth century was as rapid in Scotland as in England. In Ayrshire for example, the price of provisions doubled between 1740 and 1790 and Ferguson notes that the closing years of the eighteenth century were hard. He quotes Dr Samuel Johnson that thousands died of starvation, while many suffered from ague, asthma, consumption and rheumatism. [102] Many communities took action to relieve the want of the poor and in Edinburgh about one eighth of the population were fed by charity.[103]

The Town Records of Dingwall for 8 March 1800 contain an entry that Baillie Munro had reported:

> ....upon the the present alarming scarcity and high prices of meal and victual and it was suggested that a subscription be opened for the purpose of raising a fund in order to provide and sell meal to the necessitous poor within the burgh at reduced prices. [104]

Sir John Sinclair in his Statistical Account notes that the principal changes that had occurred in the mode of living of the people of Scotland at the end of the eighteenth century arose from the use of potatoes and tea, and from the greater abundance of spirituous liquors.[105] The better sort of potatoes he wrote, properly prepared could be used with perfect safety, and where the inhabitants lived on salted provisions, the use of potatoes was of great service in preventing scorbutic (scurvy) complaints. Scurvy and scrofula (Tuberculosis affecting the lymphatic glands in the neck) were common in Scotland at this time.

Tea in moderation and of good quality, might be taken without injury (according to Sinclair), but the poor used a very coarse type of black tea, drank it very strong and often without milk or sugar. (Reference will be made in a later chapter to sugar being consumed in huge quantities in tea). The tea was drunk "... so hot that it produced the most fatal results on the nervous system ".[106] The most injurious alteration in the diet from a moral as well as a health point of view, was the substitution of spirits for ale. "... Many became tipplers, neglected their business and were ruined; consumptions, stomach complaints, insanity and a multiplicity of nervous disorders were more frequent than formerly. ... ". [107]

There was no lack of corroborative evidence of the ill-effects of tea and spirits and twenty years after Sinclair, Inspectors of Poor were still attributing the decadence of the Scottish people and the increasing amount of pauperism

among them to the habit of tea drinking.[108] This custom of tea drinking had to meet opposition from many quarters and as Ferguson (1948) points out "...It was not only [from] the patriotic,the old-fashioned and the robust, " but also from, "...magistrates, ministers and doctors. ...". It was estimated (in 1840) that the amount of spirits consumed in Scotland was equal to twenty-three pints per head of the population per annum, as compared with seven pints in England and thirteen in Ireland. And it was stated that when the drunkards of Glasgow became too poor to satisfy their appetite for spirits, they resorted in great measure to Laudanum.[109] This drink problem was to continue well into the nineteenth century and accompanied the city's phenomenal growth and mounting social problems.

After a delay, the Union did result in economic growth in Scotland, notably in the tobacco, linen and cotton trades.[110] These new industries attracted the migrant labour from the country to the towns, but the consequences of this movement was to lead later not only to the overcrowding, squalor and disease of the nineteenth century, but was also, it will be argued, a further contributory factor in the demand for dental as well as medical care. The movement in population was most marked to west central Scotland, and Glasgow grew from having about half the population of Edinburgh to being the biggest town in Scotland.[111] It was in 1726, that Daniel Defoe described Glasgow in glowing terms: "...'t is the cleanest and beautifullest and and best built city in Great Britain. ... "; but by the end of the century it was beginning to earn its reputation as the least clean city in Britain, one of the many by-products of the Industrial Revolution.[112]

As Devine points out in his introduction to <u>People and Society in Scotland,</u> although the commercialisation of agriculture had been advancing over the century, albeit slowly, urban growth was vigorous and mercantile activity was extending both at home and overseas. "... In a few farms in the Lowlands, organisation was becoming more recognisably

'modern' with larger units of production under the control of single individuals,committed to supplying the needs of the market." [113]

However, by the standards of England, one of the most advanced economies in western Europe at the beginning of the eighteenth century, Scotland was still poor and backward in material terms and, as Devine further points out, mortality rates were much higher in Scotland than in England before 1760. This is one of the factors that helps to explain why Scottish population increase in the later eighteenth century seems to have been more associated with a sharp fall in death rates rather than with a significant rise in fertility.

Another contrast was in the scale of urban development. Whereas in England 14 per cent of the population lived in towns of 10,000 inhabitants or more, the figure for Scotland was just 5 per cent; the vast majority of rural dwellers in Scotland still depended to a greater or lesser extent on access to land to make ends meet, a consequence of the differences in the structures of the two societies. These figures were to change dramatically in the nineteenth century.[114]

The eighteenth century witnessed increasing market activity as urban growth intensified and the production of linen and other textiles in the countryside brought many more into the nexus of commercial exchange.[115] But relative to England, Scotland was still lagging. A further example quoted by Devine refers to the fact that controls and regulations in connection with bread prices lingered on in Scotland long after they had been abandoned in England. The result was that when the controls were finally rejected in the early 19th century, the effect was more disruptive and "...helped to fuel the social tensions which intensified in Scotland in the post-war years."[116]

Even as late as 1821, as many as two Scots out of three worked on the farm, the croft, in the country village and the small town; however their living conditions were quite different from those of their forebears for they were now landless employees, "....subject to the new pressures of labour discipline, enhanced productivity and cyclical unemployment ".[117]

The examples given are only a small sample of some of the differences in the way of life 'enjoyed' both sides of the border, but it can be seen that these inequalities might be of significance in future developments in the field of health care, particularly in the provision of dental health. It is because Scotland was so far behind England economically, socially and also in agricultural, industrial and commercial activities, that when the demographic 'explosion' occurred in the next century, Scottish endeavours especially in the fields of medicine and dentistry, appeared to have taken such a gigantic leap forward (these were major components of the Scottish Enlightenment). "...The age-long gap between a rich England and a poor Scotland narrowed and perhaps came close to disappearing ... ". [118] In fact, it was a real as well as an apparent accomplishment.

Recent research on comparative urban development in Europe, suggests that the rate of urban growth in Scotland at this time was the fastest of any region either in Britain or the Continent.[119] These changes had a profound effect on the structure of Scottish society and also on the demand for a more effective supply of health care and in particular, on dental care.

1.5 The State of Medical and Dental Care at the End of the 18th Century.

The Union of Parliaments eventually brought a new peace and prosperity between Scotland and England, so there was a period of relative progress. Unfortunately, reliable health statistics do not appear until the end of this period, but it is generally agreed that there was an improvement in the health of the people of Scotland which only regressed with the onset of the Industrial Revolution at the close of the century.[120] Major epidemics temporarily disappeared, the primitive methods of famine relief became permanent and the population of Scotland increased from about 1 million to 1.6 million.[121]

The rise of the towns and their industries created a new middle class and this together with an increase in medical knowledge heightened the demand for medical and dental treatment. As Hamilton puts it :

> ...A new spirit of naturalism replaced the rigours of the Post Reformation period, this together with a national effort of self-improvement led to a remarkable flowering of the intellect of Scotland, in which medical research and education played a central role.[122]

In spite of these, albeit modest advances, itinerant healers still roamed the country dispensing their 'cures', but with the new knowledge, even <u>their</u> methods changed and the quacks became enlightened using some of the new knowledge that was becoming available.[123]

The history of medical education in Scotland, particularly in the 18th century, is a subject on its own right and much of what has been written owes a great deal to the classic work of Comrie and subsequent writers, of various nationalities. [124]

Many of these - some of them English - stressed the superiority of Scottish medical education. [125,126] To quote Newman, "...In the 18th century and indeed well into the 19th century, Scottish medical education was far superior to the English counterpart..." and, "...the Scottish universities were in the 18th century undoubtedly the greatest medical schools in Britain, probably in Europe".[127]

Medical education had been completely reorganised about a hundred years before on a basis largely derived from Holland; Leyden was the favourite place as the result of the teaching of Herman Boerhaave (1668-1738). The essentials of the Scottish system were systematic and well thought out courses of instruction given in the form of lectures by professors, including a great deal of general science as applied to medicine. These elements were combined with organized clinical teaching, and tested at the end for a degree by a fair and thorough examination. The whole process was in the hands of the Universities, whereas in England medical schools were much more the by-products of hospitals. [128]

Many reasons have been adduced for the remarkable rise in the status of medical education in Scotland at this time. One major progressive factor in the era of The Enlightenment must have been the fact that the Scotish Universities and schools accepted students denied access to medical education elsewhere. The absence of religious tests was one of the reasons for the popularity of Leyden as a centre for medical education and the proportion of Scottish students attending these courses who would not subscribe to the Presbyterian Church bears this out. (Of the English speaking students at Leyden,in the period 1709-1738, two thirds gave their country of origin as Scotland) .[129]

As Collins points out, "...While Oxford and Cambridge were centres of privilege and ecclesiastical preferment, the Scottish universities saw themselves as part of a broadly conceived national consciousness ".[130] The universities of

Oxford and Cambridge also placed obstacles in the path of prospective students who would not subscribe to the articles of the Church of England, so non-conformists and dissenters had a further incentive for choosing the Scottish universities for their studies. It was not until 1871 that all religious restrictions were removed; dental education was not affected as systematic training at recognised centres did not commence until after that period.
The following table shows the place of training of British medical graduates between 1600 and 1800:

Table 1.6.1: Location and Training of British Medical Graduates.

Date	Oxford and Cambridge	Europe	Scotland	Total
1600-1650	599	36	0	635
1650-1700	933	197	36	1,168
1700-1750	617	385	406	1,408
1750-1800	246	194	2594	3,034

Source: Hamilton, The Healers p151.

As Hamilton points out, these figures should be treated with caution since they refer only to graduates and therefore omit not only those who chose not to graduate, but also those whose training was by apprenticeship. Large numbers of surgeons and apothecaries trained in this manner are consequently excluded. Nevertheless, the number trained in this way was progressively decreasing at this time.

The increase in the demand for medical teaching in Scotland brought its own problems, one of which is relevant to dentistry. The clinical teaching was unsatisfactory and the anatomists had a shortage of human material for dissection. This led to the growing trade in the removal of bodies from graveyards and their sale to the college and university anatomists.[131] One such transaction was uncovered in Glasgow and the case which was held in the High Court of Edinburgh

made dental history, in that it was the first occasion on which dental evidence was given in a court of law as a means of identification. Several notable dentists were involved and the case aroused a great deal of interest. [132]

As the number of medical graduates increased, practitioners became more plentiful throughout Scotland; it was reckoned that by the end of the 18th centuty there were about 2,300 doctors throughout the country, but their distribution was uneven and many of the remote areas had no doctors, especially the outlying islands. It was not uncommon for a relative to make a journey to the mainland to describe the symptoms to the doctor and as Plant puts it, there was just a chance that if the relative did not let his imagination run away with him the doctor might recognise the malady and be able to dispense a remedy for it.[133]

Dental care - up to the end of the eighteenth century - was gradually spreading and the latter half of the century saw the first faint signs of a scientific and methodical approach to the teaching of dentistry, although treatment was still mainly extractions. Many factors were involved, one of which was the emergence of a number of dental notabilities, among whom was James Rae (1716-1791). Rae may have been the first to give a course of lectures on dentistry in Great Britain in January 1764 at Edinburgh.[134] He was descended from a family of long standing landed proprietors in Stirlingshire and was educated for the medical profession, becoming a member of the Incorporation of Surgeons in 1747 and Deacon in 1764-1765.
The Minute book of the Incorporation of Surgeons contains the following entry:

> 24th January 1764. Mr Rae informed the meeting that he proposed giving a course of lectures upon Diseases of the Teeth and desired the Corporation would be pleased to allow him the use of their Hall for the purpose which was unanimously agreed to. [135]

Unfortunately there is no evidence that these lectures were actually delivered. He was considered a talented and experienced surgeon and as such was in extensive and respectable practice. He also had a reputation as a dentist and according to Kay, "...rescued that department from the ignorant and unskilful hands in which it was then placed."[136] He occasionally gave private lectures on the teeth but mainly concentrated on general surgery and about 1766 began delivering a course of lectures on surgery. Research has revealed that his services had been required by the Laird of Carnwath, George Lockhart. A cash book, belonging to the Laird (discovered in 1976) has the following four entries:

> Feb.18 1759. Pd. to Mr Rae for drawing a tooth to me 5-0.
>
> Aug. 1763. Pd. to Mr Rae for taying 2 teeth for me 10-0.
>
> Aug. 1763. Pd. to Mr Rae for putting a false tooth in me 15-0.
>
> March 1764. Pd.to Mr Rae for 'tying' my teeth my teeth etc 15-0. [137]

It is not intended at this point to examine in depth the significance of the fees paid by the Laird. In a further chapter it is hoped to investigate the relationship between wages, prices and the cost of living and how these factors affected the demand for dental care and the growth of the unregistered dentist. In the meantime, it is interesting to note that whilst the Laird paid these fees to Mr Rae, he paid a Mr Rattray two guineas for a consultation about his wife's health and that even more revealing, he paid Mr Smith one guinea for tuning his harpsichord.

Rae married in 1744 Isobel, daughter of Cant of Thurston in East Lothian, a member of a very old and respectable family and formerly Cant of Giles Grange (now the property of Sir Thomas Dick Lauder). They had five children - two sons and three daughters. The sons were William and John, both of whom followed the medical profession and had strong

connections with dentistry. James Rae's father, also John, was a writer but *his* father, Rae's grandfather, has an interesting background in that he was a barber who in 1662 had been appointed Barber to His Majesty King Charles II.[138]

James practised in a house at the head of the old Fleshmarket in Edinburgh and afterwards removed to the Castlehill.[139] He died in 1791 and was buried in the kirkyard of the Old Kirk of the Greyfriars. As was mentioned earlier, both William (the elder son) and John (the younger) were involved in dentistry. William practised in London and in 1777 became a Member of the Company of Surgeons. In 1785 he delivered the first authenticated course of lectures on the teeth in Great Britain. According to Campbell, these were held at the home of the celebrated John Hunter, (at his invitation), at Leicester Square, the introductory one being given on Wednesday 2 February 1785 - at 8 p m. [140]

William died young, and it was his younger brother John (1749-1808) who carried on the dental tradition. He was tutored by his father to follow the medical profession and was admitted to the Royal College of Surgeons of Edinburgh in 1781. During the year 1804-5, he was made Deacon of the Incorporation and their President. John Rae was generally considered to be a good dentist, certainly the most scientific and extensively employed in Edinburgh, especially for his skill in carrying out extractions.

That he was well known can be seen from the fact that on one occasion his dexterity with the forceps was witnessed by the Honourable Henry Erskine (founder and editor of The Edinburgh Review, an influential middle-class Whig periodical founded in 1802). Erskine wrote about the operation and was most complimentary. [141] Rae served in the Royal Edinburgh Volunteers as a 'Fugelman' - a soldier who stands in front of the Company at drill and acts as an example - becoming Captain-Lieutenant and Surgeon of the Second Battalion and latterly Captain of a corps of

sharpshooters. He held this commission at the time of his death which occurred in the Spring of 1808; he was buried with military honours. He was understood to have left considerable property.

Although reference has been made to the fact that the Rae family were dentists who were considered 'fashionable' at this time, there is also evidence that John, the younger son of James, treated patients unable to afford the usual fees. An advertisement from 1781, taken from the Menzies Campbell Collection of Odontological Advertisements, 1709-1850, reads as follows, "...Mr Rae continues to give an hour's attendance in the morning at his house, Castle-hill to the poor, gratis". Such advertisements continued to appear with breaks up to 1795. The insertion for 1792 reads, "... Advice and assistance to servants and poor people, as usual, betwixt eight and nine every morning, gratis".[142] This advice and assistance was often given by apprentices as part of their training. The Rae family connection with dentistry,over a period of four generations, is not unique. Another name beginning a dental dynasty is first noticed in The Glasgow Advertiser for January 1790. Robert Spence (Jun.) announced his intention of visiting Glasgow. That he was not the first dentist bearing the Spence name is evidenced by the fact that he refers to his uncle, also Robert, " ...Dentift to his Royal Highnefs the Prince of Wales".
An excerpt from the advertisement is reproduced below:

> R. Spence Dentist from Edinburgh
> at Mrs Hunter's, Lawfon's Clofe, Trongate,
> Glasgow
>
> Begs leave to inform his Friends and the Public, that owing to the flattering encouragement with which he has been favoured, he is induced to remain fometime in Glasgow.. As he is furnifhed with the beft materials for making ARTIFICIAL TEETH , and with excellent fets of other dentical apparatus, he flatters himfelf, he is

> enabled to give the moft entire fatifaction. From the long experience and opportunities he had while Affiftant to his uncle Mr Robert Spence, Dentift to his Royal Highnefs the Prince of Wales, he is now enabled further to perform with facility every operation on the Teeth and Gums practifed by his uncle. ...
> Glafgow, 2nd Jan.1790. [143]

The Spence name continued to feature in the Edinburgh Trade Directories throughout the first half of the nineteenth century and there is an entry for 1849-50 for a J.Spence at 48 Frederick Street, Edinburgh. Edinburgh however, did not have a monopoly of dynastic dentists. The name, John Alexander, first appears in the records of the Burgesses and Guild Brethren of Glasgow in 1792 [144] and again in the Directory for Glasgow compiled by Walter McFeat for the year 1803. The directory also contains the name of James Scott, described as a Surgeon Dentist and claimed by some dental historians to be the first resident dentist in Glasgow.[145] As Noble remarks, "...it is rather difficult to believe that John Alexander was not in practice as a dentist before 1803".[146] The Alexanders can be followed by directory entries to the year 1876; thus an unbroken dental line is maintained throughout at least 73 years.

Directories are not an infallible guide and cannot be relied upon to give a true picture of the situation at any given time. Some dentists did not want their names to appear whilst others could not get their exaggerated claims into print quickly enough. Names appear one year and disappear the next or are never seen again. One such example is to be found in Walter McFeat's Directory of Glasgow for 1800,where an entry shows that a J.Henderson,Dentist practised at Hutcheson St. (no numbers were given in this early directory) but this name does not recur.[147]

It is not surprising to find that the focus of dental activity centred on Edinburgh. The capital city had built up a reputation for sound medical education and training in both surgery and medicine and one could speculate that many of those who trained there turned to treating conditions associated with the teeth as a profitable sideline. At this time, indeed up until 1860, there was no recognised dental qualification that could be taken in the United Kingdom, and what was to prove even more crucial and damaging, was the complete lack of control over those who set themselves up as dentists.

There was neither a professional concern - there being no body as yet even considered - nor were there any stirrings of a national, social conscience. These would only come later with the emergence of political emancipation and social reform in the latter half of the 19th century.

These are two strands to be developed in later chapters, both germane to the metamorphosis of the dental profession, a profession which was transformed from a disparate collection of sophisticated tradesmen at best, to a band of quacks, charlatans and opportunists at worse - "a motley horde of toothdrawers and mountebanks" - was how they were described by the dental historian Campbell. [148]

That dentistry was frequently a secondary occupation, can be seen from the entries in various Trade Directories from different parts of Scotland. As an example, the first seven dentists named in the Trade Directory for Dundee between 1834 and 1870 gave their primary occupation as 'working jewellers' or silversmiths, whilst others called themselves dentists and opticians.[149] But even more bizarre combinations of trades were to appear and will be referred to later.

In the 1790s, Glasgow with its population of 66,578 now the largest town in Scotland, received visiting dentists principally from Edinburgh.[150] Reference has already been made to the presence of John Alexander, resident in Glasgow at this time, but, evidence of the presence of other dentists is rare. One visitor from Edinburgh was the colourful Herman Lion who combined an aquaintance with medicine and surgery in order to carry on his specialities - extracting corns, and also drawing teeth. Mr Lion's presence was announced in The Glasgow Advertiser and Intelligencer in April 1790, an extract from which is given below:

> Mr Herman Lion,
>
> (Now at Mrs Clark's, Parlane's Land, Gallowgate,Coachwork Clofe)
>
> Juft arrived from Edinburgh
>
> Respectfully offers his affiftance to the Nobility, Gentry, and the Public in general,and moft humbly acquaints them, That he extracts CORNS, whether hard, foft ,blood or black, without causing the blood to ftart, confequently cannot be attended with least pain.... His remedies in the above cafes have met the approbation of the Faculty in general, particularly in Great Britain.
>
> He draws teeth; and cleans the teeth and gums, without pain, rendering thofe that are difcoloured perfectly white, and makes the flefh grow clofe to the enamel. He has invented a fafe method of fitting Artificial teeth, fet in fo firm as to eat with them, fo exact as not to be diftinguifhed from natural.
>
> * * Mr Lion will wait on Ladies and Gentlemen at their own lodgings if defired. N.B. His ftay in Glasgow will be only a few weeks. [151]

Most of the following is due to a paper read by A.Levy before the Jewish Historical Society of England.[152] Lion was the author of a remarkable book on corns, a copy of which is housed in the library of Edinburgh University bound with

Duncan's Lectures on the Institutions of Medicine, titled Duncan and the Lion. The work dealt with *Spinae Pedum*, contained several important discoveries and was illustrated with copperplates exhibiting the different species of Spinae, (a condition associated with the bones of the toes). In an interesting appendix to his book, Lion talks of the success of his practice in Edinburgh over a number of years as a self described Dentist and Corn Operator, but is resentful that his business is described as 'disreputable'.

Lion's name first appears in the Edinburgh Directory for the year 1790 and he is listed for the last time in the Directory for the year 1822-23. In his application for a piece of ground on Calton Hill, as a burial ground for himself and his family, he describes himself as a 'Dentist'.

Apart from Herman Lion,the Spences and the Raes, several names appear between 1790 and 1800 in the Edinburgh directories. James Lea is to be found at New Street Canongate (1795-96), John Dubison is practising at 18 South Street (1796-97), James Law at 4 Rose Court and James Bladen Ruspini - "Surgeon dentist to the Prince of Wales", at 23 South Bridge, west side. The first-named, James Lea, is mentioned in an advertisement carried in the Glasgow Courier for Saturday 8 February 1800.extolling the virtues of Dr Innes's Powders which, "change the most pale and languid complexion into a blooming and healthy appearance".[153]

These powders could be purchased from Mr Lea at New Street, Edinburgh. James Law, referred to above, also claimed a Royal connection, as witness the entry in the Edinburgh Directory for 1801 in which he claims to be, " dentist in ordinary to His Royal Highness, the Prince of Wales."

Two further names which do not appear in the Edinburgh directories but feature in the Menzies Campbell Collection of 1175 Odontological Advertisements are worth mentioning.[154]

The first name is that of a Mrs Bernard (this is an entry for 1775) lodging with Mr Kinross a music-master at the head of Toddrick's Wynd, south side of High Street. Unfortunately this lady's name does not appear again, but later on the names of other women do emerge showing their early involvement with dentistry. The second is Mr Lawson described as surgeon, man-midwife and dentist, residing at Craig's Close. He too had a brief tenure and his name does not re-appear. This tendency to ally dentistry to other occupations is a feature which occurs more and more often in the 19th century and some of these combinations are quite bizarre. There is good evidence that in England, dentistry was carried on as a secondary occupation by blacksmiths, hairdressers and corn doctors. [155]

Reference was made previously to the first faint stirrings of a scientific approach to the practice of dentistry, and two Scots whose outstanding contributions to medical and dental science during the 18th century were universally acknowledged were the Hunter brothers, William and John.

Born at Long Calderwood, near East Kilbride (13 February 1728) John was the youngest of a family of ten. In 1748, John left for London - a 14 days' journey - to join his brother William already established as an anatomist and leading obstetrician. John was to have been his assistant in the dissection-room, but William was soon convinced that his brother had a natural talent for matters surgical, and arranged that he should attend Chelsea Hospital to acquire a surgical training under the tutelage of one of Europe's leading surgeons, William Cheselden. From there he became a pupil of Percival Potts at St. Bartholmew's; thus at the outset of his career he had been under the instruction of two of the finest surgical teachers in Europe.[156]

After short spells at St.George's Hospital and Oxford, he joined the army as a staff-surgeon and in 1762 saw active service in Portugal. He returned to London in 1763 and gave private lectures in anatomy and operative surgery. Hunter

had an intense interest in comparative anatomy, which allied to an overwhelming scientific curiosity, led him to acquire animals alive and dead from all over. He is reported as having approached the keeper of wild animals at the Tower of London and also the proprietors of circuses for dead carcasses. Eventually (1765), he purchased ground at Earl's Court where he established a menagerie and experimental centre. Hunter's connection with dentistry stems from a professional relationship which existed with James Spence, a Scot with family connections in Edinburgh. According to a contemporary surgeon, Jessé Foot (1744-1826), Hunter attended at Spence's rooms three times a week. It had been pointed out by Berdmore (an enlightened English surgeon referred to below) that in many cases of toothache the services of a surgeon should be obtained and that often, "...bleeding, purging and the application of 'blisters' would be required ", popular remedies in those days. [157] It would appear that Spence and Hunter carried out a number of tooth transplants but in the process also transferred venereal disease.

Berdmore thought that the process was "...not only precarious, ineffectual and dangerous but also immoderately expensive ".[158] Tooth transplantation involves the removal of a sound, healthy tooth from one person and inserting it into the alveolar socket of another from whose jaw a carious one has been removed. For this operation to have any chance of success, sterile conditions must prevail, and as there was very little known about disease causing organisms at this time, the majority of the transplants ended in failure. But there is no doubt that transplanting teeth was a common practice among some dentists which reached its zenith towards the end of the 18th century. As Campbell puts it, "...it violated the moral code by influencing poverty-stricken persons to sacrifice their sound teeth and thus ensure severe physical and mental pain, in return for paltry payments ". This operation was undertaken most frequently to beautify ladies in the higher ranks of society.[159] Generally it was beggars and paupers who allowed themselves

to be subjected to this barbarous practice, often for a paltry sum; nevertheless, many of the illustrious surgeons and dentists in both Scotland and England as well as abroad carried out these operations.[160]

But to return to Spence. One of his fashionable patients was another Scot, James Boswell who wrote in his Journal - Thursday 6 May 1773 - "...Toothache easier. Went to Spence, two stumps drawn and teeth cleaned: agreeable to see things well done ".[161] It is very probable that the relationship with Spence and his two sons, also dentists, was the catalyst which prompted John Hunter to write his text books on the teeth. The first publication appeared in 1771 (The Natural History of the Human Teeth) and was a consequence of his investigations on cadavers, one reason why many of his conclusions were erroneous. Nevertheless, his anatomical descriptions and drawings were outstanding and unique for this period and provided an incentive for further research.

A second edition appeared in 1778 with a supplement (known as Part 2) A Practical Treatise on the Diseases of the Teeth. In this work, Hunter gave a reasonable description of the process of tooth decay and also dealt with many of the signs and symptoms of gum disease. He considered that diseases of the teeth, gums and alveolar process (the bony extension of the jaws containing the tooth sockets) was the concern of the dentist and he recommended that cavities in teeth should be filled with gold leaf or lead. However, when there was pain in a tooth, the remedy was to burn the ear with 'hot irons', apply hot poultices, administer hot brandy and laudanum or sniff lavender.[162] He made significant contributions to the understanding of many dental conditions including *Tic douloureux* (a neuralgia of the trigeminal nerve) and the relationship of tartar deposits to gum disease and linked variations in salivary flow to some medical conditions. He was also an advocate of preventive dentistry stressing the importance of fresh vegetables and fruit in the diet. Hunter also suggested that irregularities in the teeth could be corrected by the

use of pressure on adjacent teeth by means of plates or ligatures, but that the judicious extraction of teeth could be just as effective.

Hunter wrote at great lengths on the transplantation of teeth, advising among other things that the dentist should arrange to have several 'donors' present. If the first tooth did not fit the socket, another should be tried and so on until a good fit was obtained. As Campbell says, "...It seems strange that Hunter, a man endowed with superior knowledge based on scientific research should advocate such a highly objectionable procedure ".[163] Nevertheless, John Hunter's work was mainly responsible for the spread of scientific surgery in Britain in the eighteenth and nineteenth centuries; prior to this it was dominated by the French.[164]

Dental treatment, as we understand it today, was still primitive at the end of the eighteenth century. Extraction and filling of teeth was being carried out, but it would appear that this treatment was only available to a small proportion of the population. Also, it was being offered by a small group of persons, some of whom had a medical qualification and some who had none. Dental books were now appearing with increasing regularity and this in turn led to the beginnings of a professional, if unsolicited correspondence, arising out of their publication with claims and counter-claims on the best methods of treating certain conditions, although secrecy was still the rule and new 'remedies' and treatments were guarded zealously.

Dental journals were still unknown and did not appear until the 1840s; their appearance could be considered one of the factors in the advancement of scientific, dental knowledge and the first visible signs of the emergence of a professional body.

1.6 Dental Books Published Before 1800.

Dentistry up until the end of the eighteenth century had been dominated by the French, from whom it is believed the word 'dentist' originated; one of the first appearances of the word was in the Edinburgh Chronicle on 15 September 1759. Outstanding amongst his contemporaries was Pierre Fauchard (1678-1761), often dubbed 'The Father of Modern Dentistry'. [165] His two volume classic, *Le Chirurgien Dentiste*, published in Paris in 1728, is considered a seminal work in the development of dentistry; most dental historians would agree that it heralded a new era influencing dentistry throughout the Continent of Europe and also the United States of America.

It was translated into German in 1733, but extraordinarily, a full translation in English did not appear until 1946, although it is highly probable that many of his methods were copied by contemporary British dentists.

An interesting observation on the manner in which dental operations were carried out in the early years of the eighteenth century is provided by Fauchard. He criticised the then common practice of placing the patient on the floor; it was,"both indecent and uncomfortable,"[166] particularly when a woman was *enceinte*; instead he recommended that "... the patient be seated on a horsehair covered easy chair with the feet firmly resting on the ground ".[167]

Books published by British authors continued to appear with increasing regularity up until the end of the eighteenth century: A Treatise on the Teeth by A. Tolver in 1752, A Treatise on the Teeth,their Disorders and Cures by F. Hoffman in 1753, with a second edition in 1756 and A Treatise on the Structure and Formation of the Teeth by R. Curtis in 1769. Thomas Berdmore, an enlightened English dentist, published A Treatise on the Disorders and Deformities of the Teeth and Gums in 1768.

John Hunter's first work already referred to, appeared in 1771 and was followed by A Practical Treatise on the Diseases of the Teeth in 1778, with translations in Dutch and Italian as well as a German edition. The significance of this work can be gauged by the fact that sixty one years later, in 1839, an American edition was also published. R. Woofendale in 1783 brought out Practical Observations on the Human Teeth, and the celebrated Bartholomew Ruspini also published A Treatise on the Teeth in 1767 with many subsequent editions.

Renewed interest in finding a more suitable material for artificial teeth resulted in the appearance in English of A Dissertation on Artificial Teeth in General by Nicholas Dubois De Chémant in 1797; the use of human teeth was common up until the middle of the nineteenth century; in 1865 the Pall Mall Gazette refers to the fact that certain London dentists used natural teeth from the battlefields of the American Civil War. These were collected by tooth-drawers who followed the armies.[168] That these teeth were still in use as late as 1862, is evidenced from catalogues of Smales Brothers dental suppliers, which carried details of the different grades available.[169]

The next chapter will deal with the social and economic changes, which resulted from the industrialization and urban emigration from 1800 to the last decades of the century with particular reference to the state of the nation's health and the rising demand for dental treatment. This was the period within which the first signs of a professional voice could be discerned, and to paraphrase Campbell, the dentists would make a bid for respectability.

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[73] J.D.Comrie, History of Scottish Medicine 2 vols, London 1932, p228; L.G.Mathews, *Licensed Mountebanks in Britain*, J.Hist. Med. 1964;19:30-45.

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[75] As recently as the last decade (1980), it was possible to find 'miracle cure' medicines being sold at "The Barras" in Glasgow.

[76] D.Hamilton, op.cit. p74.

[77] Ibid. op. cit. p74.

[78] Ibid. p 75.

[79] Ibid. p77.

[80] Ibid. p78

[81] Ibid. p84.

[82] A fascinating account of the origins of these beliefs is given in D.Hamilton's The Healers pp80-90.

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Chapter 2

Dentistry in the Nineteenth Century.

2.1 Industrialization and Urban Emigration.

The outstanding feature of the period under review in Scotland was, like everywhere else in Western Europe, the rapid growth of the population. Paralleling the industrial changes, intellectual and scientific advances played an increasingly important role in the field of health and social welfare, where problems were steadily mounting.

The rapid growth of the towns of the industrial central belt and large scale migration from the Highlands and Ireland were two important factors, Glasgow becoming the breeding ground for major epidemics caused by overcrowding, under-nourishment and lack of sanitation.[1] Edinburgh on the other hand grew at a more leisurely pace, although it too suffered from outbreaks of typhus, common at the beginning of the century. However, it was the appearance of cholera that forced communal action, triggering the rise of a public health movement both locally and nationally; a topic which had much bearing on the future development of dentistry.[2]

The emergence of an industrial society was already under way in the latter years of the eighteenth century. For example, New Lanark employed about 368 people in 1791, rising to 1,700 in 1820.[3] The collapse of the tobacco trade, the growth of the linen industry and the adoption of steam by the rising cotton trade, resulted in an increasing demand for skilled labour, mainly satisfied by the linen workers. This was a period of industrial expansion only rivalled by the growth of the iron industry in the 1830s. [4] However, this growth was not uniform; there was a marked swing away from certain occupations to others in the latter half of the eighteenth century.

Particularly affected were agriculture, forestry and fishing, all showing reductions in employment after 1850, although these figures do not necessarily indicate decline; for example, improved methods would result in a less intensive labour force. Sectors which benefitted were mining, transport, services, manufacturing and construction.[5]

In the first half of the nineteenth century, there were over 100 cotton mills operating in Scotland, most of which were in the Glasgow area. Mr Leonard Horner, one of the Parliamentary Factory Commissioners, reported on 21 July 1834, "...In Scotland, there are 134 cotton mills; that with the exception of some large establishments at Aberdeen and one at Stanley near Perth, the cotton manufacture is almost entirely confined to Glasgow." [6] It was also reported that 31,000 people were engaged in this industry and Dr James Cleland (Superintendent of Public works in Glasgow from 1810 and city statistician), noted that Glasgow had "...31 different kinds of manufactures using steam." [7] The surge in industrial development was accompanied by increasing demands for labour, one result being the redistribution of the bulk of the population towards the central belt.[8] This population 'explosion' was an important factor in the growing demand for health care in general, and dental treatment in particular.

Although reliable population statistics are not available until the introduction of compulsory registration of births, marriages and deaths in 1855, most historians are reasonably confident that Sir John Sinclair's figures in the Old Statistical Account of 1795 can be used as a base line. His estimate of the population of Scotland as 1,526,492 rose to 2,888,742 in 1851, an increase of 89%, and between 1851 and 1881, the population had increased to 3,735,573, or by 29%. See Table 2.1.1.

Table 2.1.1: Population of Scotland 1801-1881.

Census	Total	Rate of Growth (Inter-censal increase as a percentage of previous population)
1801	1,625,000	-
1811	1,824,434	12.3
1821	2,099,945	15.1
1831	2,373,561	13.0
1841	2,620,184	10.4
1851	2,888,742	10.3
1861	3,062,294	6.0
1871	3,360,018	9.7
1881	3,735,573	11.2

Source: Scottish Population History: M Flinn, (ed), p302.

Striking demographic changes in the Scottish regions were already under way by the end of the eighteenth century. Only East Lothian in the central belt showed no change in population in the period 1755/1801. As can be seen from Table 2.1.2, Renfrewshire and Lanarkshire showed dramatic increases of 193% and 124% respectively over this period.

Table 2.1.2: Population Changes in the Central Belt, 1755-1801.

Region	Population in		Percentage Change
	1755	1801	
Ayrshire	59,009	84,306	+43
Renfrewshire	26,620	78,056	+193
Lanarkshire	80,300	179,932	+124
W.Lothian	16,829	18,722	+11
Midlothian	89,094	122,641	+38
E.Lothian	29,709	29,975	0

Source: Old Statistical Account 1791-99, Sir John Sinclair (ed). (1983 ed). vol.1, p xlii.

These six counties make up the Western and Eastern Lowlands and can be taken to represent the Central Belt of Scotland. A comparison of the years 1801 to 1881 shows the changes in the population. Between 1801 and 1881 there was a further increase of 190.6%.

Table 2.1.3: Population Changes in Central Scotland 1801-1881.

Census	Regions	
	Western Lowlands	Eastern Lowlands
1801	331,110	557,214
1811	412,491	619,386
1821	511,178	701,885
1831	62,528	785,814
1841	790,646	846,237
1851	926,221	927,538
1861	1,060,182	964,324
1871	1,241,952	1,062,348
1881	1,460,638	1,183,294

Source: Scottish Population History, M.Flinn, (ed). p306.

That Scotland in the the last decades of the nineteenth century was experiencing a period of rapid economic and industrial expansion, is exemplified by the experiences of the Central belt which "... became in the process one of the most intensively industrialized regions on the face of the earth ". [9] The urbanised proportion of the total population rose from 35.9% in 1851 to 48.9% in 1881.[10]

Even more striking was the increase in the population of Glasgow, from 66,578 in 1791, to 344,986 in 1851 - an increase of just over 500%.[11] By 1881, the population had reached 487,985 - a further increase of 41%. [12] Scottish population expansion has been the subject of considerable historical research.[13,14,15] The consensus of opinion is that apart from a declining mortality rate, an important factor in urban growth was the search for employment, failing which, the unemployed hoped to get help from public and private charities. A further factor was the expectation of obtaining living accommodation of some kind; a forlorn hope in most cases as overcrowding increased with each wave of new arrivals.

Although this was a period of extensive Scottish emigration, the loss was balanced particularly in the Lowlands, by the influx of Irish immigrants. In the case of Glasgow, in 1840, they accounted for just over 15% of the population. The City of Dundee had a similar proportion. Only 51% of the inhabitants of Glasgow were born in the County of Lanark, and it was noted (1840) that only 40-50% of the inmates of the city workhouses were city born.[16]

A similar analysis of patients in Glasgow's Albion Street Fever Hospital showed that 40% were from the Highlands and agricultural districts of Scotland, whilst 30% were from Ireland. Census returns for 1851 show that there were 207,367 Irish-born living in Scotland. [17] But after 1851 immigration slowed and apart from 1861 and 1871, never exceeded the 1851 total.[18]

From the health point of view, the nett result of the urban immigration, allied to other factors was an increase in poverty, overcrowding and sickness, including dental diseases, subjects which will be discussed in the next section.

2.2 Epidemics, Sanitation and Disease.

Life in Scotland in the first half of the nineteenth century has to be viewed against a background of repeated outbreaks of fevers, cholera, smallpox and consumption. As smallpox diminished, measles became rampant along with whooping cough. Influenza was also virulent and resulted in many fatalities.[19] Although accurate registers were not available until the latter half of the nineteenth century, many towns appointed officers to draw up Bills of Mortality, which initially recorded the number of burials and, later the alleged cause of death; alleged, because in the majority of cases the diagnoses were highly speculative and should be treated with extreme caution.[20] Their value lies in the fact that certain diseases were marked by signs and symptoms so gross, or of epidemic conditions so marked, that there was little doubt as to the correctness of the diagnosis.

One of the earliest tables of mortality was that kept by the parish minister of Torthorwald, in Dumfriesshire. It covers a period of 27 years ending 1790, and shows that there were 280 deaths in that period, amongst which were 2 deaths from 'teething'. Of greater significance is the Bill of Mortality for the City of Glasgow for the year 1791. Out of a total of 1,508 deaths, 71 are ascribed to 'teething'- 4.8% of the total deaths, and according to the table, the sixth most common cause of death.[21]

Unfortunately, there is no definition of the word 'teething,' but evidence available from other sources in the latter half of the nineteenth century, shows that there was a high incidence of malnutrition and deficiency conditions, especially in children under the age of two, coinciding with

the eruption of the primary (milk) dentition. Many of the deaths reported as being due to teething could have been caused by associated conditions. Another factor to be considered is that many of the prevalent diseases had significant oral manifestations. This aspect will be discussed in a later section dealing with diet.

In 1864, vaccination against smallpox became compulsory in Scotland, although this was relaxed in 1907, when abstention was allowed on conscientious grounds. Each of these acts influenced the mortality rates, particularly of infants, and the results strengthened the belief that vaccination was justified.[22] In the period 1835-39, smallpox deaths at all ages in Glasgow totalled 2,196 (including 2,044 under 10 years of age, 93% of the total deaths from smallpox). After the introduction of compulsory vaccination, the proportion of deaths under 10 years of age fell to 38%, indicating the changing approach to disease at this time, a trend which was also beginning to be reflected in the dental field, albeit at a much slower pace.[23]

The reduction in the incidence of smallpox at the beginning of the century was only a pause in the outbreaks of disease which afflicted the country during the first half of the century. Relapsing fever, now thought to be either enteric and/or typhus, struck Scotland during the years 1817-1819. The fever was characterised by its tendency to recur every three, five, seven or nine days and was reported from all areas of the country. But the greatest number of deaths was in the cities especially Edinburgh, Glasgow, Aberdeen and Greenock, although other places including Dumfries also reported outbreaks. Although vaccination had been shown to be effective against smallpox, the treatment of fever was based on the traditional and irrational method of blood-letting. The patient would have varying amounts of blood removed, sometimes on successive days. One such patient, Sir Robert Christison, in August 1819, had 30 ounces removed one day and 20 ounces the next.[24]

Blood-letting was a common practice right up until the middle of the century and indicates that if dental treatment was considered primitive by to-day's standards, medical practice was not much better. The fevers which had become so prevalent in Scotland, principally in the larger cities of Edinburgh and Glasgow, were the subject of report at a meeting of the British Association held in Glasgow in September 1840. [25] Dr Neil Arnott pointed out that four views had been put forward as to the cause and chief remedy of the misery and disease prevailing among the poor of Scotland, " not one of which made particular account of the malaria of filth to which the London reporters had attached so much weight". First, there was the view held by the "benevolent and eloquent Dr Chalmers", that the want of good religious training was the cause and that Church extension was the remedy; second, the "enlightened Dr W.P.Alison" held that destitution was the cause, and a good Poor Law for Scotland was the remedy; third, another excellent man stated that the abuse of intoxicating drinks was the cause, and a legislative or other suppression of this was the remedy; another gave his reasons for believing that want of national education was the cause and the establishment of such schools as he described the remedy. Dr Arnott's own view was that the faulty sanitation of the times was largely responsible for the condition.[26]

In a paper read before the British Association meeting referred to above,entitled Vital Statistics of Glasgow, Dr Robert Cowan said:

> The next cause [after destitution] of the diffusion of epidemic disease, is the state of the districts which
>
> the poor inhabit. ...In all districts of the burgh, and in the suburbs, there is a want of sewerage and drainage. ...The streets, or rather, lanes and alleys,in which the poor live, are filthy beyond measure. ...The houses in the disease-haunted areas, are ruinous, ill constructed, and to an incredible extent, destitute of furniture. In many there is not an article of bedding, and the body clothes of the inmates are of the most revolting description; in fact, in Glasgow , there are hundreds who never enjoy the luxury

> of the meanest kind of bed, and who, if they attempted to put off their clothes, would find it difficult to resume them. The lodging houses are the media through which the newly arrived immigrants find their way to the fever hospital, and it is remarkable how many of the inmates of that hospital, coming from lodging houses, have not been six months in this city.[27]

It can be seen from these observations that although there were some who realised the importance of environmental factors in causing disease or facilitating its spread, the concept was only slowly being accepted, and in 1849 in a report on the measures adopted for the relief of the cholera epidemic of that period, the descriptions reappear with all their original realism:

> It is in those frightful abodes of human wretchedness, which lay along the High Street, Saltmarket and Bridgegate, and constituted part of that district known as the 'Wynds and Closes of Glasgow,' that all sanitary evils exist in perfection. They consist of ranges of narrow closes, only some four or five feet in width, and of great length. The houses are so lofty that the direct light of the sky never reaches a large proportion of the houses. ... There are large square midden-sheds, some of them actually under the houses, and all of them in the immediate vicinity of the windows and doors of human dwellings.[28]

The above quotation, by Dr A.K.Chalmers, is taken from a report by Dr Sutherland of the General Board of Health, and was written thirty years after the first recorded epidemic of typhus; almost a generation lay between that outbreak and the second cholera epidemic, yet the description of local conditions vary only as Dr Chalmers puts it, "... in the growing vigour of the phraseology employed, and in the widening range of its implications as the years pass by." [29]

Although smallpox had largely been controlled by the late 1840s, the crude death rate continued to climb. Scarlet fever, diphtheria and cholera along with measles became the chief causes of death, with measles a major killer. The fevers and measles all exhibit oral signs and although there are few contemporary clinical descriptions of this aspect, the effect on the dentition and periodontal tissues

must have been considerable, especially on under-nourished and debilitated patients.

A crude death rate of 25 per 1,000 in the 1820s, increased to 30-35 per 1,000 in the '30s and 40s, reaching 56 per 1,000 in 1847.[30] Flinn cites a crude death rate for the period 1871-1880 as 237. [31] Although the process of teething as it is currently understood does not constitute a dental disease, it could not be construed as unreasonable to speculate that many of the deaths were hastened by the lack of basic dental care during teething. Evidence gathered by Dr R.Watt, of Glasgow in 1812, which listed 'teething' as one of the eight principal causes of death must therefore be treated with caution.[32] Yet, disease was only one of many problems in the cities. Figures for crime, alcoholism, prostitution and infanticide were all rising, particularly in Glasgow. In 1819 there were 'only' 89 arrests for criminal offences, but by 1854 there were 3,176. Pawnshops were numerous and, according to the Statistical Account of Scotland, 1845, 2040 heads of families pawned 7,380 articles and received £739:5:6.[33] One house in ten sold alcohol and Glasgow had 4350 brothels spreading venereal disease throughout the community.[34]

Abortion was widely used to limit family size and patent abortifacients were openly advertised. Statistics on infanticide are not available, but children's deaths often whilst they were in the care of baby minders, went unquestioned. Much commoner was the practice of deliberate neglect or withholding food from a sick infant.[35]

Although dietary changes as a cause in the increase in dental caries will be discussed later, mention is made here of the exploitation of the poor by food suppliers selling infected meat and fish cheaply, and without any form of inspection. Milk was regularly adulterated and was a source of infection spreading tuberculosis from infected cows and various fevers from its handlers.[36]

The subject of the supply of water for public use at the beginning of the 19th century is outwith the scope of this work, nevertheless some mention must be made of the importance of water not only for consumption, washing and bathing, but also as the medium responsible for the transfer of infection in enteric fever, dysentery, cholera and probably many oral diseases. In 1840, John Hill Burton, a leading Edinburgh advocate pointed out that in many parts of Scotland, the want of a good water supply was an impediment to the 'cleanly' habits of the working people. In addition to the paucity of the supply, time was wasted and bad habits acquired by those waiting their turn at the wells, especially in times of drought.[37] Dundee, Stirling, Dunfermline, Lanark and Arbroath had poor supplies and in the cities of Edinburgh and Glasgow, there were both public and private suppliers of water. In Aberdeen, for example, in 1840, out of a population of 48,000, only 6,000 houses had a piped water supply.

Conditions at work were also becoming dangerous, and as Hamilton points out, rural workers could only work during the hours of daylight and children were not exploited because of their lack of physical strength, whereas the opposite was true in the new factories. The working day could be extended by artificial lighting and children employed for long periods.[38]

New diseases appeared as a result of new industries. Lead poisoning was an occupational disease of potters, glaziers, painters, plumbers and printers, whilst manganese poisoning was common in the bleaching industry. 'Phossy jaw' was a disease which affected the teeth and jaws of workers in match making factories. It was caused by the absorption of the phosphorus used in the manufacturing process; the use of phosphorus was banned in 1908. Other occupational hazards were the dust diseases affecting the lungs of miners, the consequences of which are still present in families today. Additionally miners and others working with the then new machinery were also victims of unguarded machines.

But there were compassionate employers, such as Robert Owen of New Lanark and James Smith of Deanston, both of whose factories were well-ventilated, safe and heated. Comprehensive welfare and education were the twin pillars on which they based their philosophy.

Essentially, health care for the mass of the people was poor or absent, and even as late as 1871, the causes of 24% of Glasgow deaths were not certified, since a doctor had never attended the patient and no cause of death could be given.[39] Dental attention, except for extractions, was still a rarity and, as will be shown later had a very low order of priority in the daily struggle to stay alive. Although not universal, the above description of life for many urban Scots in this period can be best be summed up by the following life expectancy table, which shows the expectation of life in Glasgow at birth, and at ten years of age. Males could expect to live 34.12 years in the period 1821-27, from age 10, 42.27 years. In the years 1832-41, a 10 year old boy would expect a shorter life-span of 37.40 years. In the 1870-72 period, the situation worsened for survivorship from birth, but improved in the last decade of the nineteenth century. The life span of females followed similar lines. Scottish figures for 1870 showed that a male at birth could expect to live to just over 30 years whilst a female would survive for 32.61 years [40]

Table 2.2.1: Expectation of Life in Glasgow at Birth and at Ten Years of Age in Several Periods.

	Age	1821-27	1832-41	1870-72	1881-90
Males	0	34.12	....	30.93	35.18
"	10	42.27	37.40	40.15	44.32
Females	0	36.64	....	32.61	37.70
"	10	45.24	39.94	41.83	45.44

Source: The Health of Glasgow 1818-1925. An Outline by A.K. Chalmers. p63.

The impact of demographic changes and mortality on the increasing demands for dental treatment in the latter half of the nineteenth century, is considered in a later chapter.

2.3 Dental Treatment and Advertising.
The Itinerant Dentist: Charlatans and Quacks.

For a variety of reasons, some of which have already been discussed, the demand for dental attention rose in the first half of the nineteenth century. This is reflected in the slowly growing number of dentists advertising their services in newspapers and also in the local trade directories.

The same situation existed in England at this time, as Hillam points out in her unpublished thesis. [41] She says that dentists were to be found in all the main towns, but in rural areas treatment on offer remained at a simpler level where extractions were mainly the province of the surgeon-apothecary or increasingly the chemist. In Scotland, the chemists and druggists were the major purveyors of dental treatment, performing mainly extractions and principally among the working classes.

As Hillam notes: "Dentistry in the 19th century, was not a service in the modern sense, but aimed at a section of society; those with the money and the inclination to devote to the care of the teeth." [42]

Although trade directories are not a true guide to the number of persons who purported to be dentists, they do give an indication of the growth of the self-styled, established dentists especially in the larger towns, such as Edinburgh. Here, trade directories for 1800 listed six dentists offering their services to the public.

By 1820, the number had risen to sixteen, amongst whom were James Bladen Ruspini, " Surgeon dentist to the Prince of Wales", and James Law, "Dentist in Ordinary to His Royal

Highness the Prince of Wales".[43] Also listed as "dentist and chiropodist" was Herman Lion, already mentioned. A directory published in Glasgow for 1803 by W McFeat, listed the names of two dentists, John Alexander, 'Dentist', and James Scott, 'Surgeon-Dentist', referred to in an earlier chapter. After 1861, Census returns gave a better indication of the number of persons calling themselves dentists.

Newspapers however, were the main medium for advertising the various services offered by these early 'practitioners'. A typical example from 1800 reads as follows:

> Mr Scott
> No 22, South Bridge, Surgeon-Dentist
> Begs leave to inform the public that he has returned to Edinburgh and may be consulted daily upon the diseases of the TEETH and GUMS, and the arrangement of children's teeth. Teeth cleaned and fastened, if loose, and the want of them supplied by artificial ones, that for use and beauty, cannot be distinguished from Nature.
> N.B. Mr. Scott composes a safe and proper TOOTH POWDER and LOTION for the preservation of the teeth and gums; and will wait upon his patients at their own houses, if required.[44]

An important source of income was the sale of tooth powders, tinctures and various patent remedies. A typical example is found in the advertisement columns of the Edinburgh Evening Courant for 3 November 1832, where Mr Whyte, Surgeon, reminds his public, that he is still in possession of the 'INFALLIBLE REMEDY for TOOTHACHE'.[45] This was a comparatively inexpensive concoction at 1s. Other dentists were selling their COMPOUND STRENGHTHENING POWDERS at 5s 5d, a considerable sum of money at this time, when the average wage of most workers was about 10-12s.

In 1819, a dentist was defined as, " An artisan who confines himself to the extraction of teeth and to several operations required by their defects, redundancies, accidents or disorders. " [46] It could also be argued that a dentist's identifying feature was the ability to blow his own trumpet

by means of extravagant claims through the press - known as 'puffs'. Campbell says that one dentist spent £36 a week on advertising; doubtless it proved a rewarding investment. Much of the cost of advertising in the period under review, was due to the advertising tax. Initially this was 1/- per insertion at the beginning of the 19th century, raised to 3/6, reduced to 1/6 in 1833, and finally abolished entirely in 1855.

In a foreword to his Collection of Odontological Advertisements, Campbell writes:

> These advertisements, (1708-1850), act as windows through which to view the activities of certain of our predecessors.
> I am fully convinced that, were it not for the information, which they impart, there would be more deficiencies in our knowledge concerning the state of dentistry as a lowly trade, prior to emerging as an eventful profession.[47]

Valuable information on the dental treatment available in the smaller towns from itinerant dentists, is afforded by the Edinburgh Advertiser of 24 August 1802. It carries an insertion from Mr Ruspini, 'from London', intimating his forthcoming visits to Ayr and Greenock. The full advertisement reads as follows:

> Mr Ruspini from London, SURGEON DENTIST to the PRINCE of WALES, having been solicited by some respectable Ladies and Gentlemen to visit AYR and GREENOCK, for a few days, in the line of his profession, he intends being in AYR on Tuesday first, and in which town he will stay until Tuesday following. Any commands left for him at KING'S ARMS, AYR, will be duly attended to - On Wednesday he will be at GREENOCK, and to be heard of at Mr McKechnie's Inn there. Mr R's observations on the teeth, to be had at above at only 6d each.
> No. 16 St. Andrew's Street.[48]

Most, if not all of these advertisements, inform the public that the practitioner has been 'solicited' or appears 'by special request.' Some have 'been sent for' as in the following:

> To the Ladies and Gentlemen of Glasgow and Paisley.

> Mr Breham, SURGEON DENTIST, having been sent for to Edinburgh, to wait on several families, requests of those who wish his attendance in Glasgow and Paisley, that they will not lose any time in their application, as he can receive no orders after Saturday next, as he must positively return to Edinburgh at that time.... He will wait at the Saracen-head Inn, Paisley, on Monday, Tuesday and Wednesday next - and at Spence's Lodgings, opposite the Black Bull, Glasgow, on Thursday, Friday and Saturday, where all commands will be received and immediately attended to. ...
>
> Lately published and to be had of most booksellers, the second edition of a TREATISE on the Structure, Formation and various diseases of the TEETH and GUMS: showing the best method of alleviating the pains of Dentition; of promoting the growth, beauty, colour and durability of Teeth; of preventing and curing the toothache, and other disorders of the teeth and gums; of the use and abuse of Tooth Powders, tinctures and brushes, together with the pernicious effects of neglecting the teeth &c. By EDWARD BREHAM, Surgeon Dentist. Stationer's Hall.[49]

There are several points of interest in this advertisement, taken from the Glasgow Herald of 1810. The town of Paisley had a population of between 30-35,000 (certainly by 1821 it was in the region of 40,000), yet Pigot's Commercial Directory for that period does not contain the names of any resident dentists. Mr Breham is also plugging his latest 'treatise', generally a vehicle to sell his tooth powders and tinctures, a fairly common practice at this time, as was the reference to the lockjaw cure and the offer to supply the name of individuals willing to testify as to the efficacy of the cure. Usually members of the Nobility and even members of the Royal family were named as satisfied patients.

Prominent in the use of the advertising medium were the family of Crawcours, who practised dentistry throughout most of the nineteenth century. The original family consisted of five brothers, and their undoubted success in exploiting a material for filling teeth in the 1820s (*Mineral Succedaneum)* allied to their brash advertising, aroused considerable resentment among many of their contemporaries. The fact that they were of the Jewish persuasion was also

used for barely disguised, antisemitic attacks by several prominent dentists.[50]

Returning to the advertisements themselves, an excerpt from a typical Crawcours insertion, taken from the Glasgow Argus of 1833, reads as follows:

> MESSIEURS CRAWCOURS
> have arrived.
> DENTAL SURGERY
> No 260 BRANDON PLACE, BLYTHSWOOD SQUARE EAST,
> GLASGOW.
> Royal Mineral Succedaneum,for filling decayed teeth without the slightest pain, heat or pressure, and Incorrodible mineral teeth prepared and fastened on Philosophical principles, without wires, springs, ligatures or any of those clumsy restrictions which have hitherto disgraced the art, by
> MESSIEURS CRAWCOURS. ...Surgeon-Dentists to the Royal Family, also patronised by the Courts of AUSTRIA, FRANCE,RUSSIA, PRUSSIA, and BELGIUM
>
> *Established for more than a century.*
>
> MESSIEURS CRAWCOURS respectfully intimate to the Nobility, Gentry and Inhabitants of Glasgow, that, at the request of several Families of distinction, they have been induced to commence their Professional Avocations in Glasgow, and may be consulted professionally at their Residence, No. 260, BRANDON PLACE, Blythswood Square, East, where they hope to be honoured with the continuance of the patronage which has been so liberally bestowed on them since their arrival in the Scottish Metropolis.
>
> MESSIEURS CRAWCOURS may be consulted daily at their Residence, No.260 BRANDON PLACE, Blythswood Square East, Glasgow.[51]

The Crawcours also placed similar advertisements in the Edinburgh papers, with it will be noticed, definite emphasis on the Scottish dimension. Their claim that they were the inventors of the filling material has never been challenged, even by their fiercest critics. 'Succedaneum' was a mixture of mercury and silver, similar to the present day amalgam still widely used, and from specimens of their Mineral teeth, it appears that they were composed of a form of porcelain.

An interesting point arising from an insertion in the Glasgow Herald for 1833 concerns Crawcours's Mineral teeth. The cholera epidemics which were sweeping Europe is used to publicise the use of the teeth:

> Since the prevailing of the Cholera Morbis, throughout Europe, the substitution of mineral teeth has entirely superseded the introduction of natural ones. ...Messieur's Crawcour's invention being free from those infectious impurities which must in greater or lesser degree, attach to human teeth [52]

A prescient view, considering that at that time, scientific knowledge of the transfer of infection was non-existent.

It can be seen from many of the advertisements, that the dentists of this period travelled extensively, visiting towns such as Paisley, Greenock, Port Glasgow, Ayr, Montrose and Campbelltown, the latter not an easy place to reach in the early nineteenth century. Before about 1803, Glasgow itself was a target for itinerant dentists based on Edinburgh, even though the population of Glasgow in 1801 was estimated at 83,769 (first official census). It is known that twenty or so years earlier, in 1782, Paisley was being visited by a Mr Law, who:

> having bestowed his most assiduous endeavours to render himself Master of the proper treatment of the teeth, and under the most capital dentists in London, he now proposes to practise his art in this place, [Paisley] for about twelve days.[53]

It was not until the 1830s, that a resident dentist appears in Paisley and once again this information is obtained from the pages of the local press. An announcement in the Paisley Advertiser for October 1833,carries the following:

> DENTAL SURGERY AND MECHANISM.
> Mr Dowie, Surgeon Dentist,has the pleasure of intimating his return to the inhabitants of Paisley and its vicinity. He purposes, should he be so fortunate as to obtain a share of public favour, to reside permanently at Paisley, which he is well aware will be a very great benefit to the community. He suggests, for public consideration, whether or not this be the

> only way in which those employing a Dentist can obtain ready and ultimate satisfaction....
> Mr Dowie is from the establishment of Mr Cameron, Surgeon Dentists, George Square, Glasgow, which he considers a sufficient recommendation.
> Mr Dowie will be found at Mrs Martin's lodgings, No 1 Maxwell Street, North Side of English Chapel.
>
> Paisley, October 1833 [54]

Glasgow and Edinburgh however, were not the only cities with resident dentists. Aberdeen had several, all but one being permanently resident using the city as a base to visit surrounding towns. The Aberdeen Journal for 1829 and 1830 carried advertisements for six dentists; Mr Gray, who was a Member of the Royal College of Surgeons, London; Mr Fowler, Dentist and Cupper, Mr Crombie, Mr Kidd and Mr Peter Wright who described himself as 'Musical Instrument maker, Ivory turner and Dentist'. Mr Wright claims in his announcement that "... he has served the public for forty years".[55] Unfortunately he does not make it clear whether he was referring to his dental accomplishments.

Mr Fowler paid visits to Keith, Elgin and Banff on a regular basis, whilst Mr Gray made annual visits to the city from Edinburgh. Mr Kidd was also based in Edinburgh, appearing in Aberdeen in February and March of 1830. His name does not appear in any of the Edinburgh directories up to 1850. All that is known about him is that his Edinburgh address was, 24 Queen Street, and that he was Assistant to J.Paterson Clark of London, A.M. (Member of the Society of Apothecaries).

A prominent feature of all the advertisements is the emphasis on the previous experience of the operator. In the absence of recognised dental qualification, assistantship with an established or well known name, was the only assurance that the public had as to the *bona fide* of the dentist; nevertheless many such claims were fraudulent, and there are several instances of disclaimers appearing in the

press regarding alleged positions, formerly held by dentists.[56]

Between 1800 and 1850, the number of 'practitioners' continued to multiply, many adding the word 'Dentist' to their other occupations, in contrast to those who had served apprenticeships in mechanical and operative dentistry and were considered to be men of integrity, with a knowledge of dental diseases. But, it was the charlatans, quacks and empiricists appearing at country fairs, race meetings and other gatherings, who continued to exploit the ignorance of the majority of the public.

The control and suppression of the unqualified was one of the major aims of the first British dental journal appearing in 1843 - encouraging signs of the emergence of professional awareness. The subject of the unqualified, will be a recurring theme throughout the nineteenth century, and will be a major topic in succeeding chapters.

In the absence of a dental journal a number of articles concerning dentistry appeared in the medical press. Many were of a technical nature, but a great number dealt with the growing numbers of untrained practitioners or quacks. One such letter to The Lancet of 28 March 1839 is typical of many and is worth quoting:

> Sir:- Perhaps no species of empiricism has ever been carried to so great a extent with impunity as that practised at the present time by the advertising (self-styled) Surgeon-dentists. With the most unblushing and shameless effrontery do these persons through the medium of the public prints profess to perform utter impossibilities. Yet in no instant, shall we find any of these pretenders to have studied for a single day, a profession which, (at least for some years) requires the most undivided and severe application for its acquirement. ...I have been frequently astonished at the mischievous effects resulting from improper and unscientific operations on the teeth, more particularly with with regard to children whose appearance is frequently much distorted, and in many instances utterly ruined by the uncalled-for extraction of an irregular permanent tooth...[57]

The writer goes on to describe a case where,"...an itinerant advertising dentist extracted four permanent teeth in the lower jaw which were erupting, whilst the temporaries which were lose were left." These naturally shed some time later leaving the patient with a gap. The necessity to quote previous, illustrious patients is also referred to in a later part of the communication: "...this person at that time, advertised as dentist to the King of Holland ... he is now one of the leading dentists ... rejoicing in a different name from the one he assumed four years ago." [58]

But quackery was also rife in the field of medicine, and the pages of The Lancet were full of accounts of these miscreants and appeals for control. The following is a short excerpt from an issue of 1839 *On Quackery*, by J.M. Coley, Senior Surgeon to Bridgenorth Infirmary:

> ...Unfortunately the bulk of mankind, however highly educated in general and classical knowledge,evince a disposition to believe the most marvellous statement, and the most marvellous events in medical matters...[59]

An editorial from a later issue continues the theme:

> If medical empiricism could be grasped and exhibited in all its plenitude of craft and villainy, the scales would fall from the eyes of the public, now so deluded and quack-ridden; with one voice its suppression would be demanded and the monstrous abomination would cease to exist [60]

This was an era in which the medical profession was passing through the same kind of turmoil that was besetting the dentists, but in the case of the doctors would be brought under control by the passing of the first Medical Bill in 1858. Unfortunately, dentistry would not see anything similar until twenty years later.

The state of the medical profession at this time is best summed up in the words of a further editorial which appeared in The Lancet:

> What then we ask is the present position of medical affairs?...first we say an angry spirit of discontent pervades all ranks of the profession...an overwhelming majority of nearly 25,000 English, Irish and Scottish medical practitioners is thoroughly dissatisfied with the existing state of medical law. While many alterations had taken place in medical schools and hospitals, mainly by the efforts of an independent medical press.
> ...we must proclaim with unabated fervour, that the great, the master evil remains unshaken, untouched in all its hideous deformity. We necessarily refer to that state of the law which allows various sets of mercenary, goose-brained monopolists and charlatans to usurp the highest privileges which should be of right, enjoyed by the ablest members of the noble profession..[61]

In the next section, the scope of dental training, the rise of the dental journals and the call for reform will be discussed; factors which had a distinct bearing on the shape of future dental treatment in Scotland and on the development of the profession of dentistry.

2.4 The Dawn of Scientific Dentistry and the Call for Reform.

During the first half of the nineteenth century, the practice of dentistry was considered to be an undefined mixture of mechanical and operative procedures. Generally, a youth wishing to become a dentist would be indentured to an established practitioner as an apprentice for a period of five years, primarily to learn the art of what today would be called dental prosthetics. A legal deed was drawn up, specifying in great detail the conditions of the contract, for example, "...He must obey his master faithfully, behave himself, never reveal secrets, not haunt taverns or gaming houses, not contract matrimony, not unlawfully absent himself day or night from his master's service." [62]

In addition an indenture fee was payable to the dentist, which varied with his reputation. Usually the father had to guarantee to provide the apprentice with sufficient food and wearing apparel, although board and lodging was sometimes

part of the agreement. As far as the operative or surgical side was concerned, acquiring a sound training was more difficult, unless the dentist was prepared to give clinical instruction. Generally, a number of dentists advertised that treatment would be given to the poor gratis, usually for an hour in the mornings, several days a week. [63] In these cases the pupil could watch and assist whilst fillings and extractions were carried out, and when he was considered to be competent, allowed to carry out the treatment himself.

As Campbell puts it, "...there would probably be considerable 'smash and grab' tactics with extractions by instalments."[64] Other evidence showing the well established apprentice system comes from newspaper advertisements. For example, Mr Buchanan a Glasgow dentist, inserted the following announcement in October 1847:

> Mechanical Dentist Wanted.
> A respectable youth from 14 to 16 years to engage as an apprentice to a dentist. One who has had a little experience as a working jeweller will be preferred. Apply to Mr Buchanan, 150 Bath Street.[65]

Additionally Edinburgh, but not Glasgow, maintained A Register of Apprentices, covering the period 1666-1800. One such name appearing is that of James Blair, formerly apprentice barber and wigmaker in Blairgowrie, who later became a dentist in Leicester.[66]

Turning to formal training, there is no firm evidence to support the existence of any kind of lectures or systematic course in dentistry being offered in Scotland until the latter decades of the nineteenth century. There probably were occasional lectures as dental disease as a part of medicine assumed a new importance. Francis Home, the first professor of materia medica at Edinburgh University, had devoted two chapters to toothache and dentition in his book, *Principia Medicinae* in 1762, and in a student's notebook of lectures given by Alexander Munro (secondus), in 1784, there

are copious notes on the eruption of the teeth in children, and on dental caries and the filling of teeth with lead and tin. In addition, stress is laid on the importance of scaling the teeth. Another manuscript notebook from 1789 has a section on *Dentition in Children.*[67] Further evidence for the growth of scientific dentistry comes from the University of Edinburgh, where the initial qualification in medicine was the degree of M.D., candidates being required to submit a thesis in Latin, as part of the final examination.

Five of the theses in the university written between 1778 and 1829, were devoted to the formation, structure and diseases of the teeth. It would appear from this information that some form of dental research was already under way in the city. [68] The absence of formal lectures in Scotland however, did not present any difficulties to others. There is evidence of how easy it was to acquire sufficient knowledge in one afternoon to become a 'dentist'; as the handbill puts it, 'with incredible rapidity'. One of these hand-outs from circa 1844 has survived and is worth reproducing:

> Demonstrations of Dental Surgery and Mechanism.
> Mr Henry, Successor to Her Majesty's Late Surgeon Dentist in London, Purposes during a short stay in Glasgow, delivering A Private Course Of Demonstrations Of Dental Surgery and Mechanism, which will convey a rapid but comprehensive knowledge of the art, and qualify Medical Practitioners, Students, Chemists,&c., to undertake all the duties of the Dentist. [69]

An additional part of the leaflet announces similar demonstrations in Edinburgh to be held from four to five in the afternoon. Fees for the Surgical Branch were two guineas and that for the Mechanical, three guineas. Mr Henry was better known as D.W.Jobson, who practised in Edinburgh and whose name appeared in the Edinburgh directories for 1833-34 and 1834-35.

Meantime in England, formal courses of lectures were given in 1785 by the Scot, William Rae, held at John Hunter's house in Leicester Square, previously referred to. On the

other hand, an announcement in The Times of 10 February 1807, states that Mr Moore, Surgeon-Dentist to Her Royal Highness, the Duchess of York, will deliver a Course of Lectures on *The Structures and Diseases of the Teeth* and *The Complete Practice of the Dentist Explained.* The tenor of this notice suggests that both sides of the border had their opportunists.

More conventionally, Joseph Fox gave notice in The Times of 14 January 1804, that he was commencing the Spring Course of lectures with *The Structure and Diseases of the Teeth* to be held at the Medical School of Guy's Hospital. The same institution, in January 1825, was the venue for Thomas Bell, delivering lectures on the *Anatomy and Diseases of the Teeth.*[70] Fox's and Bell's lectures were based on their own texts; many of the others used already published material. Thus in the matter of organised dental lectures, England was ahead in this field, but not without the contributions of eminent Scots.

The numbers of dental text books produced, continued to increase, along with a miscellaneous collection of 'treatises,' which were poorly disguised advertisements for the author's dental products. For the lay public it would be difficult to discern the genuine from the spurious, and a growing feature was the number of publications of a popular type aimed at the general reader. Some were genuinely educational, but others were blatant attempts to sell a dentist's own particular concoctions. The following is a small selection of examples of some of these publications, the majority of which were the works of English dentists, although there were some outstanding exceptions. All were London publications.

John Hunter's Natural History of the Human Teeth was issued as a third edition in 1803; J.Fox, produced his own The Natural History of the Human Teeth, 1803-06; Practical Guide to the Management of the Teeth by L.S.Parmly (an American dentist) came out in 1816, G.Waite, produced The Surgeon-

Dentist's Anatomical and Physiological Manual, in 1820. A popular work was A.Clark's Directions for Preserving the Teeth, (2nd edition), 1826, whilst Thomas Bell, already referred to, brought out two significant books on The Anatomy Physiology and Diseases of the Teeth in 1829 and 1835.

A significant advance in the understanding of dental histology, occurred with the publication in the Edinburgh Medical and Surgical Journal in January 1836 of John Goodsir's Origin and Development of the Pulps and Sacs of the Human Teeth. This work was closely followed by an equally important investigation by Alexander Nasmyth, an eminent Edinburgh dentist, Researches on the Development, Structure and Diseases of the Teeth. This work, the subject of an address to the Royal Society in 1839 and reprinted in the Lancet, resulted in a considerable amount of interest and correspondence.[71] It is described by Lufkin as, "...an excellent critical review of the existing knowledge of the structure and developmental anatomy of the teeth to the year 1839". [72] In 1841, Nasmyth published his work, Three Memoirs on the Development and Structure of the Tooth and Epithelium. The importance of this research can be judged by the fact that a specific membrane was named after him. Although Nasmyth's assumptions were subsequently shown to be erroneous, his investigations are still judged to have made an outstanding contribution to scientific dentistry.

More significant perhaps, was the fact that scientific knowledge was now flowing between different countries;in his *Researches* Nasmyth refers to many other scientific workers, such as, Robert Blake, a Dublin dentist who studied the teeth of various animals as well as man for his Edinburgh MD. Jacques René Tenon, a Frenchman, described another tooth tissue, cementum, whilst fellow countryman, George Cuvier, a paleontologist, made further contributions to dental anatomy. Research was also being carried on in Germany by the Berlin physiologist Johannes Müller and his

student Rudolf Virchow, who pioneered a new phase in normal and pathological anatomy through their studies of the cell. An understanding of cellular structure and function was subsequently demonstrated by the German biologist, Theodore Schwann in 1835.

In the same year, three physiologists took up the study of the fine structure of the tooth; Johann Evangelista Purjinke, first in Breslau and then in Prague, the Swedish anatomist, Adolph Retzius and Joseph Linderer, a Berlin dentist, the first two being names associated with specific dental tissues familiar to all dental students.

Although, this work is concerned with the development of dentistry in Scotland, no account dealing with the rise of scientific dentistry, would be complete without a reference to Sir John Tomes, whose name is also linked inseparably with the drive towards professionalism in Great Britain. He was born in 1815 in Weston-on-Avon, the son of a farmer and following schooling, he became apprenticed to an apothecary in 1836. He studied medicine at King's College, London and then in the Medical School of the Middlesex Hospital. Tomes devoted himself to the study of tooth structure and in 1840 gave up the study of medicine to become a dentist. Simultaneously, he devoted himself untiringly to dental research. In the period under review, he produced in 1848 A Course of Lectures on Dental Physiology and Surgery. His later achievements will be dealt with in a subsequent chapter.[73]

Many of these scientific advances were due to improvements to the microscope. In the middle of the 19th century, bacteria were known only to a few experts and as curiosities of that instrument. Although the Dutchman, Anton Van Leeuwenhoek is generally credited with its invention, a primitive form had been in use as early as 1590. But the Dutchman was probably the first to see micro-organisms, and in 1683, he sent a paper to the Royal Society in London, in which he described 'Animalculae' as they were then

called, in water, saliva and dental tartar. The magnification of this instrument was in the order of between 100 - 150.[74] Continuing his investigations, he correctly classified the organisms into bacilli, cocci and spirillae, a classification still in use today.

It is one of the ironies of science that this discovery remained more or less ignored until rediscovered by Louis Pasteur in 1835, leading to the discovery and naming of the first disease producing organism - the *Bacillus anthracis* by Joseph Casimir Davaine in 1850.[75]

It would be fitting here to conclude this section on the advance of knowledge in scientific dentistry, with a brief summary from the pen of the illustrated epistemologist, Karl Popper, on the subject of discoveries in science. It is impossible he felt, to announce a discovery in definitive terms. A discovery only ever reflects a part of reality and is only ever the acquisition of some piece of knowledge, which necessitates a reorganization of previous knowledge.[76]

2.5 The Impact of Dental Journals and The Reform Movement.

The advances being made in dentistry at this time were only possible due to the contributions of workers in many fields, who for the first time were exchanging information and ideas across a wide spectrum of human knowledge. The new information, ideas and discoveries found an enthusiastic medium in the shape of the first British journals devoted to dentistry. Additionally, they provided the spring board necessary for the further advancement of professional status, their editors being outspoken advocates for the case for reform.

The British Quarterly Journal of Dental Surgery, saw the light of day on 30 March 1843. Edited by James Robinson, himself a dentist, it was the first periodical published in Europe devoted exclusively to dental surgery.[77] For

reasons which have never been discovered, there were only two issues, the last one appearing in June of that year. Robinson outlined its aims in an editorial:

> We must, therefore, now begin to communicate the treasures which have been accumulating in this department, for the common good of all, and for the individual good of each. ...Important inventions and discoveries will thus be recorded...goodwill will be strengthened and the profession carried to its summit - power will gradually accumulate in the combined hands of truly respectable and scientific men, and be proportionately derogated from unprincipled persons and pretenders. By a steady perseverance in this honest aim, we may hope at last to be the instrument of so uniting our at present scattered profession, as that it shall come before the government of the country with a claim grounded in the strength of right, to be incorporated, and to have a power of instituting examinations, and granting diplomas to worthy candidates. ...Such a corporation will then constitute, if we may speak physiologically, a kind of organ for purifying the profession itself, and for eliminating and excreting quacks and imposters of all sorts from the body social.[78]

Robinson paid tribute to the American Journal of Dental Science which had appeared in 1839, considering the British journal to be a younger brother, adding that there would be much to be learned from that periodical. Two years prior to the publication of the British journal, a letter appeared in the Lancet, dated 2 March 1841. It was from J.L.Levison, a Birmingham dentist and headed, *Suggestions for a Faculty of Surgeon-Dentists*.

> Sir:- A very talented surgeon of this town, who had heard my recently delivered lecture on "Medical and Dental Quackery," suggested what I think an excellent plan. He said, that it would be well for the respectable members of the dental profession to form themselves into "a faculty of surgeon-dentists;" that they should frame a code of laws, and institute a certain examination in general and special anatomy, physiology and pathology; and having by such means ascertained the mental qualifications of candidates for membership, those who were deemed qualified to practise should have a diploma granted them.
>
> ...Very shortly something will be necessary to give the public confidence in dental practitioners, as the "doings" of itinerant surgeon-dentists are deserving notice in the pages of your excellent journal. ...It is very curious that people who live under what are called

> despotic governments, have better care taken of their health and morals than under our free institutions. It is well known that men may turn doctors or educators when all other things fail; and it matters not how ignorant or unqualified they are so that they can make a dash, dress smart, and use the personal pronoun I, and make great promises, without the least desire or intention of realising them. ... Now on the continent if anyone desires to practise in medicine &c., he must undergo an examination as to his intellectual qualification and moral character; and if deemed eligible, he has a licence to practise physic or teach; and so it should be in this country; and quacks should not be allowed to jeopardise either the health of the body or of the mind. I am yours, very respectfully, J.L.Levison,
>
> 25,Upper Temple-street, Birmingham, March 2 1841.[79]

The Lancet thoroughly approved of the idea:

> We concur most cordially with our correspondent in his suggestion. The advantages resulting from such an association as that proposed would extend both to the public and to the profession of dentistry; and while it offered an assurance to the former that, in submitting to the treatment of a dentist, they were not yielding the care of important organs to the hands of ignorant quackery, it would be bestowing a respectability upon the art which, we regret to say is, at present, far from being universally admitted.[80]

Levison's letter epitomized the prevailing opinion among the minority of caring and ethical dentists. He attacked the quacks and unqualified itinerants, urging some kind of overall control of dentistry, which would allow only the qualified to practise. An interesting point is that a respectable publication such as The Lancet considered dentistry at that time to be a profession.

Meantime, a letter to the editor of the Lancet, in July 1841, drew attention to the progress of dental science in America. The correspondent noted that, "...after encountering much opposition and overcoming many serious difficulties, " a few leading dentists in New York, Philadelphia and Boston had succeeded in forming an association - The American Society of Dental Surgeons.

As a result of the endeavours of the Society, the Baltimore College of Dental Surgery commenced its first session in November 1841, shortly afterward conferring the first dental degree (Doctor of Dental Surgery).[81]

Levison's call for action was echoed by George Waite, a London dentist in the same year, 1841 (it is not clear whether before or after) who published a pamphlet entitled, *An Appeal to the Parliament, the Medical Profession and the Public on the Present State of Dental Surgery.* Waite's main theme was that no one should be allowed to practise dentistry unless qualified, preferably under the aegis of the the Royal College of Surgeons of England. Dentistry would remain a branch of medicine, but eventually a society would be set up to control the profession throughout Britain. He said:

> ...As it now is, dentistry can be considered no profession; a person however illiterate and uneducated, may commence practice: and society being unprotected, there is no reason why he may not be consulted; in which case there is no guarantee that he is professionally competent, he may operate on a tooth in the neighbourhood of an incipient malignant tumour, and thereby do the greatest mischief; for it can hardly be supposed that he can know the diseases to which the jaws are liable, their intimate anatomy and all kinds of irritability which ill-judged dental operations may give rise to. ... To me it appears extraordinary that in this great capital, the most enlightened in Europe, and in this age of advanced science, such charlatanism should not directly be checked; and I have no hesitation in saying, that the ranks of the profession and the interests of society demand legislation. ...[82]

Waite's ideas focused on the Royal College of Surgeons of England as licensing authority, with powers to appoint a board of dentists from members of the College. Diplomas would be issued to those who passed the required examinations. He emphasised his belief that dentistry was a branch of surgery, and went on to outline the possible contents of a course in dentistry of three years duration. With considerable foresight, he suggested provisions for dealing with those dentists, already in practice:

> ...There might exist a reserved clause that all dentists being established at this time should be examined as to their qualifications, and their age noticed; and wherever gross abuse has existed, and can be proved,the licence should be refused.[83]

Commenting, Hill speculates on the pamphlet and its results. It was not known how extensively it was distributed but it could only be considered yet another isolated attempt at improvement. Although Waite was a highly respectable and qualified dentist:

> ...he appears not to have possessed sufficient influence among dentists generally to induce them to respond to his desires; or else the dogged selfishness and want of cordiality of which he complained was too deep-seated to give way before his 'appeal'.[84]

As Hill put it, "...At any rate the dark waters of ignorance and prejudice of that day seemed to flow on untroubled as before, and no light was yet on the horizon."[85]

Returning to the first issue of the British Quarterly Journal of Dental Surgery, the last page is devoted to "Opinions of the Press," and it appears that the editor was himself not averse to seeking a little publicity. Quotations appeared from the London Medical Gazette, the Medical Times and the Observer; an excerpt from one will suffice :

> ...As regards the work itself, it is well printed, handsomely and liberally illustrated, and contains several excellent papers of great importance, evidently written by men of high standing in their profession; much practical and scientific information is to be gleaned from a perusal of its contents, as well to the public as to practitioners, to whom it will afford a facility for interchange of ideas and communication of practical facts, which they have not heretofore possessed, and which alone must render the future numbers of surpassing value- *The Chemist* [86]

In the second issue of the British Quarterly, the current issue of a reforming medical bill was a recurring theme. Since the early 1830s, the medical journals had campaigned for medical reform and as noted earlier, charlatanism and

quackery were pertinent issues. In an article in the Lancet of 13 July 1839, the editor listed 16 different bodies in the United Kingdom conferring degrees, diplomas or licences to practise medicine. The editor of the British Quarterly commented on the proposed measures of Sir James Graham (Secretary of State for the Home Department), who, it was anticipated, would bring forward a Bill in Parliament introducing Medical Reform. Robinson maintained that this was an opportune time to incorporate into the Medical Bill a clause dealing with the practice of dentistry. Having expressed the anxiety of the dental profession regarding the measure, he wrote:

> ... Nor can the the legislature interfere on any point more legitimately than on one which will erect in society a barrier against the inroads of the remorseless plunderings of the unprincipled charlatan.[87] ...

A system of qualification by education and examination was steadily spreading through the various medical grades and shortly the public would be protected by the Pharmaceutical Society "... against the danger of receiving drugs from ignorant and untaught druggists. ... " [88] He went on:

> Why should not the educated dentist be protected? Or, rather, why, amid all these improvements in our social economy, is the public still to be left to the tender mercy of ignorant and dangerous pretenders to the art of dentistry? We assert that no branch of the healing art is of more importance to the health of the people , nor is there any portion of surgical practice, in which there are so many dangerous, if not fatal, errors committed. In the country districts the art is practised principally by druggists, and in many places by cobblers, and barbers, who have joined it to their own crafts. ...There must be a College of Dental Surgeons, - the credit of the profession demands it. There must be a definite curriculum of education, and a subsequent rigid examination, - the safety of the public requires it! For the future no Dentist ought to be admitted into the confidence of the public, who cannot produce his diploma from a dental college.[89]

Evidently the editor had written to the Secretary of State; his reply was not encouraging:

> Sir, Whitehall, May 4th,1843.
> I am directed by Sir James Graham, to state, in reply to your note of the 3rd, that it is not his intention at present, to introduce into a Medical Bill such a clause as you allude to.
> I am,Sir, your obedient servant,D.O'Brien, *Priv.Sec.* [90]

The second issue was also noteworthy for the inclusion of a six page letter from J.L.Levison, entitled *Exposure of Quacks and Quackery*. After the usual flowery introduction so beloved of that age, he launched into an attack on charlatans. His description of a quack is best expressed in his own words, "...To condense our definition of a quack, he is a mean, ignorant, boasting personage who trusts to an unblushing ignorance, and showy dress, and substitutes for them, information and intellectual qualifications... ". [91]

For reasons which have never been divulged, there were no further issues of the British Quarterly, however, on Saturday, 13 January 1844, a new dental journal appeared, the Forceps, once again edited by James Robinson, and published fortnightly until March 1845.

The new periodical continued in the vein of its predecessor, relentlessly attacking the quacks and campaigning for reform. One noticeable difference, was the appearance of a letter from a Scottish dentist on the subject. Robinson, undoubtedly, had a sense of humour, biting and sarcastic at times, but also bordering on xenophobia; it is difficult therefore to decide if the conspicuous absence of reporting on Scottish dental matters in the British Quarterly had been a deliberate action or, because London was the location of the Royal College of Surgeons and could boast of 200 dentists holding a qualification of that body. (The best estimates for persons practising dentistry in Scotland in 1843, derived from Census Returns (1841), trade directories and newspaper advertisements, would be around 73). Headed, *Dental Quackery North O' The Tweed*, the writer expressed his appreciation for the "...fearless exposure you have made of quackery in its various forms, as it exists in England...". He goes on to state that it is rife in Scotland and that

holding the qualification of MRCS or MD is no security to the public against it. "...Some of those who 'prepare' dental practitioners in this locality can boast of 'finishing them off' with nearly equal speed to the professors of the south...".
The letter continues:

> Not a hundred miles from Duke Street there is a wholesale establishment for the education of those who wish to practise dental surgery in all its branches, where the students have no reason to complain about the length of time required to study either the mechanical or surgical branches of the profession. I understand that twelve months is considered an *extraordinary* length of time and that *perfection* is generally guaranteed in a much shorter period. Such quackish pretensions deserve the most severe condemnation. By such means the parties may fill their pockets, by extorting large premiums from those who are foolish enough to be gulled by them ... such a system is repugnant to the mind of every right-thinking person who wishes well to his profession.[92]

The writer goes on to detail examples, quoting one case, where the title of Surgeon-Dentist was tacked on to the business of a cutler. Concluding, the correspondent indicates, that there had been exchanges on the subject with his professional colleagues, who "... are extremely anxious that something should be done effectually to crush quackery ... and by placing the dental profession on a proper basis, raise it to that status in society to which it is properly entitled. "[93] Absence of reports in the British Quarterly therefore, concerning Scottish dentists, was not an indication of lack of activity 'North O' The Tweed'.

The Forceps at this time, was the only British journal dealing predominantly with dentistry. It differed from its predecessor in that its subtitle was *Journal of Dental Surgery, the Collateral Arts and Sciences, and General Literature.* The first editorial made it clear that it was intended not only for the advancement of Dental Surgery and all its social bearing and relations, but also for the non-professional reader. Among the 'headings' covered would be; "Occasional Essays, Reports of Lectures, Reviews of Books,

Notices of Fine Arts, Musical Chit-chat and Glances at the Theatre". A regular feature of the Forceps was *Funny Sketches of Funny Men*, biographical accounts of well-known practitioners which were laced with biting satire and innuendo. The first article dealt with Mr John Gray and the following excerpt will convey a flavour of the style:

> We have frequently heard it remarked, that after a man has experienced the vicissitudes of life in the trade or profession to which he originally belonged, he will invariably choose that of a dentist, quack doctor, spectacle maker, or a dealer in *black diamonds*, with the hope of retrieving a lost fortune, and is frequently more successful than their regularly educated brethren. ...
>
> ... The gentlemen whose name appears at the head of this article ... is one termed by the profession a *genteel advertiser*, or in other words, in advertising his book he advertises himself. About forty years since, Mr. Gray exercised the ingenious and useful art of watchmaking or mending at Aberdeen; but whether he found his native place too small for his expansive genius, or whether a northern atmosphere was affected by a peculiar disease hereditary amongst her Majesty's northern subjects, is like some other questions of equal importance, involved in mystery. Certain it is, however that he did come to the Scotchman's El Dorado, London, and as certain that he worked for some time at his craft (for what occupation can better describe the name), for which he was considered admirably fitted by both natural talents and education.
>
> In one of his perambulations over this over-grown city he met a fellow countryman who, like himself, had left the land of cakes for a more money getting locality, and the trade of a jeweller for the higher profits and superior station of a professional man; and urged by his example and advice, Mr Gray bade adieu to main-springs and balance wheels, and became his man Friday in the construction of artificial teeth, and in other details of his profession. His ambition was fired; he kept his eyes open and his pocket closed, and having picked up a little knowledge and saved some money, he made a bold push and commenced for himself.[94]

The article continues in a similar vein describing how ".. by dint of six month's grinding and cramming made himself competent to pass the *pons asinorum* of surgery ... and came forth a full blown *pure* surgeon with all his

blushing honours ". In the same issue, under the heading *Tooth Drawing for the Million,* the following is to be found:

> ...We understand that it is the intention of the Monsieur Quacksys to perform the operation of tooth drawing at 4d each, or four for a shilling, the set for 5s 9 1/2d. Breaking a jaw, and other equally valuable services, £6 6s. [95]

Earlier the subject of books and treatises had been discussed, and it was stressed that many of these publications were barely disguised advertisements for the dentists' own products. Robinson in the Forceps ruthlessly attacked these individuals in his customary scathing manner. One such article concerned the Glasgow dentist, Mr D.A. Cameron, who practised in the city at various addresses between 1830 and 1850. Cameron's book appeared in 1838, entitled, *Plain Advice on the Care of the Teeth.* In a preamble, it is made clear that the article only deals with Mr Cameron as an author, but Robinson goes on:

> ... we have no intention here of examining his claims as a practitioner of Dental Surgery; we are not, at present, making any calculations of the chances of those who visit him, for the purpose of getting rid of a troublesome grinder, may have of leaving his surgery with a broken jaw. ... the title of the book, will, no doubt, strike our readers as peculiarly expressive, ... the word *plain* is excessively characteristic of the honest, open, unsophisticated, straight-forward-sailing, honourable sort of personage, which Mr. Cameron is shown to be, in the course of the following report of a trial, which is copied from the Scotch Reformer's Gazette, of Saturday June 9th 1838. [96]

The essence of the report was that Mr. Cameron had commissioned a Mrs McFie to write a book on *The Toilet;* this having been completed, she received £3 to account but, when she asked for the balance, was told that the book was not to be published, whereupon Mrs McFie demanded the return of her manuscript. In the meantime a new book had been published entitled *Plain Advice on the Care of the Teeth* by 'D.A.Cameron, Surgeon-Dentist', a great part of which had been made up from Mrs McFie's *Toilet.* When her request for redress was refused, Mrs McFie brought the action against him. The decision of the Sheriff was entirely in favour of

Mrs McFie, who was awarded five guineas and costs, as well as the original £3.

It is interesting to compare the attitudes of different historians towards Robinson. Campbell describes him as, " ... an enlightened and cultured surgeon-dentist" [97] whilst Lilian Lindsay in *Personalities of the Past* describes him as " ... a man of extremes; resolute but open to conviction; violent in temper but compassionate to those in trouble ".[98] The examples quoted from the Forceps, represent only a small sample of the articles which appeared regularly, and illustrate the continued and unrelenting challenge to quackery and the campaign for official recognition of dentistry. Nevertheless, there is no doubt that Robinson, through the medium of the Forceps was a powerful influence, contributing to the campaign for reform, exposing the unscrupulous exploits of the growing numbers of unqualified practitioners and, as will be seen later, playing an important role in the development of dentistry as a professional body. The Forceps also played an important role in the dissemination of new methods, treatments and scientific discoveries, devoting space to articles which had originally appeared in the medical press. Perhaps one of its most important functions was as a medium for the free exchange of ideas and opinions among the minority of ethically minded dentists.

This in itself was a powerful, contributing factor in the development of a professional spirit and set the scene for a push towards legitimization. Unfortunately, Robinson's offensive, personal manner made him many enemies and although the Forceps had a short existence, the hostility against Robinson was evident for many years afterwards. Alfred Hill recounts that Robinson spent an evening with him when the subject of the *Funny Sketches* was raised.

> ... I have written many silly things in my time, and I am afraid many unjust things too. As to the *Forceps*, I heartily wish I had never had anything to do with it; and I should like to know that not a single copy of it was now in existence.[99]

In the next chapter, the socio-economic conditions prevalent in Scotland will be explored, with reference to the poor, the sick, the unemployed and their need for dental treatment. Wages, prices and the cost of living were all important, relevant factors linked to the question of how the need was met together with the influence exercised by these sections of the population on the development of dentistry, as was the effect of what for the the moment might be called the 'monied classes' on the growth of dentistry. Whether the terms 'middle class' and 'monied class' are synonymous is a matter best left to the sociologists and economic historians; even the definitions of these terms is a matter of considerable controversy.

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Chapter 3

3.1 Socio-Economic Factors and Dental Needs. Poverty and Ill-Health. 1800-1878.

A major hypothesis of this thesis is that dentistry as a profession developed in response to the social, economic, political and contemporary events of the period. It is in essence a holistic approach, although in certain epochs causes intrinsic to the profession may be identified, whilst at other times, extrinsic factors appear to dominate. Consequently, awareness of the living conditions of the people of Scotland is of importance, and this section will deal with the availability of dental treatment for those suffering from both poverty and ill health.

Prior to 1845 public welfare was mainly the domain of the church. It combined charity with a social conscience, urging its members to help the needy and provide personal and communal support. Funds were provided from several sources: ordinary church collections, extra collections at the celebration of the Sacrament, dues collected for the use of hearses and mort cloth, mortifications for the benefit of the poor and in some parishes from the rent of seats in the church. [1]

An additional source was from the proceeds of fines imposed for various offences (e.g., breaches of chastity) and certain sums were extracted from the delinquents before they were restored to full communion with the church.[2] Fines imposed at Sheriff Courts were also used as donations to Institutions; one such example was noted in the Annual Report of the Paisley Dispensary for 1845, where several fines were allocated to the funds.[3]

As the cities grew in size they attracted increasing numbers in need of help, the able-bodied as well as the sick. Living conditions deteriorated, exacerbated by overcrowding, lack of sanitation and malnutrition making it more difficult for the church to discharge its traditional responsibilities. Additionally, "... it had adopted in the new conditions a moralizing philosophy of poverty, namely that those in need were likely to be the victims of their own failings. "[4] This led the Church to the conclusion that there was grave social danger in alleviating their "self-inflicted" condition and, additionally, to thinking in terms of the poor as "deserving and undeserving". This attitude was epitomised by the Rev. Thomas Chalmers, held in high esteem for his work among the poor in St. John's parish Glasgow. Chalmers' views on relief were vigorously opposed by William Pulteney Alison, Professor of Medicine at the University of Edinburgh.

Extensive unemployment due to trade depression between 1841 and 1843, threw thousands of Paisley weavers out of work having no claim on any kind of relief. The government's reaction to this situation was unusual in that it secretly raised private funds and organised their distribution,and at the same time set up an enquiry into the workings of the Scottish Poor Law. [5]

The Report of the Royal Commission on the Poor Law (Scotland) was published as a Parliamentary Paper in 1844 and came into effect in 1845. Writing in 1840, Dr W.P. Alison said:

> ...Let us look to the closes of Edinburgh, and the wynds of Glasgow, and thoroughly understand the character and habits, the diseases and mortality of the unemployed poor, unprotected by the law, who gather there from all parts of the country; let us study the *condition* of the aged and disabled poor in all the smaller towns in Scotland; let us listen to the tales of misery which come to us from the remote parts of the Highlands and Islands...let us compare these things with the provisions for the poor, not only in England, but in many other Christian countries; and so far from priding ourselves on the *smallness of the sums* which are applied

> to this purpose in Scotland...we must honestly and candidly confess, that our parsimony in this particular is equally injurious to the poor and discreditable to the rich in Scotland. [6]

The sentiments expressed by Dr Alison epitomised one of the main reasons for the reform of the Scottish Poor Law, namely the dissatisfaction of the medical profession with the amount and quality of relief provided for the sick poor. Crowther sums up:

> Alison's words expose the fundamental problems: low levels of relief payments; the plight of the unemployed; attitudes towards immigrants; the relationship between poverty and disease; the special difficulties of the Highlands; the shortcomings of charity, and underlying all these the comparison between English and Scottish treatment of the poor.[7]

The New Poor Law Act of 1834 did not apply to Scotland and one of the main differences at this time was that in England the unemployed labourers had the right to relief; in Scotland no such right was admitted. England too, accepted the view, that because proportionately less money was spent on poor relief in Scotland, the Scottish system must be superior. English funds were obtained by compulsory assessment, those of Scotland mainly by voluntary contribution. Additionally agents administering the English system were paid whereas in Scotland members of the Kirk Sessions acted voluntarily. It was no wonder that visiting English commissioners pronounced the Scottish Poor Law and its administrators "admirable".[8]

In his Observations on the Management of the Poor, Dr Alison made comparisons with the organisation of poor relief in other countries; Holland had an expenditure of £5,000,000 a year, or 4s.4d. a head; France spent £1,8000,000 a year or 10s. a head on the population; Hamburg's poor relief was 4s. The corresponding figure for Scotland was 1s.3d.[9]

The divergent points of view on the issue of the Poor Law were epitomised by the chief protagonists, Dr Alison and the Rev. Thomas Chalmers. The latter's attitude could be described as a product of the traditional Scottish Poor Law based on the moral, spiritual and social philosophy of the Church. He extended the rural parish experience, where those who were in need were few and were helped by the social bond which still existed between classes. Above all he believed that the middle class members of the Kirk had a social responsibility, and that self-reliance and mutual help among the working classes was essential for their spiritual uplift.[10]

On the subject of medical relief for the poor, Dr Alison quoted his own evidence:

> The medical aid to the poor I believe to be generally very deficient; and where it is sufficient for them, it is a heavy and unjust burden on the medical men, who devote often ... a larger proportion of their time and money to the service of the poor than any other class in the community.[11]

Alison was assisted in the campaign for Poor Law improvement by many others. Adam Farrie treasurer of Greenock Royal Infirmary and Dr Handyside, acting surgeon of Edinburgh Royal Infirmary both gave effective evidence before the commissioners as did many scores of doctors. It was the doctors who supplied the most trenchant criticism of the existing poor law in town and country.[12] Dental treatment for the poor during this period was sporadic and in many case carried out by medical staff in dispensaries. The unemployed who were fit would not receive any assistance and the sick poor fared no better.

It has been pointed out that most of the dentists who advertised their services in the press, announced that they were available to treat the poor 'gratis' at certain times. Unfortunately there is little evidence of the type of treatment which was available, although it is known that it

was mainly extractions and that they were carried out by assistants and apprentices.[13]

Reference was made earlier to the absence of any evidence that there were resident dentists in some large towns,for example Paisley which in 1830s, had a population in the region of 45,000. One dentist was traced through the Paisley Advertiser for October 1833, but he seemed to be a lone figure as Slater's Directory for 1851-52, contained no resident dentists. Although there were visiting dentists it seemed improbable that some form of dental treatment was not available. The question was asked, where did the people of Paisley go when they suffered from toothache?

The Annual Reports of the Paisley Dispensary and House of Recovery as contained in Paisley Pamphlets showed that in the year ended 1838, toothache accounted for 34 cases, "dentition" 1 and *Tic Douloureux* (Facial Neuralgia) 2; making a total of 37 dentally related conditions. In 1843 the number of cases reported was 41, with a similar number in 1844. In 1845,there were 34 cases. Unfortunately in the 'List of Disease on the Journal' for 1847, there is no mention of toothaches, possibly due to an omission on the part of the printer.[14]

Most towns of any size had their dispensaries, run by voluntary contributions and donations, and it was to these that the poor, the sick and the lower paid would go to receive some form of treatment, in the case of toothache, usually extractions. Dispensaries in Glasgow were common in the period under review, but evidence of treatment of dental conditions is scarce. One exception is the Glasgow University Lying-in Hospital and Dispensary which catered for expectant mothers and children. In 1837, there were 40 cases of 'dentition' treated and in the 5th Annual Report for the year ending 20 December 1839, there were 138 cases reported.[15] There are no indications to which dental conditions this term was applied.

In her unpublished thesis, Carolyn Pennington says that it is fairly certain that minor surgery was carried out at the dispensaries and that tooth extraction was also done. She quotes the following from the 5th annual report of the Western Public Dispensary:

> ...amongst children of two years of age, most of the sickness was due to the irritation of teething operating on debilitated constitutions for want of nourishment.[16]

There can be no doubt that the dispensaries filled a much needed want in the treatment of dental conditions among the poor, who could not or would not visit the so-called orthodox dentists.

Annual reports issued by dispensaries do not often chronicle the social conditions of their patients, and so one which draws attention to these is noteworthy. The following are some selected excerpts which recorded the state of impoverishment among the poor of Glasgow:

> The melancholy tales of distress sometimes told at the dispensary, and the visits made to the poor in their homes, have directed the attention of the Physician to several circumstances in the condition of the working class of this city, to which it may not be improper to advert, as they have a considerable influence over the health, as well as the morals of these people. ...[17]

The report goes on to say that the streets, lanes and alleys of the suburbs as well as the city are poorly lit, badly paved and difficult to keep clean. Many of the streets are without any form of lighting, and the blame lay at the door of the the Police Commissioners who:

> ...have recently expended large sums on the lighting and paving of the principal streets and great thoroughfares of the city. The lamps that illuminate the arches of the Old Exchange would alone suffice to illuminate a whole lane....[18]

The statement continues, "... and, the money expended on Ingram Street would have served to pave a large proportion of the bye-streets in the city. ...".[19]

The report describes the living conditions:

> Many of the dwellings of the labouring poor are quite ruinous, unfit for lodging human beings, and such as would be condemned by any board of inspectors. ... Their dwellings are not only very wretched, but the rents paid for them are exorbitantly high. ... single rooms are sometimes let for five pounds a year, and miserable cellars for two or three. ... Great numbers of the labouring poor, consisting of different families are often crowded together in one apartment, with little regard to the distinctions of age and sex; and the consequences, as might be expected, are highly prejudicial to the health and to the moral feelings and habits of the individuals. ...The indigent conditions of the working classes, and the miserable dwellings into which they are huddled, oblige them to purchase their provisions and fuel in small quantities, sometimes on credit, and therefore at prices which would be deemed quite exorbitant by the wealthy inhabitants of this city. ...
>
> The indigence of the labouring classes in Glasgow is much greater than the rest of the community are aware of - a very small interval indeed separates them from complete destitution, which is immediately produced by the sickness of the head of the family, or his want of employment. It would be a melancholy and painful subject of statistical enquiry to endeavour to ascertain how many individuals in this great city with all its wealth, get up in the morning without knowing where they are to find a meal, and how many actually cannot obtain food without having recourse to begging or theft. ...[20]

The report continues with an account of the "vice of intemperance", which it says, "..has proved the most powerful of all the causes of their demoralisation and misery and the prevalence of disease. " It was not uncommon for children to be given alcohol, and a case is described in the report by the writer who saw a five year old girl being given a glass of spirits in a dram shop, "... to drain from it the last drops. ... ". [21] The report points out that it was only too easy for the working classes to obtain spirits and that the shops engaged in the sale of intoxicating liquors were open in the early hours of the morning when the cotton-mill workers were on their way to the factories. Temptation was literally at every street corner and the workers were more to be pitied than censured.

After a number of comments on the present position of the law, the writer discusses several suggestions which might improve the situation ending with the following observation:

> ...It is not, therefore, matter for wonder, that these poor people, scantily clothed and shivering in the morning air, should be tempted to warm their stomachs with a glass of spirits; for nothing which they can obtain at that hour, and for the small sum which they can command, will produce the same grateful feeling. ...[22]

It would be reasonable to assume that the classes of people described would be in no position to afford the high fees charged for dental treatment by qualified dentists Consequently, the increase in the number of dentists in Glasgow, Edinburgh and other cities, was not in response to this section of the population. (By 1852, 22 dentists can be traced resident in Glasgow and 35 in Edinburgh). However, the existence of large numbers in need of dental treatment and unable to afford it, influenced a number of concerned and public spirited dentists.

Their efforts resulted in the setting up of dental dispensaries where advice and treatment was given free. These 'clinics' were the precursors of the dental hospitals which opened in the 1870s, and some notion of the potential patients can be gained from the following extract from the 4th Annual Report of the Board of Supervision for the Relief of the Poor in Scotland, 1851:

Registered poor.....	82,357
Casual poor.....	95,686
Total	178,043 [23]

With a population of 2,888,742, in 1851, this represented 6% of the people of Scotland, none of whom could afford to pay for dental treatment. Thus the condition of this deprived section of the nation was an important factor in the development of dispensaries and dental hospitals, opening up a whole new field of dental activity.

3.2 The Working Classes: Occupations, Wages and Dental Treatment

The genesis of the independent dental practitioner is to be found in the larger Scottish cities, principally Edinburgh and Glasgow, the simple reason being that that was where there were 'customers' for their services. For centuries Edinburgh had played host to generations of government officials, and even after the Union of Parliaments there were still many professional people residing in the Capital, still the seat of the Court of Session. Along with the wealthy merchants and the land-owners were the rising monied class; all fair game for the speculative practitioner, and an important influence on the development of the dental profession. Glasgow too, became a target for the opportunist dentist, attracted by the growing numbers of the population - all potential patients, but many of whom would be unable to afford their charges.

By 1851, 35.9% of the Scottish people lived in towns having a population greater than 5,000 and it was here that the greater part of the working population was to be found.[24] The four main cities of Glasgow, Edinburgh, Dundee and Aberdeen contained 22% of the total population. [25] It is not possible to make realistic comparisons with regard to occupations between 1801 and 1851, nor with later decades, due to the changing methods employed by the census compilers. Consequently figures quoted only give a broad guide to the numbers involved.

In the 1801 census for example, occupations were dealt with under the following headings: "Persons chiefly engaged in agriculture"; "Persons chiefly employed in trade, manufacturing and handicraft", and "All other persons not in the other two classes." The 1811 census substituted the word "families" for "persons."

By 1851, occupations were grouped into 17 classes, divided into 90 sub-classes covering 332 different occupations. A further change in the following decade was the introduction in 1861 of separate Scottish returns compiled by the Registrar General for Scotland.

In 1801, 41% of the population were engaged in the first two groups mentioned above, and in 1851, using a comparable classification, but from a larger number of occupations, it was calculated that these occupations represented 42% of the population

The following table shows the details:

Table 3.2.1: Occupations as a Percentage of the Population 1801,1851.

Year	Engaged in agric.	Engaged in Trade, Mnf.etc	Total	Total pop.	% of total pop.	All others not in preceding classes- %
1801	365,516	293,373	658,889	1,599,068	41	59
1851	-	-	1,213,523	2,888,742	42	58

Source: Census of Great Britain 1801,1851.

The categories chosen from the 1851 census were as follows:

Class 1. Persons engaged in the general or local Government of the Country.

" 11. Persons engaged in the Defence of the Country.

" VI. Persons engaged in Entertaining, Clothing and performing Personal Offices for Man.

" VIII. Persons engaged in the conveyance of Men, Animals, Goods and Messages.

" IX. Persons possessing or working the land, and engaged in growing Grain, Fruits, Grasses, Animals and other Products.

" X. Persons engaged about Animals.

Class XI. Persons engaged in Art and Mechanic Productions, in which matters of various kinds are employed in combination.(this category included manufacturing processes)

" XII. Persons working and dealing in Animal Matters.

" XIII.Persons working and dealing in matters derived from the Vegetable Kingdom.

" XIV. Persons working and dealing with minerals.

" XIV. Labourers and others - Branch of Labour undefined.

These occupations were selected as representing broadly, the working classes on the basis of earnings. The classes which were not included, because they were considered to be in a higher income bracket, or non- earners, were as follows:

Class III.Persons in the Learned Professions (with their immediate subordinates), either filling Public Offices or in Private Practice.

" IV. Persons engaged in Literature, the Fine Arts and the Sciences.

" V. Persons engaged in the Domestic Offices, or duties of Wives, Mothers, Mistresses of Families, Children Relatives.

" VII. Persons who Buy or Sell, Keep, Let or usually Lend Money, Houses or Goods of various kinds.

" XVI. Persons of Rank or Property not returned under any Office or Occupation.

" XVII. Persons supported by the Community and of no specific occupation.

It can be argued that many in the selected categories would be earning more than some in the excluded or "monied classes", but the estimates are approximate and only put forward to give a quantitative basis to the argument.

Smout calculates the "Working Population of Scotland by Broad Industrial Groups" in 1851 as 1,269,000, representing 44% of the total population, which compares favourably with the 42% calculated selectively.[26]

Attempting to quantify an average income for the working population also leads to rough estimations; each trade and occupation had its own rates and these varied in different parts of the country. Nevertheless, a considerable amount of information on wage rates and the cost of living has been elicited from the Report on the Royal Commission on the Poor Law (Scotland), published as a Parliamentary Paper in 1844. Levitt and Smout have produced a considerable amount of data from the report enabling working class earnings to be compared with the cost of living.[27] It is recognised that "working population" is not synonymous with "working class", but the point being made here, is that the earnings of the former represented a major proportion of the latter group.

Bearing in mind what was said before about the geographical distribution of dentists, it is considered that concentration on urban wage earners is justifiable. In any case estimating the wages of, for example, Scottish farm workers is complicated by the fact that they were paid partly in kind and worked under differing conditions according to whether they were hired yearly, half-yearly or seasonally. Again many lived in purpose built bothies, some in rented cottages and others lived within the farmer's own household.[28] Their wages were considerably lower than urban wage earners', and notwithstanding that the cost of living in a rural area was generally less than in the towns, it is not difficult to argue that they would not be able to afford the cost of dental treatment.

Married farm servants' mean wage for Scotland was £10.2 per annum, unmarried farm servants received slightly more - £10.99; but these were the actual money wages and when other 'perks' were added the total wage was estimated at about £24 per annum. Women and children working in the fields were

usually paid on a weekly basis. The Scottish average for women was 4.32 shillings whilst children received 2.78 shillings.[29]

Turning to the industrial scene,an examination of working class wages shows as expected, that there was a variation in different trades and in different areas. The Scottish average for artisans (skilled workers who usually underwent a period of apprenticeship) ranged from 15.63 shillings per week for masons to 13.30 shillings for smiths. The weavers fared badly with a Scottish mean of 6.50 shillings per week. Women and children working in industry earned 4.49 and 2.97 shillings per week respectively. The following tables illustrates earnings in a number of trades:

Table 3.2.2: Comparison of Wages in Selected Trades 1843.

Smiths	Shoemakers	Colliers	Masons	Wrights
13.30s	10.70s	15.51s	15.6s	14.00s

Source: State of the Working Class in 1843, Levitt and Smout, pp115-116.

All the above were weekly wages and varied in different areas of the country. The table on the following page sets out these differences:

Table 3.2.3: Wage Rates by Economic Type of Community - 1843.

Type of Community	Artisans	Masons	Wrights	Women in Industry	Children in Industry	Lowest Labourers
Urban-industrial large towns.	13.60	18,50	13.60	4.94	3.09	6.38
Urban-industrial small towns.	13.90	15.20	14.30	5.09	3.09	6.06
Mixed economy rural parishes.	13.30	15.50	14.50	4.60	2.95	5.85
Mixed economy country towns.	13.30	16.80	14.00	3.78	2.79	5.94
Agric. farming parishes.	13.20	16.20	13.90	2.70	2.80	5.74
Agric. crofting.	11.50	11.90	12.60	2.19	___	4.58
Scottish Mean	**13.20**	**15.60**	**14.00**	**4.49**	**2.97**	**5.79**

All rates are in shillings per week.

Sources: Compiled from data taken from The State of the Working Class in 1843, I.Levitt, T.C.Smout.

3.3 Working Class Budgets and the Cost of Dental Treatment.

In order to ascertain how much money if any, would be available to pay for the cost of dental treatment, a comparison of the earnings of the working class Scot with the cost of living is a logical step, but once again the results are hedged around with qualifications and caveats. The task is made somewhat easier due to the work carried out by one of the witnesses before the Royal Commission Enquiry on the Poor Law (1843), Mr David Stuart, Distributor of Stamps at Dumfries, but before that, a resident in the parish of Dryfesdale. For his own interest he had worked out the budget of a local man having a wife and four children,the man being the only wage earner.

The Dryfesdale budget included the cost of the following: whiskey, clothes, soap, candles, school and doctors' fees. Buying the same goods as the Dryfesdale family, Levitt and Smout calculated family budgets for eight different regions of Scotland. These ranged from £21.7 per annum in Orkney to £28.4 in South Berwick.[30] Only the artisan could attain and surpass the Dryfesdale standard on his wages alone, no matter where he lived. An additional expense was the necessity for many workmen to buy their own tools and materials and furthermore, the highest paid artisans, builders and masons, would be unable to work during the winter season. Levitt and Smout show that it was only when the father, mother and the two children were all working could the family produce a realistic surplus.[31]

Turning to the cost of dental treatment in the period 1800-1850, one finds that although many dentists advertised their charges, it cannot be assumed that these were typical. Like much else in this period, quantitative estimates have to be viewed cautiously, particularly when dealing with the advertisements of the 'dentists'.

Advertising had become identified with the worst aspects of dentistry and so the ethical dentists did not publicise their charges. Even when charges for treatment appeared in the press, they were pitched at a level to draw in 'customers' and once in the premises, the costs could be increased greatly.

Dental charges varied greatly depending on the area, the materials used and the standing of the dentist. Reputable, long established practitioners could ask for high fees in the fashionable areas of Edinburgh and Glasgow; generally these were the dentists who did not advertise. Others varied their charges according to the fees being asked by their competitors. An example of a scale of fees in 1833 which appeared in the Glasgow Argus was as follows:

> An entire Set of Natural or Mineral Teeth,
> highly finished with fine gold sockets,usually
> charged 40 to 50 guineas.....£20
> Artificial Teeth,highly finished,usually
> charged 30 guineas.....£15
> Single Tooth,Natural or Mineral on Gold Plate..£1 1
> Stopping decayed teeth with Mineral Zafferia....0 10 6
> Removing Tartar.....0 10 6
> Filling or any other operation
> in Dental Surgery. 0 10 0
>
> 32

The above were the charges of a practice situated in Renfield Street, Glasgow. Mr Young,on the other hand, who practised at Morrison's Court, Argyle Street, had a different set of prices, some of which are given below:

> Complete Set of Natural Teeth with Gold Plates....£12
> Complete Set of Mineral Teeth.with Gold Plates....£11
>
> Hollow teeth stopped with Mineral 'Succeddaneum'..5/- 33

A "complete set" comprised an upper and a lower set, whilst "half sets" were either upper or lower and it would appear from the advertisement that charges for these were half the price of a complete set. It can also be seen that as late as 1833, natural, that is human teeth, were still being used.

Fifteen years further on, in 1848, Mr Abernethy, at 3 Bath Street, Glasgow, was advertising, "...a decayed tooth filled for half-a-crown..." and "...toothache instantly cured." [34] An example of Mr Abernethy's enterprise can be gathered from an advertisement placed in the Glasgow Herald of March 1849. In it he, "...intimates to Governors, Guardians, Governesses &c., that he has made such arrangements as will enable him to attend Private Families by quarterly contract..." and his services he goes on, "...will be found not only highly advantageous, but extremely economical, by those requiring Private advice and treatment. ... ". [35]

Edinburgh dentists on the whole did not advertise to the same extent as the Glasgow practitioners, but amongst those who did was J.Douglas, who charged 5s for a single enamel tooth, 8s for a single mineral tooth and 15s for a single mineral tooth set on gold. From the advertisement it would appear that Mr Douglas had been a 'mechanical dentist' , in other words, he was skilled in the making of artificial teeth. Doubtless, like many others he had decided to deal directly with the public rather than supply a dentist. He had also acquired other dental skills, as he adds in the announcement that "...charges for other Dental Operations equally moderate".[36]

M.Jordain, Surgeon-Dentist of 6, North Charlotte Street, Edinburgh, also supplied single teeth for 5s. His approach suggested that he was aware of the difficulty of certain classes in paying for treatment, as the advertisement states, "...that he is at length enabled to make teeth available *for all classes*...". [37] (my italics). As early as 1818, a number of medical organisations published scales of recommended fees, which as Hamilton points out, "...suggests that they were attempting to reach a wider range of potential patients or seeking to prevent the undercutting of fees by the doctors themselves...". The fees appear to be much the same throughout Scotland and all arranged their charges according to four social classes.

The scale shows that extraction of teeth was £1 1s on the highest class and 2s 6d in the lowest class, coincidentally confirming that doctors also extracted teeth at this time.[38] The scales were based on income, and the lowest scale would correspond to the earnings of the working class, designated Class IV, where the earnings were deemed to be under £50 per annum.[39] Recalling that the mean wage for artisans in Scotland was 13.2s per week, and that the highest paid were the masons with a Scottish mean of 15.2s per week, the lowest charge of 5s for a single artificial tooth would represent two days wages. Having a tooth filled or extracted would require one day's wages for most of the working class. In reality, most of the working class were not in the artisan class and earned much less. These assumptions are based on the lowest charges advertised and one can be fairly certain from the qualifications made in the advertisements, that the 'patient' would be fortunate to leave without having being talked into paying more.

3.4 Children and the Elderly.

There is a further substantial group of the population to be considered, namely children and the elderly, in other words, a section of the population who were not wage earners. Census Returns data allows the number of persons in different age groups to be calculated. This has been done for the years 1821, 1841, 1851 and 1881. As the question on age for the 1831 census was omitted, this was not available for that year, and as with many census returns, answers to the age of the persons enumerated was often not given. In fact the number of returns without an answer to the age question in 1821 was 465 for Scotland.[40]

It was decided to concentrate on two groups, those under 15 years of age and those over 60. Although many children under 15 years of age were at work, their earnings were only of significance if added to the wages of the rest of the family; the money they earned would not be sufficient to purchase dental treatment as an individual.

Legislation to abolish the exploitation of children in factories and mines was gradually introduced around this time. Althorp's Act of 1833 laid down a minimum age for the employment of children in cotton mills of nine years, limiting their hours to eight up to the age of thirteen. For the first time Factory Inspectors were appointed, but because of the absence of compulsory civil registration of births, it was impossible to prove the age of children employed. An interesting and relevant dental contribution on this issue was the publication of a letter in The Lancet, several years earlier (in 1838) from Edwin Saunders, a prominent London dentist and a leading light in the dental reform movement.

His communication was headed *The Teeth, A Test of Age* and is sub-titled *On the practical examination of the teeth with a view to determine the age of children, more particularly with reference to their qualification for factory labour.* [41] An added comment from two Factory Inspectors was that they had adopted this method and that it was the best criterion of age.

Further legislation followed, such as the Mines Act of 1842 (prohibiting the employment of women and young children below ground) and Ashley's Act of 1847. The latter restricted the employment in factories of women and all young persons between the ages of thirteen and eighteen to ten hours a day, but the Act did not cover other areas where children were employed. It was not until the introduction of compulsory school attendance under the Education Act of 1872 that child labour was effectively limited. The age of fifteen was chosen because this was when apprenticeships normally started, and children not indentured would still be paid children's rates.[42] At the other end of the scale, sixty years and above was selected on the assumption that these adults (both male and female) would no longer be earning or would be unable to earn a full week's pay. Another reason was that the Census returns are given in decennial age groups, 60-70,70-80,etc. and it was considered

that selecting the 70-80 age group would have been too extreme in terms of lack of earning ability.

The following table illustrates these points:

Table 3.4.1: Percentage of the Population Under 15 and Over 60 Years of Age.

Year	Under 15 yrs.	Over 60 yrs.	Total	% of Total Pop.
1821	743,148	150,851	893,999	**42.70**
1841	953,186	193,240	1,146,426	**43.75**
1851	1,028,810	215,816	1,244,626	**43.08**

Source: Census of Great Britain, Enumeration and Age Extracts, 1821, 1841, 1851.

Allowing for the fact that many of the over 60s would be in some of the groups so far discussed, there would still, allowing for duplication, be between 42 and 44% of the population who would not be in a position to afford dental treatment due to no earnings or low earnings.

It is perhaps advisable to clarify the genesis of the above group in relation to the Census description of occupational classification. The 1841 tables showed in which occupation the persons enumerated belonged. A final column was headed "Residue of the population". These were persons not included in the occupation classification - in 1841 this amounted to 58.4%.[43] This group had no declared occupation and so would have embraced the under 15 and over 60 years of age category. This latter percentage shows that the 42-44% quoted above may be an underestimate.

The position then is, that totalling these sections of the population, the following result is obtained:

Broadly Working Class.....43%
Unemployed and in receipt of Poor Law..... 6%
Over 60 years and under 15 years of age... 43%
Total..... 92%

It must be emphasised that these are estimates, but it gives some indication of one of the problems which faced the (emergent) caring Society in this period. Another, to be discussed later was the absence of qualified practitioners to deal with the demand for dental treatment.

Of the remaining 8% of the population, the majority have been classified as "Middle Class", formerly referred to as the "monied class". The 1831 Census gives numbers which lead to a percentage of 5.6, for this group, classified as, "capitalists, bankers and other professional men" and this figure is quoted by Morgan and Trainor. [44]

Morgan and Trainor, using parliamentary franchise and what they term "middle class occupations" as a basis arrive at a figure of 21.6% as representative of the class for the year 1861 and 23.2% for 1881.[45] But this is a percentage of the occupied or working population, not the total population, a distinction which makes a considerable difference in terms of percentages.

In the Census returns for 1881, the occupational classes had again been altered. There were now 6 main classes, 25 orders and 81 sub-orders embracing 432 occupations. The main classes were; I. Professional, II. Domestic, III. Commercial, IV. Agricultural, V. Industrial (Manufacturing) and VI Unoccupied and Unproductive. The latter group comprised, "Wives, children and scholars" with no specified occupation, and represented 56.98% of the total population.[46]

This was the non-earning group. Omitting the Class I "professionals" from the reckoning, the 4 other groups, represented 40.45% of the Scottish population. These groups now embraced much of the working class and a rising middle class but, due to a variety of reasons, a great number at the higher end of the income range had, for the first time, extra money to spend. In a later section this factor is advanced as a contributory cause of the increased demand for dental treatment. An additional pointer to the increasing prosperity could be found in the Annual Report of the Board of Supervision for 1878-79, which gave the number of registered paupers as 62,899 or 2.8% of the total population - a considerable improvement on the 6% quoted for 1851.[47] (The number of paupers remained fairly steady until the advent of the Old Age Pension in 1911). [48] Thus, in 1881, there was still some 57% of the population, who had no income, and accepting that some 80% of all the working population had an income of less than £100 per annum, there would be a further 34% who would fall into a category of low pay.[49] This group therefore comprising 93% of the population would find it difficult to afford the charges of the reputable, qualified dentists.

Thus in 1881 the position was as follows:

Non-earning group	56.98%
Low paid workers.....	34.00%
Registered Paupers ...	2.80%
Total	93.78% [50]

If the under-15 and over-60 years of age basis is used for 1881, as a non-earning group, instead of the 'Unoccupied and Unproductive' classification, the result obtained shows that this section now represented 45.4% of the total population of Scotland. The conclusion which is therefore reached is that during most of the nineteenth century, between 80 and 90% of the population of Scotland (about 3 million people) would be unable to afford to pay for dental treatment.

Turning to the the differential rise in wages, incomes and prices, etc., between 1851 and 1881 and in particular the inflationary effects on dental charges if a comparable 'cost of living' index for 1851 is given as 10.6 then for 1881, it was 11.4.[51] Although there is a degree of inaccuracy in the use of this indicator, it can be assumed that this would have very little effect on average earnings and living costs, including dental charges between 1851 and 1881.

3.5 Upper and Middle Class Influence on the Development of Dentistry.

Definition of the "Upper Class" is generally accepted as those occupying the highest position in the social hierarchy, especially the wealthy and the aristocracy, often referred to as the 'nobility and the gentry'. The middle class on the other hand is a much more amorphous or heterogeneous group, conceived by Morgan and Trainor (1990) as "... all Scots who fell between the lairds and the manual labouring classes. " [52]

Smout uses Dudley Baxter's figures. The Upper and Middle Classes are arranged in three groups according to income:

1. Higher (incomes over £1,000)
2. Middling and "upper-small" (incomes £100-1000)
3. "Lower-small" (incomes up to £100) [53]

A dictionary definition of this group is more likely to be," a social stratum that is not clearly defined, but is positioned between the upper and lower classes." It consists of business men (and women) professional people, etc., and their families. A further qualification might be that it was marked by bourgeois values. The latter term, derived from Marxist philosophy assigns to the bourgeoisie as distinct from the bourgeois, the position of the ruling class of the two basic classes of capitalist society, consisting of capitalists, manufacturers, bankers and other employers. According to Marx, the bourgeoisie owns the most

important of the means of production, through which it exploits the working class.

A simplistic, but practical definition for the purposes of this thesis, is that the upper and middle classes were those who had disposable incomes, making them the major 'customers' for the services of the urban-industrial based dentists. This small number of about 8% acted as a catalyst and a magnet for the burgeoning dental profession. It was to them that the advertisements were addressed and it was this group which acted as stimulus to the increasing number of dentists appearing. But along with rapidly improving knowledge based on scientific discoveries, dentists were beginning to attract members of the public outwith these privileged groups. This can be seen from the advertisements of Messers Jourdain, Douglas and many others. True the occupation of dentist was flourishing, but the road to professionalism was still some way off.

In the next chapter, the struggle for power and influence between the various protagonists is traced. Each group was convinced that their solution was the right approach, but the interminable wrangling was to split dentistry from top to bottom.

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45 Ibid. p106.
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47 34th Annual Report of the Board of Supervision for the Relief of the Poor and Public Health in Scotland pxv, [C 246] 1879.
48 R.H.Campbell, Scotland since 1707. p234, John Donald (2nd ed), Edinburgh 1985.
49 This figure is arrived at by using the data given by Smout in the work cited. Table 2. p111. "The Manual Labour Classes" are defined as having incomes up to £100 per annum, and this class comprises 80.47% of all "productive persons". As the 4 classes selected amounted to 40.45% of the population, and the excluded class - 'Professionals' amounted to 2.57%, this totals 43.02% of the total population (all productive persons). 80.47% of this total gives 34% with an income of £100 per annum or less.
50 See note above as to the method of calculation which gives this value.
51 Unofficial Price Index 1750-1914 issued by Central Statistical Office, Government Offices, Great George St. London. March 1993.
52 N.Morgan, R.Trainor, op. cit. p103.
53 T.C.Smout, A Century of the Scottish People 1830-1950, p111.

Chapter 4

The Struggle for Unity: Establishing a Dental Profession - 1850-1878.

4.1 Renaissance of the Reform Movement

According to the Census Return for Scotland (1841), there were 600 dentists in Great Britain, 521 in England and 73 in Scotland. However, in many cases dentistry was a secondary occupation and therefore would not always be declared.

The 1851 Census (for Great Britain) mentions dentists only once in the preface and comments that there were 1167 and adds, "... many are mechanists ... and most aurists, oculists and dentists are surgeons. ...". [1] There are no separate returns for Scotland at all. But if the figure of 73 dentists for 1841 is taken to represent about 12% of the British total, an estimate of the dentists in Scotland in 1851 can be gauged by taking 12% of 1167. This gives a figure of 140. With a population of 2,888,742, this represents a ratio of 1 dentist to 20,633 of the population.

Alfred Hill, in Reform in the Dental Profession, calculated that, "...there were at that time [1856], as nearly as could be ascertained, some 1300 or 1400 dentists practising throughout the three kingdoms".[2] Again taking 12% of the lower figure, the number of dentists in Scotland comes out as 156. The mean of these two figures, produces the result that there were about 145 persons practising dentistry of various types in Scotland at this time. This gives a dentist to population ratio of 1:19,022. The comparable figure for Great Britain was 1:17,960.

The convoluted dental history of the period 1850-1878, has been comprehensively and meticulously detailed by N.D. Richards in his thesis submitted to London University in 1978.[3] Richards' work concentrates mainly on dental history as seen from an English viewpoint, but does deal

with the main developments as and when they affected the whole of the United Kingdom. Nevertheless as this was a formative period in the development of dentistry as a whole, it is considered that a broad outline of the changes which took place and an account of the main events should be related, with particular emphasis on the Scottish perspective.

Although much of the activity was centred on London, there was considerable involvement by Scottish dentists, many of whom played crucial roles in the developments during this time. The calls for reform which had been so eloquently expressed by James Robinson, editor of the Forceps and by George Waite, J.L.Levison and others in the 1830s and 1840s, culminated in attempts to influence the members of the Royal College of Surgeons of England. Their object was to bring dentistry within the provisions of the forthcoming Medical Bill which was being laid before Parliament in the early part of 1843. The purpose of this, was to alter and according to the petitioners, improve the charter of the Royal College. This Bill was known as Sir James Graham's Bill (Sir James was Secretary of State for Home Affairs).

This opportunity was seen by the some of the leading London dental practitioners who were also members of the Royal College of Surgeons, to be an convenient time to have the claims of dentists included in the new legislation. The delegation which met the President of the Royal College were informed that in his opinion, "...members of the College who practised dentistry exclusively were, in strictness, seceders ... and had lost caste."[4]

Further meetings followed and as a result the following letter was sent to Sir James Graham:

> 32 Old Burlington Street,March 15 1843.
>
> Sir,- We the undersigned having heard of your Bill for the better regulation of the medical colleges, would most respectfully suggest for your consideration that part of the profession practised by dentists, and would

also present to you an opinion. We earnestly believe that much benefit would be obtained by the public were a legislative enactment made which should oblige parties purposing to practise as dentists to pursue a course of education similar to that followed by those intending to practise surgery, and to gain for themselves a similar diploma. Evidence of patients suffering from the ignorance of parties who have not received any professional education, and yet practise as dentists, and through advertisements delude the public by quackery and fraud, are constantly presenting themselves to our notice. Such gross imposition could not be practised by educated men, as all must be who are qualified as surgeons.

We confidently believe that such an enactment would meet with the approbation of the public at large, and of all the respectable members of our branch of the profession. That other nations have considered this subject of importance may be inferred from the enactments of France, Germany, Austria and America, where those who practise as dentists are required to possess a certificate of qualification, given after examination by an authorised medical body. In England no qualification is imperative; yet the importance of the proper knowledge upon the subject can hardly be doubted when England's greatest surgeon [Hunter] thought the subject worthy of a place in his mind; and that he gave time and thought to it may be seen by referring to his work upon the teeth, their diseases and treatment. With these facts strongly impressed upon our minds, we have considered it our duty thus to address you, and have the honour to be, sir , your very obedient and humble servants.

The letter was signed by Samuel Cartwright, G.H.Parkinson, J.H.Parkinson, Arnold Rogers, Edwin Saunders, W.A.Harrison, Charles Stokes, John Tomes, Frank Sherwin, Charles Oswin and Dominique Morell, all respectable and leading London dentists.

Apart from the reference to John Hunter as "England's greatest surgeon,"- Hunter was born at Long Calderwood near Glasgow - several comments can be made. Firstly this group was not representative of dentists throughout the United Kingdom; secondly, they suggested that dentistry should come under the aegis of the Royal College of Surgeons and thirdly, they were expressing an opinion as a group that had received no mandate from any other dentists, and, as it emerged, acted in a covert manner. It was also pointed out

by Hill that those signing the letter omitted to insert their qualifications.[5]

A further letter was sent to the President and Council of the Royal College of Surgeons, drawing their attention to the current issue of medical reform. The writers were confident that because of the "high character" of the Council of the College, the execution of the projected changes would affect all branches of surgery by an improvement in knowledge and an "elevation in professional character". The letter states:

> ...considering, however the small number of persons recognised by the college who practise the branch of surgery to which we have directed ourselves, and knowing also the limited opportunities generally possessed of appreciating the circumstances and relations of that department of practice, we trust that our testimony in regard to its actual condition, and its advocacy of its claims to your consideration, may not be thought to be displaced at this moment. ...[6]

The letter goes on to state that there were in London about 2,000 practitioners of whom 200 practised dentistry exclusively, adding the words, "real or pretended." Further, only twelve were associated with any of the corporate bodies which presided over medicine and these were members of the College of Surgeons.

Continuing, the writers point out that it is unnecessary to emphasise to surgeons the connection between diseases of the teeth and other associated organs and local and constitutional derangements which may occur (nevertheless they do point it out). They add that only recognition and membership of the College can rescue their branch of the profession from "... the obloquy which has of late been cast upon it by the malpractices of ignorant and empirical pretenders ". The letter goes on :

> ...Under these circumstances it is to you, the influential and ruling body of our college, that we naturally appeal at this important epoch, and most respectfully and earnestly submit, not only our individual claims,but also the claims of those few

> others who being with ourselves members of the college, devote themselves to our branch of the profession, as not unworthy to be recognised in the arrangements now in progress, and to have secured to us that character and rank to which we believe the regularly-educated surgeon-dentist legitimately entitled. ...[7]

The letter concludes with comments on the new grades which might be introduced to the College (fellowships), and hopes that their claims for recognition will not be overlooked. Although there are no records of those who signed the letter, it is thought that they would be the same as those who had signed the appeal to Sir John Graham. There is no record of any further meetings of the group, who became known as the 'Memorialists' nor is there any evidence that the letters were acknowledged at the time. As a result of this failure, dento-political activity practically ceased during the following decade.

4.2 Appeal for a College of Dental Surgery: Rymer's letter to the 'Lancet'.

Many reasons have been sought for the lack of success in organising the dentists at this time. The most probable are that the dentists worked exclusively for themselves and in isolation from each other; also, there was no unifying source since the demise of the dental journals. Consequently there was no bond between them. Those with a medical qualification were, on the whole, loath to become associated with the so-called mechanical dentists, whilst the latter were contemptuous of academic qualifications without 'mechanical' experience. But no one could decide where the line should be drawn between the two groups. Meanwhile, items of dental interest continued to appear in the medical press.

The first sign of a resurgence appeared with the publication of a letter in The Lancet in August 1855 from Samuel Lee Rymer, a Croydon dentist.[8] Rymer described the chaotic conditions which prevailed in dentistry. He attacked the charlatans and impostors who treated the unsuspecting

public, often causing great harm and injury. Rymer drew attention to the system of dental education in the United States of America, where dental colleges had been founded and degrees conferred on those who had completed a course of professional education. Dentistry in the USA was now looked upon as a respected profession. See appendix A.

Using the columns of the newly instituted British Journal of Dental Science (first published in 1856), Rymer continued his campaign, calling a meeting of all dentists on 22 September 1856 at the London Tavern in Bishopsgate Street. According to contemporary reports, 200 dentists attended from all parts of the country, including some from Scotland, constituting the first ever, British gathering of those who called themselves dentists.[9] The meeting could certainly be hailed as a triumph by the organisers. As Lilian Lindsay pointed out in her biography of Rymer, few places were served by the railway and travelling in these days, was to say the least of it, a tedious business.[10] Significantly, none of those who had made approaches to the Royal College in 1843 were present, although they had all been invited. The reason for their absence was soon to become clear. At the meeting resolutions were passed calling for the organization of a dental society and the establishment of some system of professional education and examination.

A further public meeting was called for 11 November 1856, when James Robinson took the chair. Rules, regulations and a constitution were drawn up and agreed; but it was also brought to the notice of the assembled that on the previous day (10th November), a rival society had been formed by those members who had petitioned the Royal College of Surgeons - The Odontological Society. Although the news "...created mingled feelings of surprise and mirth..." in the minds of many, others saw in it "...a stroke of diplomacy brought about by the increasing pressure of those steps which had been taken in the broad light of day", a reference to the clandestine methods of the 'Memorialists'.[11]

Nevertheless, a further public meeting was called for 16 December 1856, at which the College of Dentists of England was founded with James Robinson as its first president and although the word 'England' appeared in the title,it was explicitly stated that "...it was an amalgamated society of dentists practising in the three kingdoms...".[12] Confirmation of this and the extent of Scottish involvement can be seen from the list of office-bearers, where amongst the eight vice-presidents elected, three were Scots; F.B. Imlach and Robert Reid of Edinburgh, and F.H.Thomson of Glasgow, who was to play an important role in the formation of the first Scottish dental society a few years later.

In the next section, the motivation behind the 'Memorialists' appeal to the Royal College is examined, as are the events leading to the introduction of the first recognised dental qualification in Great Britain.

4.3 The Odontological Society and The Royal College of Surgeons.

There can be no doubt that Rymer's campaigning stirred the established Fellows and Members of the Royal College into action. Having met in private in December 1855, they sent a further letter to the President and Council of the Royal College (the last one had been sent in March 1843, and had not been acknowledged).[13] The circulation of this letter was restricted to a small number of people,and was prefaced as follows:

London,October 1856.

> The expediency of forming a 'British Institute of Dental Science,' being at present under consideration amongst certain members of the dental profession,- for the furtherance of their project, and for the support of their professional brethren, it has been thought desirable that it should be made generally known that the following 'Memorial' has been addressed to the Royal College of Surgeons, the answer to which has not been given:

> To THE PRESIDENT AND COUNCIL OF THE ROYAL COLLEGE OF SURGEONS, LONDON.
> Gentlemen,- We, the undersigned, feeling that the department of dental surgery in England, in the absence of any recognised qualification, is wanting in that character and position which its importance merits, have consulted together to devise some means whereby a standard of qualification may be established. Of those who practise dentistry, some have made themselves members of the College of Surgeons, some have obtained the medical degree at the University of London while others possess that of Edinburgh. But a strictly medical or surgical degree cannot in itself prove that the possessor is familiar with the practice of dental surgery. Yet the student, feeling the necessity of some sort of recognised qualification, devotes that time to a strictly medical education which should have been shared in acquiring a practical knowledge of dental surgery; hence it happens that men enter upon their professional career having yet to learn those practical details so essential to their legitimate success. ...

The letter goes on to point out that many eminent dentists practise without a medical qualification, and that in America, special courses of study in Dental Colleges have been established where after examination the student, if found competent, is awarded a diploma. These dentists, "...assume a superiority over all other practitioners and are regarded with confidence by the public, who reasonably look upon a special qualification as an indication of superior professional merit."[14] The concluding paragraph read as follows:

> Feeling that the time has arrived when it is imperative that some educational course should be instituted, and that an acquaintance with the general principles of surgery, anatomy and physiology, and an intimate knowledge of such parts of those subjects as relate to the region of the mouth, are absolutely necessary to the duly qualified practitioner, we, the undersigned, beg to submit to the president and council of the College of Surgeons, whether an examination in the department of dental surgery, as in midwifery, might not be instituted. The adoption of such a course would, we are sure, prove a great boon to practitioners, and would, at the same time, secure a manifest advantage to the public.

The letter was signed by the following: Samuel Cartwright FRS, John H.Parkinson, John H.Parkinson Jun., MRCS, Edwin Saunders FRCS, William M.Bigg, Samuel Cartwright Jun.,MRCS, G.A.Ibbetson MRCS, James Parkinson, John Tomes FRS, H.L. Featherstone, Alfred Canton MRCS, Robert Nasmyth MD MRCS, J. L.Craigie FRCS, T.Barrett MRCS, Arnold Rogers FRCS, Thomas A.Rodgers MRCS, Hubert Shelley MB London, MRCS, and S.James A.Salter MB MRCS FRS.

According to Hill, some members of the Royal College had not been consulted and the fact that some of the signatories were of men who were not members made matters worse.[15]

Having despatched their appeal to the President and Council of the Royal College, the Memorialists announced the formation of the Odontological Society (10 November 1856), under the presidency of Samuel Cartwright FRS. The signatories to this announcement were the same as those who had appended their names to the letter to the Royal College, and included that of Robert Nasmyth, of Charlotte Square, Edinburgh. Nasmyth was an outstanding figure in British dentistry, being at that time Surgeon-Dentist in Scotland to Queen Victoria, having held the royal appointment to both George IV and William IV.[16]

At the first meeting of the Odontological Society on 5 January 1857, Samuel Cartwright in his address, stated the reasons for the formation of the Society; he stressed that the memorial contained only a suggestion which if accepted would be submitted for the approval of the profession, the main consideration by those who had signed was "...an earnest desire to benefit their profession and a sincere conviction that a recognised connection with the College of Surgeons is best calculated to raise the status of the dentist to an equality with other medical practitioners."[17]

The announcement concluded as follows:

> ...Having arranged the bye-laws for the furtherance of the society,it was then determined to invite a limited number of town and country practitioners to join it, so as to secure, from the first, a sufficient number of members for the purpose of carrying out the objects of the society, previous to throwing it open to the profession at large for admission in the ordinary mode by ballot - a plan borne out by the early history of every society on the model of which the present is based. Such limitation of invited members was found absolutely necessary, and was made without the slightest intention of creating any invidious distinction, it being evident that the names selected could not be considered as representing *all* the gentlemen who rank high in the profession, there being many not included who are equally respected as intelligent practitioners, as any among those to whom the invitation was sent.[18]

Hill's summing up of the situation was that, the official announcement was a lame apology, and that, "...if it did not actually increase and intensify the annoyance so generally prevalent, certainly gave satisfaction to none but the few who composed the society itself ".[19] Thus was formed the Odontological Society, initiated by the actions of the 18 Memorialists, all dental practitioners, with sincere motives and a deep interest in the future of their profession. But what rankled and led to the growing animosity, was the secrecy which had characterised the whole undertaking, and the seeming distinctions which they had made in selecting their members.

As 1856 drew to a close, two important societies had been formed, both dedicated to the same objective; reform and improvement of their profession, but with very different ideas on how this should be brought about. The Memorialists were of the opinion that dentistry should come under the aegis of surgery and be within the medical establishment, whilst the other group took the opposite view, namely, that dentistry was a separate profession and should stand on its own two feet. This group initiated by Rymer therefore became known as the 'Independents'.

In addition to the two major parties, there was also a third group, who held the opinion that dentistry was merely a section of surgery and according to Hill, seemed to have taken very little interest in the squabble. They considered that they and they alone, were entitled to practise dentistry. They were unmoved by the criticism of their surgical colleagues and their claim to fame was that their leader was Thomas Bell, a leading London surgeon and Lecturer on the Anatomy and Disease of the Teeth at Guy's Hospital (1825).

A contrary view to that taken by the major antagonists, was expressed in The Lancet in April 1857. The writer felt that there were a number of "dental artists" who were quite happy not to be considered 'Surgeon-Dentists', but merely dental artists for supplying artificial teeth. "...They are quite satisfied with the good they are doing in restoring and preserving health by restoring and preserving mastication by means of useful and uninjurious artificial teeth ". He goes on to say that "...they require no college, but a workshop" and that a meeting was to be held of like-minded to propose the formation of a friendly association of native artists who confine their activities to the making of artificial teeth, "... who can execute the *work* they undertake *with their own hands*, no other to be admitted." The writer signed himself, 'Non Forceps'.[20]

Commenting on the situation, Hill writes, "... The animosity between the major groups was both bitter and undisguised "; adding that it was not surprising in view of the circumstances which had led to their formation.[21] For the next seven years this state of open warfare continued with both sides campaigning actively in a bid to further their particular aims. However in 1857, an attempt was made to bring the two sides together, the mediator being Robert Reid, an Edinburgh surgeon-dentist who was visiting London. He decided to write to John Tomes, one of the honorary secretaries of the Odontological Society, and suggested a meeting between Thomas Underwood, member of the Council of

the College of Dentists and Tomes. As Tomes was ill at the time, the meeting was held in his bedroom, "...and ended in mutual esteem". [22]

A further meeting with representatives from both sides was arranged at which proposals for a union were drawn up. Even the name had been agreed upon - The Institute of British Dentists - but, although the proposals were accepted by the Odontological Society, they were rejected by the College of Dentists. According to Lindsay, Rymer was the prime antagonist to the union. [23] He hoped that by perseverance the College of Dentists would receive a Charter enabling it to educate and award a dental qualification with sole control over practice. James Robinson, who had been chosen as one of the delegates, had approved the terms of union, so when the College refused to agree, he resigned along with Hepburn, Underwood, Fox and Alfred Hill, secretary and author of Reform in the Dental Profession. As all of them were office-bearers of the College, this constituted a considerable loss to that body. [24] Meantime, Robinson had joined forces with the rival organisation and became a trustee of the Dental Hospital of London opened by the Odontological Society in November of 1858. His tenure of office was short and it was not long before he found an excuse to return to the College of Dentists, which as Lindsay (1955) puts it, was "...his first love ". [25]

4.4 The Medical Press: Views on an Independent Dentistry.

Although the British Journal of Dental Science had appeared in 1856, The Lancet continued to print a large number of articles on items of dental interest. These were largely contributions by dentists who were medically qualified or were members of the Royal College. However, the controversy between the feuding sections of the dentists associated with the forthcoming Medical Bill, had grown to such an extent as to become an issue which appeared to impinge on the territory of the medical profession.

The Lancet of 24 January 1857 carried the following editorial comment:

> The position of Dental Surgery in this country is certainly peculiar, and in many respects anomalous. Its ablest practitioners contend for its intimate relation to, and connexion with, general surgery. At the same time another and, numerically, an influential class, contend that dentistry - as they delight to call it - has no legitimate connexion with surgery, or with the College of Surgeons; that the less a man knows about anatomy, physiology, or surgery, and the more he knows about mechanical principles and appliances, the better dentist does he become. These latter are content to rub on and take their chance of a routine kind of practice, embracing chiefly the supply of artificial teeth, for which mechanical tact and aptitude are the chief if not the only requisites, leaving all cases of doubt and difficulty to their better-educated brethren. These two sets of opinion have long dominated the whole body of dental practitioners in this country, and under one or the other of these two banners the profession have gradually segregated itself. ...[26]

The editor went on to deplore the lack of unity which is required to obtain satisfactory reform adding that, "... the profession of dental surgery is forcing its importance on the public mind...", and continued:

> ...The dentist says, after devoting the three or four years necessary to the acquisition of a due amount of dexterity in the mechanical processes of the art, that he cannot afford to devote an equal period to the study of anatomy and surgery, for which he will have small actual need in practice, and obtaining a diploma which, after all, does not certify to his competence as a dentist. On the other hand, the existing College of Surgeons declares that it recognises no specialities in practice; that although a great part of what it requires will be laid aside, and many things that it does not require must be learned from other sources, it still insists upon the one old undeviating standard. Thus its influence in checking the entrance of the unworthy into the ranks of the profession is practically null; and thus it happens that, out of somewhere about 1500 practitioners, only about 30 at the most possess the diploma of the College of Surgeons. ...[27]

The remarks in The Lancet brought a quick reply from S.L. Rymer:

> ...it is *not* the opinion of its members [the College of Dentists] as a body ' that the less a man knows about anatomy, physiology, or surgery, and the more he knows about mechanical principles and appliances, the better dentist does he become.' I may go further, and express my conviction that there is *not one* of the large numbers of the College holding such an opinion. ... [28]

Rymer went on to point out that the College of Surgeons was not competent to judge the capability of a dentist without the assistance of practical men. The following month The Lancet again took up the issue of dental reform, commenting on the objective of the College of Dentists to create a distinct corporate body. This time making its own view clear:

> ...Is this a sound position? we think not; and we hope notwithstanding the criminal apathy of the Council of the College of Surgeons, that the members of that college will not sanction such a proposal. ...[29]

The editorial went on to say that the proposals would create divisions in the science of medicine and (perhaps more importantly), it would rob the surgeons of, "... one of the chief sources of emolument in the profession...". But although The Lancet spoke out against the establishment of an independent body, it was in favour of admitting those, who although not connected with the medical profession,had distinguished themselves in dental practice.
"... They must be admitted as brother practitioners and their merits freely acknowledged...".[30]

In March The Lancet returned to the question again, putting forward the proposition that if the Charter allowed the admission of licentiates in midwifery - a branch of the profession ignored by the surgeon - it can only be a quibble that practitioners of dentistry are excluded. At the same time it regretted the prolonged delay in acknowledging the requests from the Memorialists. A further letter in that issue was from a Member of the Royal College of Surgeons who

practised dentistry. He pointed out that many apprenticed dentists had completed their education by taking the diploma of the Royal College of Surgeons acquiring a knowledge of anatomy, surgery &c., and that similarly, many members of the College like himself, had gone on to serve an apprenticeship in mechanical dentistry.

The Medical Times and Gazette was inclined to take a more balanced view. In an editorial dated 15 November 1856, it noted the formation of the Odontological Society and the objectives of its members to remain within the ambit of the Surgeons. It described the signatories as being "...distinguished members of the profession. ..." and ascribed the motives of the rival body as being:

> ...to unite the Dental Profession together not as an off-set from the College of Surgeons, but as an independent body with a College of their own, on the model of the American Colleges. The object of both these Societies being the same, namely the advancement of the Dental Profession, it would surely be advisable to unite for the common good.[31]

It can be seen that just as the dentists were divided on the correct method of approach, the medical press also had its division of opinion, and, as will become clear, there would be considerable opposition from the medical authorities to an independent dental profession.

4.5 The Royal College of Surgeons: Charter for a Dental Qualification - Scottish Activities.

Although most of the dento-political activity revolved around London, being the seat of the Royal College, Edinburgh played a major role in the movement towards dental reform. John Smith, (described by Campbell as one of the greatest of British visionaries), graduated MD at the University of Edinburgh and was awarded the diploma, LRCS, Edinburgh. [32] He had intended to practise medicine, but the death of his father, who had been a dentist, decided him that he would carry on his father's practice.

Amongst his many contributions to dentistry was the delivery of the first comprehensive course of lectures on dental surgery in Scotland, in recognition of which he was appointed Surgeon-Dentist to the Royal Public Dispensary in Edinburgh, where he supplemented his lectures by such clinical instruction as the practice of the dispensary afforded.

The Lancet carried an announcement that, "Lectures in Dental Surgery are delivered in Summer by Dr John Smith".[33] In February 1858, Dr Smith addressed a letter to the President of the Royal College of Surgeons, Edinburgh, in which he drew attention to the highly unsatisfactory state of dental surgery. He was concerned with the education and qualifications of its practitioners and how these could be improved, adding that dental training consisted of an apprenticeship in mechanical dentistry, where there were few opportunities to carry out extractions and little instruction in diagnosis and treatment.

In his opinion, the ideal remedy was that everyone who wished to practise dentistry should possess a surgical degree, but with a specially added dental education. Alternatively, he proposed that whatever specialty was adopted, it was desirable that they should be qualified surgically.[34] According to contemporary records, the response to this appeal was discouraging.[35] John Smith's contribution to dentistry continued over the years. He played an important role in the opening of the first Scottish Dental Dispensary in Edinburgh in January 1860.

Following an exchange of letters between the Odontological Society and the Royal College of Surgeons, a communication was received by the Society from the secretary of the Royal College of Surgeons on 4 April 1857. In his letter he suggested that the Society should petition Parliament and have the necessary clauses inserted into the forthcoming Medical Bill.

Discussions between the two bodies took place and on 6 July 1858, at the Committee Stage of the Medical Practitioners Bill, Mr A.J.Beresford Hope, MP for Maidstone, moved the following clause:

> It shall not withstanding anything herein contained be lawful to Her Majesty, by charter, to grant to the Royal College of Surgeons England power to institute and hold examinations for the purpose of testing the fitness of persons to practise as Dentists, who may desire of being so examined and to grant certificates of such fitness.[36]

The clause was agreed to unanimously and the complete Bill received the Royal Assent on 2 August 1858 and so became law, an event of outstanding significance in the history of dentistry. As Hill commented:

> ...Over all the confusion and strife of party feeling which had characterised the year, this fact stood forth prominently as that which would most unmistakably affect the future of the dental profession. It was the most conspicuous event of the time, and it only remained to take the necessary consequent steps thereupon, and await the manifestation of professional feeling on the subject, which time only could develop and declare. [37]

In establishing the Licence in Dental Surgery - the LDS RCS, England - the Charter specifically provided that the holder of a diploma should not have his name entered in the Medical Register. Fish comments:

> ... This, in effect meant, that the aim of the Memorialists to make dentistry a speciality of medicine had failed, and by creating a diploma that was an alternative rather that an addition, they irretrievably separated the two professions - the very thing they wished to avoid. [38]

The granting of the Charter on 8 September 1859 led to feverish activity by both the major groups. Following the founding of the Dental Hospital of London by the Odontological Society in November 1858, the attached London School of Dental Surgery was opened in September 1859, in order to comply with the Charter. The College of Dentists, mainly through the efforts of James Robinson, opened the

Metropolitan School of Dental Science in October 1859 and intimated that they were preparing an alternative qualification - Membership of the College of Dentists of England (MCDE).

The College of Dentists received a severe set-back when it was announced by the Royal College of Surgeons that examinations for the LDS would take place in March 1860. Nevertheless, they refused to be discouraged,continuing to make preparations for their own dental school which was opened in October 1859. The LDS examinations were held on 13th, 14th and 15th March with 43 candidates taking part, all of whom passed. Among the successful candidates were four Scots: Henry A.Dewar of Aberdeen, and David Hepburn, William A. Roberts and Robert Reid, all of Edinburgh.

By the end of 1860 there existed the first London Dental Hospital and two rival dental schools, a profession united in its determination to improve its status by legitimization but hopelessly split on the best method of achieving this goal. The Odontological Society was regarded as the standard bearer with influential connections and the distinction of having introduced legally recognised dentists - the Licentiate. The College of Dentists on the other hand, although champions of a profession determined to control its own affairs and independent of the Surgeons, were seen as courageous runners-up in the struggle.

The fact that by the end of the year, more than a hundred members of the profession had gained the new licence added weight to the claims of the Odontological Society to have gained the ascendency. Nevertheless, the College continued with their lectures and meetings and considered moving to larger premises to house the projected National Dental Hospital.

The College of Dentists prepared a diploma which contained the following:

> By virtue of the powers vested in us by the council of this college, we, the court of examiners, have diligently examined _____ and have found him competent to exercise the art and science of a DENTAL SURGEON. We have, therefore this day admitted him a member of this college. [39]

The motives behind the award of the diploma were to afford the public a guarantee against incompetency and the suppression of charlatinism. "...Their examination was to be real and not fictitious, while the issue of a diploma would go far to meet the universal longings to possess an authoritative acknowledgement of the holders' capacity." [40] Hill adds that "... it is morally certain that the granting of diplomas by the College of Dentists was meant as an overt competitive act with the College of Surgeons ".[41]

The developments which occurred during the years leading up to the present position, were given a stimulus by the opinions expressed in the medical and dental journals. The latter had re-appeared after a lapse of some eleven years and in the next section the impact of these on the issues under consideration will be examined.

4.6 Rebirth of The Dental Journals.

It may not be entirely coincidental that the hiatus in dento-political activity between 1843 and 1855 corresponded roughly with the absence of any dental journal during that period. (The last issue of the Forceps was March 8 1845). The first issue of the The British Journal of Dental Science, a monthly magazine, appeared in July 1856. The magazine was owned by a Mr Blundell and published by John Churchill, and in his opening number, he assured his readers that, "... the columns of the British Journal of Dental Science were open for free discussion unfettered by cliqueism, and at the disposal of any and every member of the profession". [42]

These sentiments were warmly applauded at a time when the profession was awakening from its period of inactivity. The August issue carried an editorial which supported and encouraged Mr Rymer and his followers to continue his campaign for a dental authority, independent of the Royal College of Surgeons. The remaining issues of 1856 continued in the same vein, appealing for unity and espousing the cause of the College of Dentists.

An unexpected development occurred at the end of the year, when for unknown reasons, the proprietor of the journal decided to sell his titles and offered the magazine to the committee under Mr Rymer. This offer was not accepted and the Journal was sold to a group of dentists whose views represented those of the Odontological Society. As Hill comments, "..Little by little the difference of spirit and tone was made apparent until the British Journal of Dental Science was seen flying the flag of bitter opposition". [43] From a friend it had become a foe. Fortunately, due to the efforts of James Robinson and other dentists, a new journal representing the College of Dentists saw the light of day in April 1857 - The Quarterly Journal of Dental Science - and, according to Hill, "...its contents reflected credit on all concerned". [44] There was no shortage of material. The College had appointed a staff of lecturers and drawn up a list of subjects to be taught to the members. As the lectures were delivered, the journal published them. The lecturers in all cases were either Members or Fellows of the Royal College of Surgeons or medically qualified personnel. Apart from publishing accounts of the various meetings and the transactions of the College as they occurred, the Quarterly Journal continued to advance the cause of the College of Dentists by advocating its claims upon the dental profession at large.

In January 1859, the journal name was changed to the Dental Review, which continued to give its backing to the College of Dentists until it ceased publication in 1867, whilst its rival - The British Journal of Dental Science - continued to

flourish. The latter along with the Dental Cosmos (published in Philadelphia, USA), were the only two dental journals of importance to be published in the English language at that time.

In the next section, the events leading to the rival factions finally agreeing to amalgamate to form a united profession are examined and the consequences which followed.

4.7 The Independents Surrender - A United Profession.

The year 1861 brought the first independent Census returns for Scotland and showed that there were 192 dentists in a population of 3,062,294, giving a ratio of 1 dentist to 15,949 of the population. The comparable figure for Great Britain was 1:12,994. Meantime it is interesting to note that there were 653 dentists in London giving a ratio of 1:4,294.[45] A convincing reason why almost all the dento-political action took place in the Metropolis.

The National Dental Hospital was opened on 11 November 1861, representing a major achievement by the College of Dentists, but the rival Hospital and School under the auspices of the Odontological Society had been given official recognition by the Royal College of Surgeons in May 1860. An additional set-back were the continuous attacks from sections of the medical press in regard to the conduct of some members of the College of Dentists. This referred to the chronic problem of advertising, which had been curtailed under the rules of the College. [46] Waite in his reply admitted that there had been breaches of the regulations and as a result two names had been removed from the College list. He added that certain licentiates of the Royal College had also been guilty of the same offence. The issue of advertising showed the fundamental difference between the two sides; the College of Dentists held that

"the admission of truthful advertising must be allowed", whilst the Odontological Society condemned public announcements under all circumstances. [47]

By July of 1861, 131 persons had obtained the LDS of the RCSE adding further to the air of pessimism beginning to appear in the expectations of the College of Dentists. A further blow was dealt by the sudden death of James Robinson, then treasurer, on 4 March 1862. Hill comments:

> There appeared quite up to the end of this year, the same determination on the part of the two opposing sections of the profession to relinquish nothing in their several attempts at supremacy. It is true nevertheless that the minds of the best men were truly weary of continued strife and it was to them at least a great relief to hear, as it was asserted some did hear, a faint whisper of peace. [48]

Rymer had for some time considered that there was little hope of obtaining a Charter for the College, and that the only way forward which would benefit the profession was an honourable capitulation. Accordingly, terms were agreed between the two bodies and on 4 May 1863, the two societies were merged to become the Odontological Society of Great Britain. The prevailing mood may best be summed up in the words of John Tomes, member of the Odontological Society and a leading light in all the negotiations:

> When a body of men are willing to abandon their own special views in favour of a common cause, and have acted in the spirit in which the College of Dentists have acted on the present occasion, it is not for us to scrutinise the past too closely; but it is for us to receive them with liberality, placing implicit confidence in the future. ...[49]

The fusion of the two societies allowed the focus of attention to be shifted from confrontation between rival sections, to furthering the development of the profession. An important step in this direction was taken when a memorial was presented to the Council of Medical Education and Registration (a body set up under the Medical Act of 1858), requesting that the licentiates' names be placed on

the Register. This of course, was excluded under the terms of the Charter and it was not surprising that the petition was rejected. However, the licentiates were advised to apply for an Act of Parliament for themselves and keep a separate register. Thus were sown the seeds which would lead to the first Dentists Act and the provision of a Dentists Register; but not until another decade had passed. By the end of the year 1865, there were nearly three hundred licentiates throughout the country and dento-political activity tended to be in the direction of expansion of the new Odontological Society with the proposed establishment of provincial branches.

In the next section the involvement of Scottish based dentists is traced and the extent of their contributions to the development of the profession is examined.

4.8. Progress in Scotland: The Edinburgh Dental Dispensary and the Founding of the First Dental Society.

The passing of the Medical Bill in 1858, "... brought unity to the medical profession ... not by clearing the ground and making a new start but by imposing on the existing licensing bodies a new controlling authority armed with far-reaching powers".[50] The compromise pleased no one and over the next thirty years a number of amending bills were introduced until the ideals of the medical reformers were fulfilled.[51]

The Bill, which became law on 1 January 1859, set up the General Council of Medical Registration of the United Kingdom, usually known as the General Medical Council (the GMC). It regulated standards of medical education and controlled the Medical Register with powers to remove names. But a serious flaw in the Act was that it was still not illegal for the unqualified to practise, providing that they did not claim to be on the Register, and that they did not use any of the titles described in the Act, namely, Physician, Surgeon, Bachelor of Medicine or Licentiate in

Medicine and Surgery, or a Practitioner in Medicine, or an Apothecary.

In an editorial in the Medical Times and Gazette of 4 February 1860, the writer draws attention to this loophole:

> ...It will be seen that unless an unqualified Practitioner uses one of the names or titles specified in Section xl of the Act, simply he is not guilty of the offence created by the Act. This it must be admitted, is a great defect in the Medical Act; and it is hoped that measures will be promptly taken for its removal. ...[52]

It would appear that when the Dentists Act came into force (in 1878), the lessons of this fundamental defect in the Act were not learned and the emergent dental profession was to be saddled with the consequences of this omission for more than half a century.

The Medical Act had little effect on the state of dentistry, in spite of the considerable political activity prior to the Bill becoming law. One man who attacked this shortcoming was Francis Hay Thomson (1814-1870), an Edinburgh-born dentist with an MD degree, who after serving an apprenticeship with a well-known Edinburgh dentist, opened a practice in Glasgow. In a letter to the British Journal of Dental Science in March 1859, he emphasised the omissions from the Bill regarding dentistry, remarked on the need for a prescribed dental curriculum leading to a dental qualification (in this he was overtaken by events), and the right to registration and protection under the law against illegal competition.

Like many others who were familiar with dental progress in the United States of America, he commented on the fact that Dental Colleges were to be found in nearly every state,with a prescribed curriculum and that dentistry was regarded as a speciality. He was also an advocate of union between the two rival bodies, and became one of the vice-presidents of the College of Dentists.[53]

With his Edinburgh connections and his practice in Glasgow, Thomson became involved in dental politics in Scotland and was to figure prominently in the establishment of the first dental society in Scotland.

January 1860 ushered in a new era in the development of dentistry in Scotland with the opening of the first dental dispensary in Edinburgh. The idea had originated from John Smith's unsuccessful appeal to the Royal College of Surgeons of Edinburgh in 1858. Undeterred, Smith was determined to continue with his main object of advancing the status of dentistry. He decided that the next step was to provide a place in which dental treatment could be given to necessitous patients free of charge and where dental students could be taught. Smith enlisted the help of Robert Nasmyth, Peter Orphoot and Francis B.Imlach and as a result of their combined efforts the dispensary was opened in Drummond Street in January 1860; shortly after, it moved to Cockburn Street.

Imlach, who was to become President of the Royal College of Surgeons of Edinburgh in 1879, was the fourth surgeon practising dentistry to occupy that position. His friendship with Sir James Y.Simpson may account for the fact that he was one of the first dentists, if not the first, to use chloroform as an anaesthetic for dental operations.[54] As no qualification was as yet legally required of dentists, it is not surprising that at first there were few students enrolled in the dispensary; even the number of patients was not large,only 260 attended during the first year.[55] As a result, it was decided to appoint a management committee consisting of such eminent men as Professor Goodsir and Professor Christison (both of Edinburgh University), Dr Craigie PRCP, Professor Sir James Y.Simpson, Dr Newbiggin FRCS, Dr Burt, Professor Spence, Dr James Duncan and Dr Ormond; Robert Nasmyth was the consultant surgeon-dentist. An important rule introduced in May 1862 read as follows:

> Any one engaged in the practice of dental surgery, and who possesses a medical or surgical title qualifying for registration, shall be eligible for the office of dental surgeon in the Edinburgh Dental Dispensary; and any one who, at this date, May 1862, has been in the practice of dental surgery in Edinburgh for twenty years, shall be eligible for the same office. [56]

Under the new regime, the daily rotation of staff was fixed, the financial statement examined and audited, the rules and constitution approved and adopted and an appeal made for subscriptions.

Hill states that in the first year there were 1,404 patients,[57] but later says that the number was 250; [58] which ever figure is correct, the numbers had increased, as can be seen from the report of the half-yearly meeting which showed that in the six months to November 1863, there had already been 1,034 patients and additionally the dispensary was free from debt. An interesting sidelight revealed by Hill was that the donation boxes in the Dispensary yielded the sum of four shillings and eightpence, "... so that it was to be inferred the sufferers were either very poor, or else little disposed practically to show their appreciation of the relief they had received". [59]

In the first five years of its existence, the dispensary treated over 5,000 patients and a further stimulus was given to the institution when in August 1865, certificates of attendance issued by the Dispensary were recognised as part of the curriculum of the diploma in dental surgery awarded by the Royal College of Surgeons of England. Unfortunately the dispensary was always in financial difficulties and by 1870 was struggling to find money; so much so, that the use of the anaesthetic, nitrous oxide to allow extractions to be carried out painlessly, was confined to special cases. Always impecunious, the Dispensary carried on its work until 1878 when it became the Edinburgh Dental Hospital and School. It was within the premises of the Dental Dispensary in Cockburn Street, that a meeting took place in January 1865.

Those invited by John Smith were David Hepburn, Robert Nasmyth, Peter Orphoot, William A.Roberts, Andrew I. Swanson, Mathew J.Watt and John Wight. Rules and regulations were drawn up and the name of a new society agreed - the Odonto-Chirurgical Society of Scotland. [60]

Unfortunately, due to a difference of opinion on qualifications for membership, the project was abandoned. Two years later on 13 March 1867 - the anniversary of the granting of the first LDS diploma by the Royal College of Surgeons - the Society was resuscitated under the management of the following members: John K.Chisholm, John T. Cunningham, David Hepburn, David Hogue, William A.Roberts, Andrew I.Swanson, George I.Swanson, Mathew J.Watt and Andrew Wilson (all from Edinburgh), James Bell, Francis H.Thomson and George Buchanan from Glasgow, and William Williamson of Aberdeen. It is possible that Walter Campbell from Dundee was also present. Robert Nasmyth of Edinburgh was appointed President *in absentia* and Francis H.Thomson occupied the chair. [61] A sour note was sounded by the refusal of John Smith and Peter Orphoot to join the Society, no doubt occasioned by the initial disagreements which had arisen when the Society had first been mooted. However at the first Annual General Meeting in 1868, the name of Peter Orphoot is included in the members present and John Smith joined at a later date and was appointed President.

At that meeting, Robert Nasmyth retired as President due to ill-health and Francis H.Thompson took the chair, a position which he was to hold until his sudden death at the age of 56, in 1870.[62] The Society was run on the same lines as the Odontological Society of Great Britain and one of the principal laws was as follows:

> No member shall be permitted to advertise in the public journals his profession, his mode of practice, or his charges. He shall not be permitted to expose specimens of his work for public inspection, nor to carry on his practice in connexion with any other business, nor to hold any patent relating to dental practice, nor to conduct himself in any way, which the Society may

> consider derogatory to the profession, so long as he remains a member of the Society. [63]

The ethical standards which had been set were rigorously imposed and infringement of this rule resulted in expulsion from the Society. It is therefore not unexpected to find that membership remained limited in an age when advertising was the rule rather than the exception. Nevertheless, the Society proved to be of great value in providing "...a stimulus to the ethical and scientific progress of the profession (which till then had been in chaos) in Scotland". [64]

Like its London cousin - the Odontological Society - the Society's political activities diminished and it became involved mainly in the scientific field, holding meetings on various topics of dental interest. Amongst the topics discussed were: *Some of the Causes of Failures in Stoppings* and *Nitrous Oxide, its Preparation and Uses*. In 1869, Robert Ramsay of London gave a paper on his method of constructing artificial palates, Peter Orphoot read a paper on chronic periosteitis and alveolar abscess, whilst Francis H.Thomson recounted incidents which had occurred in his practice. Thus the Society continued to play a valuable role in the development of the profession, a function which it was to continue to the present day.

In spite of the existence of two well-regulated societies, the image of dentistry continued to suffer, as more and more names appeared under the classification of 'dentist'. Few bothered to qualify and by 1870, it had become clear that if dentistry was to advance, a more fundamental solution would be required. This was the path of parliamentary action and in the next section the history of the years leading to the introduction of the Dentists Act are described along with some of the dental pioneers of this period.

4.9 Dental Registration and Professional Recognition: The Dentists Act 1878.

The Census returns of 1871, showed that there were 244 'dentists' in Scotland of whom only a handful were qualified.[65] This gave a ratio of 1 dentist to 13,771 of the population, compared with 1:9,210 for England. The figure for Great Britain was 1:9,599.

The reasons for the reluctance to embrace the diploma are not hard to find, particularly when applied to those who lived in areas distant from London. Richards cites the argument put forward by J.H.Parsons of Halifax:

> ..the LDS movement was a failure since so few provincial practitioners, by virtue of the paucity of local provincial dental schools, and the subsequent need to study the curriculum in London, were able to afford either the time or the money to take the qualification. ...[66]

This certainly did not apply to the Scots, who were able to attend the Edinburgh Dispensary to obtain a certificate of attendance, recognised by the Royal College from 10 August 1865. Another reason can be traced back to the granting of the Charter to the College of Surgeons in 1859. One of the stipulations had been that certificates of proficiency to practise dentistry (the diploma), would be available to all who had been in practice before 1859; these practitioners would be allowed to sit the examination without taking the prescribed course of lectures - *sine curriculo*. In September of 1863 this term of grace expired and immediately the the number of candidates applying for the licence diminished.

The unqualified could see no reason to take time off their work to attend classes, considering that the attainment of the diploma would bind them to maintain ethical standards and seriously curb their activities, particularly advertising. They were quite content to continue to practise their form of dentistry, which provided in most

cases a profitable income generally higher than that earned by their medical colleagues.[67] Calls for reform within the profession became more widespread and one suggestion was that the Odontological Society should establish branches outwith the Capital; in this respect Scotland was ahead of England, where dento-political activity revolved around London, but like many such suggestions there was little reaction.[68] There was a general feeling that the state of dentistry had become stagnant and that urgent action was needed.

A correspondent in the British Journal of Dental Science asked, "...are we rising or sinking? Is the Dental Profession becoming elevated in the Social Scale or is it rapidly sinking.? "[69] An editorial in the same journal commented, "... notwithstanding all that has hitherto been done, quackery and humbug are more rampant than ever".[70] It was generally held that the Odontological Society was now not a suitable body to pursue the political objectives which were currently required. C.J.Fox, who was later to become editor and owner of the British Journal of Dental Science, delivered a paper to the Society in 1871 in which he advocated registration and compulsory education, urging a vigorous campaign against advertising. As the Society had recently proclaimed itself to be a scientific body above politics, no discussion of Fox's address was permitted at the meeting.[71] It took some time for Fox's initiative to filter through the profession in some places, but as Lilian Lindsay puts it, "...in others, especially in the North and Midlands where there was more inflammable material, the sparks began to fly". [72]

On 31 August 1875, a meeting was held in the Clarence Hotel, Manchester, at which Fox was appointed chairman. A bust of John Tomes was placed in a prominent position above the chair. Fox in his introductory remarks made the object of the meeting clear:

> It is the first meeting in which men of all grades, men of all parties, men of every diversity of opinion, have united either in person, in sentiment or in pocket for one common object, and according as we act today good or evil may result to the profession at large. [73]

Fox drew attention to those who had worked so hard in the past to improve the status of dentistry, and urged that regardless of standing they should all look upon themselves as equals. He spoke of the fathers of the profession led "...by him whose representation surmounting this chair seems as it were to preside over me at this meeting, John Tomes".[74]

Consequently, Tomes consented to act as chairman of the movement, and following meetings held in Birmingham, Exeter, Norwich, Bristol and Edinburgh, the Dental Reform Committee was set up on 17 March 1876. The general policy which had been agreed upon was to support action which would legalize existing practitioners, disreputable they may be, but stop future anomalies; in other words to copy the action adopted by the doctors in the 1858 Medical Act. Meanwhile, the Royal College of Surgeons of England had considered the appeals to re-admit dentists for examination, *sine curriculo* and in July 1874, this prayer was granted. As Richards puts it "...no doubt the fact that only 43 dentists qualified LDS in the years 1864 to 1871 was largely instrumental in bringing about this change of heart". [75]

At the March 1876 meeting of the Reform Committee, Fox declined membership because he thought that he would be of more service as editor of the British Journal of Dental Science. Having been associated with both the College of Dentists and the Odontological Society, he had considerable dento-political experience; additionally he was an honorary member of the Odonto-Chirurgical Society of Scotland. He had another reason for declining, namely, he did not wish to become involved in the mud-slinging which was to begin following the creation of the Association of Surgeons Practising Dental Surgery (ASPDS).

This was an ultra-conservative group set up in 1876 presided over by Samuel Cartwright in direct opposition to the Dental Reform Committee. The group's aims were to establish dentistry as a branch of surgery on a par with other medical specialities such as ophthalmology, otology and gynaecology. Cartwright was also president of the Odontological Society and it was a clear indication of the prevailing mood when due to ill-heath, Tomes demitted the office of president of the Reform Committee and his place was taken by Cartwright. Thus the man who had been a leading adversary and critic of the Reform group had, in the common interest, abandoned his diametrically opposed opinions to become their leader.

Although most of the parliamentary negotiations and political manoeuverings now centred on London, considerable dento-political activity was taking place in Scotland, and foremost among the activists was John Smith of Edinburgh. Recently appointed by Queen Victoria to be Surgeon-Dentist to her Majesty in Scotland (10 March 1871), he had also been honoured by the Royal Society of Edinburgh, who made him a Fellow.[76] Smith was elected to the Dental Reform Committee at their inaugural meeting in London in 1876 and in the following year played an important role in convening in Edinburgh "...a large and influential..." gathering of dentists from all over Scotland.[77] In his address to the meeting, he outlined his proposed objectives:

1. Representations to be made by the dental profession in Scotland to the Royal College of Surgeons of Edinburgh to institute a special examination in dentistry.
2. A selected board of examiners to be appointed for this purpose and to grant a new diploma or licence with a restricted title.
3. A preliminary literary examination to be passed before entry.
4. The dental examination to be divided into two parts.
5. Before applying for admission to the first part, a candidate to produce evidence of a period of training in dental mechanics at an approved centre.

6. The passing of the first part of this examination to entitle a candidate under certain conditions and restrictions, to use the designation, 'Dentist'.
7. The passing of the second part to confer the title, 'Surgeon-Dentist' or 'Dental Surgeon'.
8. A separate and distinct register be kept by the Medical Registrar.

Smith was emphatic on one point: every person when legislation was passed would have to register as a Surgeon-Dentist or Dentist. He based his opinions on the idea that the mechanical had to be separated from the surgical, this, as he saw it, being the reality of the present position in dentistry. In his own words:

> Unless the mechanical be separated from the surgical department, as in the case of opticians and oculists, the dentist is, in a certain sense, a tradesman dependent upon mechanical work as well as his skill as a professional man.[78]

Smith felt that the division into mechanics and surgery had been and always would be an obstacle to all dental practitioners becoming qualified dental surgeons. "... It would be oppressive, inexpedient and unjustified to make such a condition imperative". [79] It can be seen that Smith's ideas were based on the fallacious assumption that there would always be such a division and one of his motives was to protect the occupation of the purely 'mechanical' dentist. Arising out of the Edinburgh meeting, a Scottish Dental Education Committee was set up with John Smith as chairman. In the next few years he would be exercising his duties as chairman and be actively engaged in the sphere of education in his capacity of examiner to the Royal College of Surgeons of Edinburgh.

Meanwhile the Dental Reform Committee with John Tomes as a plenipotentiary, had been hard at work pursuing their brief to prepare a draught memoranda for submission to Parliament. This was being done in conjunction with the Parliamentary draughtsmen and was to be introduced by Sir John Lubbock.

Just when things seemed to be going well, a complication arose in the shape of an alternative Bill to be put forward by the Duke of Richmond as a Medical Act Amendment. From the evidence available it would appear that there was medical opposition to a separate register, and there was considerable discussion as to whether Sir John Lubbock's Bill should be dropped on condition that the main provisions in it be included in the Duke of Richmond's Bill. Apparently the Duke had no objection and consultations took place; but nothing came of it.

The events leading up to the passing of the Dentists Act, reveal that opposition was active, not only from the medical doctors, but specifically from the Scottish medical doctors. Some idea of this can be gleaned from letters sent by John Tomes to John Rankin Brownlie, who was to become the first Dean of the Glasgow Dental Hospital:

March 13 1878
Upwood Gorse,
Caterham Valley,
Surrey.

Dear Mr Brownlie,
Mr.Stewart still stops our Bill and Sir John Lubbock writes me this morning under the influence of Dr. Wallace of Greenock. Could you not two or three of you see Dr.Wallace and point out to him that Registered Medical Practitioners will be exempted from operation of section 3 of the Bill. Not that they rightly should be but simply that they are as eleven to one and are therefore too strong for us in the House of Commons. This will not do for Dr.Wallace. He no doubt believes with many others that our special education is as nothing. That any stupid fellow can do dental operations after a week's practice. The amendment to clause 3 takes the wind out of the adverse petition from the Medical men. ... I am writing to Dr.Wallace asking him to withdraw his opposition and if you or some of you could also see him my chance of success would be increased. Our cause is a just one and we shall succeed if we only work well. Sir John Lubbock is doing his best for us. He will not risk failure needlessly and the safer course is to remove individual opposition as it arises by prepared, from out of doors rather than risk conflict in the House. Dr Cameron is now with us. Yours faithfully, John Tomes.[80]

Section 3 was the key clause in the Bill and the one which was to cause all the troubles in the years ahead. Put simply, it stated that on and after 1 August 1879, no one would be allowed to use the name of 'dentist' or 'dental practitioner'or any similar description implying that he, [or she] was registered under the Act. It was also an infringement to imply that they were specially qualified to practise dentistry unless they were on the Register. Medical practitioners were to be exempted from this clause They could still practise dentistry.

A letter from John Tomes dated 10 May related that Dr Cameron had changed his mind and was now attempting to postpone the reading of the Bill for six months.[81] But a few days later he wrote that he had seen Sir John Lubbock, and the latter was of the opinion that Dr Cameron would withdraw his opposition, "...if pressed to do so ...", adding that a memorial from a few leading Glasgow medical men, "... would be sufficient and expedient."[82] Dr Cameron's vacillations were finally resolved as described in the letter of 4 June 1878. Tomes had been the active protagonist in discussions with the medical representatives discussing and shaping the Bill. In the letter he expresses his opinion that the Bill was now safe:

June 4 1878
Upwood Gorse,
Caterham Valley,
Surrey.

Dear Mr Brownlie,
I am glad of your letter. Dr.Cameron has given up his opposition. I quite believe our Bill is safe. The Government have introduced a lot of amendments respecting the machinery of registration so as to make it work with the old or new Medical Bill and will support it [in] Parliament. The principles of the Bill they have no way altered. Indeed the amendments have been deleted by the draughtsmen of the Government and our Bill.
Yesterday I went to a meeting of the Parl. Comte. of the Brit. Med. Association, [Parliamentary Committee of the British Medical Association] and turned the tables on our friends the Surgeons practising Dental Surgery.- [Association of Surgeons Practising Dental Surgery], Mr.Napier was there in full force and we had it out.

> ...(1) The meeting approved of the Dental practitioner's Bill. ...(2) The com[mit]-te approved the use of the title Dental Surgeons by Licentiates in Dental Surgery. Mr Napier and one or two friends left the meeting in disgust at the inconsistency and shortsightedness of the Committee.
> I remain, Yours John Tomes.

Apart from section 3, the another main provision of the Act was contained in section 6 which read as follows:

> Any person who:-
> (a).Is a licentiate in dental surgery or dentistry of any of the medical authorities;or
> (b).Is entitled as herein-after mentioned to be registered as a foreign or colonial dentist;or
> (c). Is at the passing of this Act bona fide engaged in the practice of dentistry or dental surgery, either separately or in conjunction with the practice of medicine,surgery or pharmacy,
> shall be entitled to be registered under this Act.

This clause allowed any person including medical practitioners and chemists who had been practising dentistry to have their name on the Register. All that was required was a simple declaration to this effect which had been duly witnessed. The Registrar did have the right to ask for a subsequent legal affirmation if he was not satisfied with the initial declaration.

The third main provision was contained in sections 18 and 19 and were concerned with the appointment of Examining Boards and the holding of examinations. The Royal Faculty of Physicians and Surgeons of Glasgow, the Royal College of Surgeons of Edinburgh and the Royal College of Surgeons in Ireland were empowered to hold examinations in Dental Surgery and award the LDS diploma. Also included were all the Universities of the United Kingdom.

The Bill received the Royal Assent on 22 July 1878 and so became law. Another milestone on the road to professionalism had been passed but at a price. The negotiators knew full well that they had accepted a compromise in order to get the Bill on the Statute Book.

In the next chapter, the consequences arising out of the Dentists Register, first published in 1879 are considered along with the unremitting rise of the unqualified. The significance of the new Scottish qualifications and the progress of scientific dentistry are also reviewed.

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35 A.Hill, op. cit. p242; J.M.Campbell, op. cit. p163.

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41 Ibid.

[42] Ibid. p75.
[43] Ibid. p78.
[44] Ibid. p80.
[45] N.D.Richards, A Study of the Development of Dental Health Services in the United Kingdom p35,
[46] A.Hill, op. cit. pp183-4.
[47] Ibid. p187.
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[49] Ibid. p199.
[50] A.M.Carr-Saunders, P.A.Wilson, The Professions p83, Clarendon Press Oxford 1933.
[51] Ibid.
[52] Medical Times and Gazette 1860;1:119.
[53] H.W.Noble, *Francis Hay Thomson, A Man of Art and Science* in Dental Historian, November 1989; No.17: pp3-17.
[54] A.C.W.Hutchinson, *The History of Dentistry in Edinburgh*. pp38-39.
[55] Ibid.p39. Reports of the the number of patients who attended varied. Hill states (p249) that there were 1,404 patients seeking treatment, but later (p250) that there were 250.
[56] A.Hill, op. cit. p249.
[57] Ibid.
[58] Ibid. p250.
[59] Ibid. pp249-250.
[60] A.Hill, op. cit.
[61] J.M.Campbell, op.cit. p303.
[62] Ibid. p136.
[63] Ibid.
[64] Ibid. p135.
[65] The number of Scottish based dentists who held the diploma of the Royal College of Surgeons England in 1881 was 16. This figure is taken from the Dentists Register for that year.
[66] David N.Richards, *The Dental Profession in the 1860s*, p283.
[67] J.M.Campbell, op. cit. Passim. See also Confirmations and Inventories 1876. p113. Thurso Street Depository, Ref., UGD/174. William Corbett an Edinburgh dentist who died 22 November 1875 at Portobello, left estate valued at £1,799 :10s: 9d, c/f with Dewar Dunlop, Physician and Surgeon of Greenock who died 6 October 1875 and left £525:17s:4d, p166.
[68] D.N.Richards, op. cit. p284.
[69] Ibid. p285
[70] Ibid.
[71] Ibid. p286.
[72] L.Lindsay, *Personalities of the Past, XXI, Charles James Fox,* in Br.Dent.J. 1955;98:455.
[73] Ibid.
[74] Ibid. For a full account of the Manchester meeting, see Br.J. Dent.Sci. 1875;18:467-492.
[75] D.N.Richards, *Dentistry a Hundred Years Ago , Charles James Fox - The Forgotten Man.* Br.Dent.J. 1972;132:235-242.
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Chapter 5

Dentistry in Scotland After the Dentists Act. Problems with the Unregistered 1879-1914.

5.1 The First Dentists Register 1879.

The first Dentists Register for the United Kingdom was published on 1 August 1879; it contained 5,289 names, of which 4,806 were dentists by declaration (90.87%) and those with an academic qualification numbered 483 (9.13%). Names with Scottish domiciles extracted from the Register - there is no separate Scottish list - amount to 354, of whom 326 or 92.10% were 'by declaration' (*bona fide* dentists). Those with a dental qualification numbered 28 or 7.90%. One revealing fact to emerge was that 125 of the *bona fide* dentists were practising dentistry in conjunction with pharmacy, thus confirming the earlier suggestion that where no dentists could be traced in a town, the chemists and druggists were carrying out this task. This is a field which would benefit from further research.

That the geographical distribution of dentists was uneven can be gauged from the fact that 230 of the registered dentists were to be found in the seven largest centres of population, that is 65% of the dentists were providing dental treatment for 31% of the population. Tables 5.1.1 and 5.1.2 illustrate these features.

Table 5.1.1: Dentists Domiciled in Scotland - 1879

Category	Number	Percentage
(A) Licentiates in Dentistry	28	7.90
(B) Persons on their own declaration in bona fide practice of dentistry:-		
(i) Dentistry alone	197	55.65
(ii) In conjunction with pharmacy	125	35.31
(iii) In conjunction with medicine and surgery	4	1.14
Bona fide Scottish dentists	326	92.10
Dentists in Scotland	354	100

Source: Extracted from the Dentists Register August 1 1879.

Table 5.1.2: Number of Dentists in the Seven Largest Centres of Population - 1879.

Place	By Declaration	Qualified	Total	Population
Glasgow inc., Govan *	101	3	104	537,411
Edinburgh	65	14	79	228,357
Aberdeen	15	1	16	105,003
Dundee	21	4	25	140,063
Greenock	10	-	10	63,902
Paisley	8	-	8	55,267
Perth	10	-	10	28,949
Totals	230	22	252	1,158,952

* Govan was not incorporated into Glasgow until 1912 but Govan addresses in the Dentists Register were considered to be in Glasgow.

Sources: Dentists Register 1879 and Census Returns for Scotland 1881.

With 252 dentists in a population of 1,158,952, these centres enjoyed a ratio of 1 dentist to 4,599, whereas the ratio for Scotland as a whole was more than double at 1: 10,552. The corresponding figure for the United Kingdom including the whole of Ireland was 1:6,595.[1] This again shows that dentists were attracted to dense urban areas at the expense of the rural where it would appear that at least some of the dental needs were being provided for by the local chemists and druggists.

The medically qualified seemed to be content to leave dental treatment to the dentists as only four practised dentistry in conjunction with medicine and surgery.[2] Only one woman appears, Elizabeth Laird of High Street, Monifieth in Fife. She was one of the many rural chemists and druggists who also practised dentistry. To her must go the honour of being the first woman to be registered as a dentist in Scotland.[3]

Multiple occupations still seemed to be common, but there cannot be many to match James Hay Henry of Macduff, whose name appeared on the 1879 Register by declaration, practising dentistry in conjunction with pharmacy. Slater's Directory for Scotland for 1882 showed that in addition to managing a chemist and druggist shop, he is also listed under tobacconist, manager of the baths and subdistributor and Collector of Taxes at Town House.[4]

Throughout Scotland there were 74 towns and cities with at least one person claiming to have practised dentistry. Many had genuinely been in practice but there was a considerable number of opportunists who knew little about dentistry except that it could provide a profitable income. The fundamental flaw in the Dentists Act was that while providing the means to register, it did nothing about those who did not register.[5] Albeit that an unregistered person was not lawfully entitled to recover any fee or charge for the performance of a dental operation, dental attendance or advice, he or she could still practise dentistry as long as the title 'dentist' or 'surgeon-dentist' was not used. These were protected by the Act, but there was still no protection for the public against the unregistered.

The first problem to emerge from the publication of the Dentists Register was that a number of persons had obtained entry on the flimsiest grounds or without any justification whatsoever, and one of the major tasks of the secretary of the newly formed British Dental Association (established 3 March 1879), was to weed out these imposters. James Smith Turner, the first secretary of the Association, warned some 500 persons that they should withdraw their names and many did so, but about 400 chose to ignore his advice. [6] Turner informed the General Medical Council who were the responsible body in the hope that they would undertake prosecutions.

The Council however, advanced legal reasons why this was not advisable and no action was taken.[7] Sir Norman Bennett, in a Presidential Address, added that the GMC:

> ... as a whole were not unsympathetic towards the aspiration of dentists to raise the standard of the profession ... but it was subject to the domination of a small minority, notably Richard Quail [medical member], who expressed himself in contemptuous terms about the dental profession. ... [8]

This initial brush with the Council pinpointed the consequences of the lack of any dental representation on the GMC and led to the setting up of a fund to undertake possible future legal action. These issues and numerous others clearly showed that there was a real need for a national organisation representing the dentists, and in the next section the background to the founding of the British Dental Association will be briefly sketched.

5.2 Founding of the British Dental Association - A Further Step on the Road to Professionalization.

The last meeting of the Dental Reform Committee was held on 8 February 1879. It was chaired by John Tomes and was convened for the purpose of winding itself up and resolving to form a Representative Board called the British Dental Association. The object of this was "...to watch over the general interests of the profession, especially with reference to carrying out the provisions and spirit of the Dentists Act throughout the United Kingdom...".[9] On Monday 3 March, a further meeting was held in London at which the Dental Reform Committee was formally dissolved and the British Dental Association founded. Five Scots were among the names of the first executive council elected; James Brownlie and G.Buchanan of Glasgow; D.H.Hepburn and Dr John Smith of Edinburgh and Walter Campbell of Dundee. Smith and Brownlie were also members of the editorial committee of the Journal of the new association.[10]

Additional resolutions passed included provisions for a Dental Benevolent Fund and limiting membership to those on the Register. Eligibility for membership gave rise to a difference of opinion with Charles Fox, whose efforts had initiated the movement setting up the Reform Committee. Fox believed that the Association should be open to all members on the Register not just Licentiates, and this led him to disassociate himself from the new body; additionally his health was failing and he withdrew from active participation in dental politics.[11] Subsequently, it was agreed that those who were entitled to be placed on the Register should be eligible to join the Association.

The infant organisation soon found itself engaged in combat with yet another old adversary, namely the Association of Surgeons Practising Dental Surgery (ASPDS). This body had strenuously opposed the passing of the Dentists Act and addressed a memorial to the GMC advocating its repeal. Although membership was only around 70,[12] the ASPDS had a powerful ally in certain sections of the medical profession whose views were aired in the columns of the Lancet. An excerpt taken from that journal and quoted by Donaldson represents the view-point held at that time:

> It is interesting to notice the many proofs of ignorance or carelessness on the part of the Public in reference to the working of the Dentists Act. So far from that statute having any protective value for the community, it is, as we predicted it would and asserted it must be, a delusion and a snare. At present the Dentists Register is a list of all the persons, with or without knowledge and qualifications, who were, or claimed to be, in the habit of toothdrawing or making at the passing of the Act.
>
> Hereafter, that is to say, when the present race of 'Dental Surgeons' shall have died out, the Register will comprise the names of those imperfectly educated and half-qualified persons who are simply licentiates in dentistry and nothing more, together with such fully qualified *surgeons* as may elect to have their names classed with the professors of a 'speciality' which, in so far as it is *surgical*, cannot in the very nature of things have any *really* independent existence. We venture to think that the number of medical men so minded will be exceedingly small. Meanwhile the drawers

> of teeth and the hewers of jaw bones will luxuriate in the possession of a Register on which we regret to find the names of a few surgeons. ...[13]

Medical opposition to the Dentists Act continued to be voiced and complaints were made that the dentists were encroaching on the clinical preserves of the medical men. Any and every opportunity was taken to attack the developing profession and one incident recounted by Donaldson illustrates this.

A number of passengers became ill aboard an emigrant ship named the *Chimborazo*, apparently from food poisoning and at a subsequent inquiry into the incident an LDS, who was also on board, was subpoenaed to give evidence. Having given his occupation as a dental surgeon, he was asked if the meat was putrid. He replied that he supposed so as nearly all the passengers suffered an acute attack of diarrhoea. The judge ruled that this particular circumstance was outside the inquiry and counsel scoffingly used the words,' a dental surgeon was not judge of that'. This incident was distorted by an active member of the ASPDS, Hamilton Cartwright, Professor of Dental Surgery at King's College and by The Lancet into the rejection by the judge, of a third-class emigrant calling himself a dental surgeon who presumed to represent himself as a medical witness. [14] Donaldson, in the article referred to, also quotes an account in the British Journal of Dental Science describing the removal and cure of a growth in the upper jaw by licentiates in dental surgery on the staff of the National Dental Hospital. The comment by The Lancet was that this operation was beyond the bounds of dental surgery.[15]

There were also numerous cases where the dentists claimed that the doctors were invading their field, as the amount of correspondence in the columns of both the medical and dental journals will testify. [16]

However,there was one activity where the two disciplines interacted for the benefit of both, and that was in the administration of anaesthetics by a doctor for the dentists' patients. Donaldson quoted from The Lancet an enquiry on medical etiquette from a doctor who discovered that the dentist for whom he had given anaesthetics was unregistered. The Lancet was in no doubt that he should refuse to attend in future. "...To associate in any way with one who is liable to prosecution ... must bring discredit not only upon himself but on the whole medical profession...". [17]

The last paragraph in the reply read:

> ... dental specialists have for years worked hard, and with success, to raise their professional and social status, and they look to their parent - the medical profession - to help them by not encouraging irregular dental practitioners... [18]

This final paragraph reflects the change in attitude which occurred in the six years since the article on the 'drawers of teeth and hewers of jaw-bones 'etc., and much of the credit for this must go to the activities of the still developing BDA. Every article or comment in the medical journals which criticised, betrayed ignorance or misunderstanding of the registered dentists' objective to raise their professional status, was speedily answered. As Donaldson puts it:

> The branches of the B.D.A. as they were formed, each became in its locality a centre of missionary zeal to further this purpose in all possible ways including approach to and cooperation with local branches of the British Medical Association. [19]

In 1882 the Association saw the founding of the Scottish branch, and two years later the annual general meeting was held in Edinburgh under the presidency of John Smith, who at that time was also president of the Royal College of Surgeons of Edinburgh. For the first time, the importance of dental science as applied to crime detection was pointed out by Robert Reid of Edinburgh.

Walter Campbell of Dundee used a 'magic lantern' to illustrate his lecture on fractures of the lower jaw and John Rankine Brownlie, who in 1879 had given the first public lecture at the Glasgow School of Dental Surgery, dealt with irregularities of the teeth. [20] (The Glasgow School of Dental Surgery became the Glasgow Dental Hospital and School on 10 November 1879).

Reference was made earlier to the importance of dental journals in the development of the profession and a significant step was the acquisition by the British Dental Association of the Monthly Review of Dental Surgery in 1880. The title was changed to the Journal of the British Dental Association with the March 15th issue. This title remained until 1903 when it was again altered to its present title of the British Dental Journal.[21]

The founding of the BDA in 1879 (Incorporation and election of office bearers took place in May 1880), marked a further step on the road to professionalization, and although there were only 383 enrolled members, the influence of the Association soon made itself evident in many spheres. Apart from its activities to weed out the imposters on the Dentists Register, the Association was also involved in the organisation and administration of local branches throughout the United Kingdom, the encouragement and spread of dental science, the elevation of standards in dental education, the need for dental services for the armed services and the introduction of dental inspection and treatment for school children.

The history of the Association reflects to a considerable extent, the history of the development of dentistry from the late nineteenth century; unfortunately it is too vast a subject to deal with adequately in the context of this work.[22] The BDA represented the third leg of the 'tripod' which Lilian Lindsay described in A Short History of Dentistry, the tripod upon which a profession must be built if it is to become firmly established: [23]

Education (dental schools), a scientific society (the BDA) and a journal (The Journal of the BDA). The education and scientific training of aspiring dentists had always been high on the list of aims of the early pioneers of reform, and in later sections, the roles of the Royal Faculty of Physicians and Surgeons of Glasgow, the Royal College of Surgeons of Edinburgh and the founding of the Scottish dental hospitals and schools will be examined and assessed.

5.3 Dental Education, Training and Examination: Glasgow and Edinburgh.

The Dentists Act of 1878 had given authority specifically, to the Royal Faculty of Physicians and Surgeons of Glasgow; the Royal College of Surgeons Edinburgh and the Royal College of Surgeons in Ireland, to hold examinations and grant certificates of fitness to practise dentistry - United Kingdom universities were also included. The Royal College of Surgeons of England would continue to award degrees according to the provisions of their charter granted in 1859.

On 22 April 1879, the Royal Faculty of Physicians and Surgeons of Glasgow announced the names of the first four Licentiates in Dental Surgery, they were:

William Stead Woodburn of Glasgow
Edwin Melrose of Bolton
Peter Gorrie of Dundee
Thomas John Molloy of Stockport

Obviously, these four must have been preparing for the examination because they qualified before any dental school had opened in Scotland. The Register shows that on 5 June 1882, Molloy was struck off the Register for advertising, as was a later licentiate, George Crocker of Manchester on 7 May 1888. [24] More interestingly, four licentiates had their names removed at their own request, apparently because of what they considered unfair competition from the

unregistered who advertised freely, something which they as registered dentists were not allowed to do. By 1900, 222 persons had qualified as LDS RFPS Glasgow, of whom 90 were domiciled in Scotland, representing 40.6% of the total. [25]

Although the Royal Faculty of Physicians and Surgeons continued to examine candidates and grant diplomas, the teaching of dental students was left to other institutions. A considerable degree of uniformity in standards of dental education had by 1885 been achieved, so that the syllabuses in most teaching establishments were broadly similar. Likewise, the GMC had laid down regulations governing the entrance of candidates to dentistry. No person was allowed to register as a medical or dental student unless he or she had passed a Preliminary examination in general education.[26] By 1921, the end of the period under review, the percentage of Scottish resident candidates who had acquired the diploma of the RFPSG had risen to 56.7 out of a total of 738. The name of the first woman licentiate to be awarded the LDS RFPSG was Williemina Simmers who was aged 22 and a native of Portsoy, Banffshire. She qualified on 5 April 1901 giving her address as 22 Westbank Terrace, Glasgow.[27]

The Royal College of Surgeons of Edinburgh awarded their first diplomas on 30 January 1879 to Peter Crombie of Edinburgh and Walter Whitehouse from England. These two, like the first Glasgow diplomates, passed their examinations prior to the opening of any Scottish dental school. In all, 14 persons were awarded diplomas in 1879, 50% giving Scottish addresses.[28] Classifying successful candidates according to their place of birth is not an reliable indication as to where they were domiciled, nor is the address where they were resident at the time of the Register entry. Many students who came to Edinburgh stayed there on a temporary basis, so even though they gave Scotland as their place of birth it did not follow that they would practise there.

Many gave Scottish birth-places but English addresses; to complicate matters, it was only from 15 April 1885 that the Edinburgh Register contains the addresses of the Licentiates. The practice adopted throughout these sections was to assume that where the birth-place and the address were Scottish, the Licentiate could be deemed to be a Scot. In the period 1879-1900, there were 323 Licentiates of whom 139 (43%) were Scottish and 184 (57%) indicated domicile outwith Scotland. The next twenty years, 1901-1921, saw an increase in the total number of Licentiates by 589 to 912, of whom 446 (49%) were Scottish and 466 (51%) came from areas outwith Scotland. Table 5.3.1 illustrates the numbers and percentages of Licentiates from both cities.

Table 5.3.1: The Number and Percentages of those Qualifying in Glasgow and Edinburgh 1879-1921.

Period	RFPS Glasgow			RCS Edinburgh		
	Scottish	Other	Total	Scottish	Other	Total
1879-1900	90	132	222	139	184	323
percent.	41%	59%	100%	43%	57%	100%
1901-1921	328	188	516	307	282	589
percent.	64%	36%	100%	52%	48%	100%
1879-1921	418	320	738	446	466	912
percent.	57%	43%	100%	49%	51%	100%

Sources: LDS Registers, RFPS Glasgow and RCS Edinburgh.

It can be seen that between the years 1900 and 1921, the number of Licentiates qualifying at Glasgow was 328, compared with 90 in the period 1879-1900, an increase of 264%. At Edinburgh, the numbers rose from 139 in the period 1879-1900 to 307 in the twenty years 1901-1921, an increase of 120%.

A total of 1,330 qualified as Licentiates in both centres in the years 1879-1921 but the total numbers on the Dentists Register in that period increased only slightly. By the year 1912, the number of women Licentiates accounted for were thirteen - six in Glasgow and seven in Edinburgh.[29] The first woman to qualify in Great Britain was Lilian Murray (later Lindsay) on 3 May 1895 when she was awarded the LDS RCS (Ed). She had a notable dental career and became one of the outstanding British dental historians. [30]

5.4 The Dentists Register 1881-1901: The Qualified and the Unregistered.

In the twenty years between 1881 and 1901, the population of Scotland increased from 3,735,573 to 4,472,103 a percentage increase of 19.7%.[31] In the same period, the number of Scottish domiciled dentists on the Register rose by only nine, from 313 to 322, a percentage increase of 2.9%.[32] Obviously, the numbers qualifying and registering were not keeping pace with the rising population. But the Occupation Tables of the Census Report for 1901, shows that there were 861 persons who had declared their occupation to be "dentistry," 35 of whom were female. [33] However, the occupation category is "dentists (including assistants), thus encompassing mechanics and journeymen of operative dentists. It would appear therefore, that there could have been up to 539 unregistered and therefore unqualified persons practising "dentistry" in Scotland at this time, (861 minus 322 on the Register), although the age profile suggests that this figures was substantially smaller.

The fact that the percentage of qualified had risen from 10.5% of the total registered in 1881 to 50.6% of the total registered in 1901, contributed very little to the available supply of qualified dental treatment for the people of Scotland, Although there were more qualified Scottish dentists proportionately than in the United Kingdom as a whole.

The relevant figures were: 10.74% qualified in 1881 rising to 40.82% in 1901. Tables 5.4.1 and 5.4.2 illustrate these points:

Table 5.4.1: Scottish Population, Dentists Register and Census Returns 1881-1901.

Year	Population of Scotland	Dentists Register	Census Declaration (Occupation)
1881	3,735,573	313	320
1901	4,472,103	322	861
Percentage increase	19.7%	2.9%	169%

Source: Census Returns for Scotland 1881,1901; Dentists Registers 1881,1901.

Table 5.4.2: Comparison of Qualified in Scotland with United Kingdom as a Whole 1879-1901.

	Percentage Qualified on Register	
	1881	1901
United Kingdom	10.74	40.82
Scotland	10.50	50.60

Sources: Census Returns and Dentists Registers 1881, 1901.

Turning to the seven main centres of population in Scotland in 1901, there had been an increase from 1,158,320 in 1881 to 1,573,320 in 1901, an increase of 36%. The Dentists Register for 1901 showed that there were 236 dentists for these centres compared with 252 in 1881, a decrease of 6.34%. The ratio of registered dentists to this population was now 1:6,666, compared with 1:4,599 in 1879, when the Register was first published. The ratio of registered dentists to the population for Scotland as a whole rose to 1:13,888 (1879 figure: 1:10,552).

It can be seen from these figures that not only was Scotland now worse off than in 1879, but also that the situation in regard to the availability of 'registered dental treatment' had shown little improvement in the seven largest centres - 73% of the registered dentists were now offering dental treatment to 35% of the Scottish population. (In 1879, 65% of the dentists treated 31% of the population).

In 1901, the total number of registered dentists in the United Kingdom stood at 4,509 giving a ratio of 1:9,228 of the population. These figures indicate that Scotland was also worse off than the population of the United Kingdom taken as a whole. Table 5.4.3. and 5.4.4. illustrates some of these points.

Table 5.4.3: Number of Registered Dentists in the Seven Largest Centres of Population - 1901.

Place	By Declaration	Qualified	Total	Population
Glasgow *	49	49	98	761,709
Edinburgh**	35	65	100	316,837
Dundee	3	5	8	161,173
Aberdeen	7	9	16	153,503
Paisley	1	3	4	79,163
Greenock	4	-	4	68,112
Perth	4	2	6	32,823
Totals	103	133	236	1,573,320

* Includes Govan. ** Includes Leith and Portobello.

Sources: Dentists Register 1901, Census of Scotland Population Tables 1901.

Table 5.4.4: Comparison of Supply of Registered Dentists: United Kingdom and Scotland 1901.

	Population	No. of Dentists on Register	Ratio of Registered Dentists to Population
Scotland	4,472,103	322	1:13,888
United Kingdom*	41,609,091	4,509	1:9,228

* Includes Ireland

Sources: Dentists Register and Census of Great Britain, Population Tables 1901.

Apart from their roles as examination centres, Glasgow and Edinburgh were the only places in Scotland until the first decade of the twentieth century, where aspiring dentists could obtain their training, and in the next section the rise and development of the cities' dental hospitals and schools is outlined.

5.5 The Scottish Dental Hospitals and Schools: 1879-1914.

Although Glasgow and Edinburgh were the main centres of population, they were not the only cities with public dental services. From as early as 1857, Dundee could boast of a dental dispensary which pre-dated that of the two major cities. However, not until 1914 was a Dental Hospital officially opened and soon after a dental school added. [34]

Many Dental hospitals evolved from dental dispensaries and one of the first in the United Kingdom was the London Institution for the Diseases of the Teeth, founded by (Sir) Edwin Saunders in 1839. It appears to have had a short life as there is no record of it after 1845.[35] Birmingham had its dental dispensary in 1858 which subsequently became the Birmingham Dental Hospital (from 1871) and School (from 1880).

Liverpool and Plymouth opened Dental Dispensaries (later to be Dental Hospitals) in 1860 and 1861, respectively; these were recognised as Schools in 1876 and 1877. Newcastle's Dental Hospital and School opened its doors on 25 March 1895 and was given recognition by the Royal Faculty of Physicians and Surgeons of Glasgow as a training establishment suitable for its diploma.[36]

Edinburgh takes precedence over Glasgow in the provision of dental treatment for the poor and needy by virtue of the fact that the Edinburgh Dispensary was opened in January 1860, at Drummond Street, nineteen years before Glasgow offered dental treatment to the necessitous poor. The Institution soon moved to 54 Cockburn Street where it occupied part of the premises run by the Eye and Ear Dispensary. Further moves saw the dispensary finally established in Chambers Street and after the passing of the Dentists Act in 1878, the Edinburgh Dental Hospital and School came into being, but not under that name. The Institution retained the name of Edinburgh Dental Dispensary until 1880. Among the initial equipment purchased were three dental chairs at £5.10s each and three spittoons and brackets at 10s each.[37]

William Guy, author of the article from which the above details were taken, comments that, "... genuine concern was the chief motive which compelled them to take action. ...compassion for those of their fellow-mortals who suffered for lack of dental treatment... ". [38] Guy continues:

> ...to relieve the afflicted seemed a goodly and righteous thing to do. Soon, however, they saw that pity was not enough: more must be attempted if men of skill were to be trained for the work, if their professional status were to be made secure. They must try to drive in triple harness a difficult team - Philanthropy, Education and Finance. A new ethical impulse impelled them to action, to seek reforms, the removal of injustice and inequality, and the establishment of a centre of learning, teaching and treatment. ...[39]

The formal opening of the Dental Hospital and School was delayed until 30 October 1879, the first of the special dental lectures being delivered on 4 November, a date which allowed Glasgow the claim of being the senior of the two Schools. W.Bowman MacLeod, the acting Dean for two years and also lecturing on Dental Mechanics, was officially appointed Dean on 26 January 1881. In 1893, he was elected President of the Odontological Society of Great Britain, the first Scot to be given that honour.[40]

Presenting the Annual Report for the year 1884, Dean Bowman stated, "... the popularity and usefulness of the Institution were increasing year by year. Last year the number of patients treated was 6,279, an increase of 681 on the previous year."[41] The Board were of the opinion that due to the increase in patient numbers it was desirable to find larger premises.

There can be no doubt that the Dental Hospital and School was fulfilling its two functions; namely, the provision of dental treatment for the poor and the training of dentists. As the Dean commented, "...the usefulness of the Hospital in educating the dentists of the future was also becoming more and more apparent; while the facilities given to the medical students were largely taken advantage of."[42] The fact that there had been more patients was he thought:

> ... an indication not only of the great good the Hospital was doing in the community, but of the benefits which it was prepared to confer on a much larger number of their poor and suffering fellow citizens. ...The dental profession like others was growing in importance and the necessity of a thorough and scientific training and education could not be gainsaid. ...[43].

He thought it a hopeful sign that science now directed the attention not so much to the curing of evils as to the prevention of them, "... not so much to the extracting of teeth as to the preserving of them. "(Applause).[44]

At the half-yearly meeting of the directors held on Tuesday 24 July 1885, Dean Bowman MacLeod reported that the number of patients treated up to June 30th was 1702. There were 499 fillings and 1189 extractions. He remarked on the "... continued prosperity of the institution...".[45] On the teaching side, the British Journal of Dental Science reported that the session 1885-86 had commenced on 2 November with eight new students bringing the roll up to eighteen.[46]

The Edinburgh Dental Hospital and School continued to expand, treating more and more patients and fulfilling its dual role of providing dental treatment for the poor and clinical material for the dental students. Reference has already been made to the fact that it was at the Edinburgh Dental Hospital that the Dean enrolled the first woman dental student, Miss Lilian Murray who obtained the LDS RCS Edinburgh on 3 May 1895. Edinburgh also had the distinction after World War I to introduce a post-graduate degree - the Higher Dental Diploma - which was for twenty five years, the only post-graduate degree available to Licentiates in Dental Surgery; students came to Edinburgh from many parts of the world to prepare themselves for this examination.[47]

In the period 1896-1900, the Hospital carried out 32,460 conservative and prosthetic operations and extracted teeth from 18,761 patients. Of this number 4,724 had a general anaesthetic, whilst 14,037 had their extractions carried out 'without anaesthetic'. Whether this meant that the teeth were removed literally without any anaesthetic or without a general anaesthetic is not made clear.[48]

The total number of patients claimed to have been seen was 51,221. However, bearing in mind that a number of fillings etc. would be performed on the same patient, it is patently clear that the number of conservative and prosthetic operations (dentures and repairs) would be in excess of the number of persons receiving this treatment.

Nevertheless the compiler of the Annual Reports adds the conservative/prosthetic operations to the number of patients attending for extractions. Consequently the total figures given are somewhat inflated, perhaps to impress the public with the amount of work being carried out, although this seemed hardly necessary.

Following the passing of the Dentists Act of 1878, a meeting of interested Glasgow dentists took place in March 1879, under the chairmanship of James Rankine Brownlie. They resolved to form a committee "... to see that proper opportunities for education were afforded to students preparing for the examination in dental surgery...".[49] Concurrent with this action, the Medical Faculty of Anderson's College (described by a contemporary writer, as "a dingy building" on the north side of George Street, between John Street and Montrose Street) recommended the establishment of a dental department within the College.[50]

After consultation with representatives of the Glasgow dentists, a notice appeared announcing the commencement of the summer medical session on 6 May 1879. Part of the notice read as follows:

> Dental Diploma
>
> Courses of instruction in Dental Anatomy and Physiology, and Dental Surgery (qualifying for the Dental Diploma) will be conducted by Professors A.M.Buchanan and James Dunlop, as may be arranged. [51]

The first lecture, delivered by J.Rankine Browmlie on Tuesday 3 June 1879 inaugurated the Glasgow School of Dental Surgery. Reporting the event, The Glasgow Herald of 4 June contained the following item:

> The first of a series of lectures to dental students was delivered yesterday in Anderson's College. The event was one of much interest to the profession inasmuch as it was the inauguration of the first school of dental surgery in Scotland.[52]

Within a few months the Managers of the College provided a suite of rooms and six dental chairs, signalling the opening of the Hospital on 10 November 1879. Thus, although Edinburgh was first in the field with its Dental Hospital, systematic teaching did not begin there until the end of October. The claim to seniority by Glasgow is further strengthened by a note in the first calendar of the Glasgow School:

> The Dental Officers take this opportunity of thanking the Managers and Trustees of Anderson's College for the very liberal way in which they have interpreted the wishes of the Dental Profession, and have thus placed the Dental School of Glasgow in the position of being the first in operation in Scotland. [53]

The regulations laid down for the Dental Diplomas in both Glasgow and Edinburgh were similar. Candidates should have been engaged for not less than four years in acquiring professional knowledge, including at least three years apprenticeship under a registered dentist. Attendance at a recognised Dental Hospital was also included, but many candidates were excused this if proof of ability in practical dentistry was forthcoming. Subjects covered in the curriculum were: Anatomy (General), Anatomy (Head and Neck), Dissections, Physics, Chemistry, Practical Chemistry with Metallurgy, Surgery, Medicine, Materia Medica. Attendance was required at a recognised General Hospital, with clinical instruction and courses special to Dentistry, namely, Dental Anatomy and Physiology, Dental Surgery, Metallurgy and Mechanical Dentistry. The examination consisted of written papers and an oral examination, and although it was stated that the candidate might be tested in manipulative skill, there is no record that this was ever exercised at this time. Attendance figures for Glasgow Dental Hospital show that in 1881, there were 1,835 patients, 2,367 in 1882 and 2,432 in 1883. There was no doubt that the Hospital's facilities were being used. [54]

Following the amalgamation of Anderson's College with other educational establishments, The School of Dental Surgery and Dental Hospital of Glasgow, as it was then known, moved to new premises at 56 George Square and became The Glasgow Dental Hospital and School. A Committee of Management had been formed which drew up a constitution based on that of the London Dental Hospital. That the emphasis had shifted from a teaching establishment to a hospital service can be seen from the public announcements of the Committee of Management in subsequent years stressing the charitable side of the Institution's work. At one such meeting it was said:

> ...as the Hospital was a public charity of the same nature as our infirmaries, and only incidentally served in some measure for the technical education of dentists, it should be supported by public benevolence. [55]

Commenting on the move from Anderson's College, the Editor of the Journal of the British Dental Association had this to say:

> ...We regret to hear that more room being required owing to an extension of the technical classes, the hospital has received notice to quit and will now be obliged to provide itself with fresh habitation, probably of much less economical terms. Glasgow is certainly rich enough to support such a hospital and poor enough to need it. ...[56]

James Rankine Brownlie was appointed Dean in 1885 and although a record of patient attendances was not kept for the whole of 1885, 3,876 cases were treated in the first eight months. For the succeeding three years the figures are shown in the following table:

Table 5.5.1: Patients Attending Glasgow Dental Hospital 1886-87.

Year	Patients Attending
1886	6,825
1887	8,242
1888	8,267

Source: History of the Glasgow Dental Hospital and School, 1879-1979. T.Brown Henderson.

During this period, there was an increase in the number of unqualified and unregistered dentists practising in the city. The dental students in the School in 1887, drew up a petition which they presented to the West of Scotland Branch of the BDA. They asked for protection:

> ..against men in Glasgow who without right or title, are practising dentistry, to the detriment of those in the profession who are spending time and money in order to make themselves proficient and to give them a legal right to call themselves 'dentists'. ... [57]

The work of the Hospital was interrupted in 1889, when notice was received from the landlord that, on account of complaints received from other tenants in the building, the premises must be vacated. Consequently the Hospital was relocated at 4 Chatham Place (now Cathedral Street) where it functioned until 1895. That the new location was not as well patronised as the old one can be seen from the opening year's attendance figures:

Table 5.5.2: Record of Patient Attendances at Chatham Place. 1889-1895.

Year	Patients	Extractions	Preservative Operations
1889	6,048	4,932	990
1890	4,622	3,391	1,231
1891	4,381	3,258	1,125
1892	4,237	3,511	726
1893	5,727	3,494	2,233
1894	7,122	3,187	3,305
1895	7,068	3,953	3,115

Source: The History of Glasgow Dental Hospital and School 1879-1979, T.Brown Henderson.

As a result of a growing academic reputation, income brought in by student fees increased, and the Managers recorded their appreciation, "with gratitude". [58] Once again the need for larger premises was evident and in May 1896 the Hospital and School made its fourth move, this time to 5 St. Vincent Place. In the period from 1896 to 1902, the number of patients seen amounted to 47,040, of which 32,468 received extractions and 22,432 preservative operations.[59]

At the Annual General Meeting of the Glasgow Dental Hospital held on 27 February 1899, the Lord Provost of Glasgow, Sir David Richmond, presided. The Secretary reported that the number of patients seen during 1898 had been 6,577, 1,085 more than in the previous year and 2,543 in excess of 1896. He pointed out that one of the features of the hospital work was the small cost at which it was done. The whole expenditure for the year was a little over £250 giving an average cost per patient of 9d, or 8d for each operation. In the fourteen years since moving from Anderson's College, the number of patients treated amounted to 82,392. [60]

T.Brown Henderson records that, as there was no tutorial class in operative procedures, the new student in his first month served an apprenticeship which consisted of watching his seniors at work. One evening a week he would sit with his fellow juniors on a shelf on the wall of the extraction room to watch and learn. When a general anaesthetic was needed, the junior student present was sent to call the anaesthetist of the day, and as the Hospital did not possess a telephone, he was sent to a nearby public house to call the duty anaesthetist, much to the envy of his fellow students. (Dr Ferguson MacKenzie recalled that a fellow-student fell from the shelf with a crash, in a dead faint upon seeing his first extraction).[61]

By 1902, the number of students had increased to 26 and once again it became obvious that more commodious premises would be necessary to cope with the increasing number of patients, and in 1903 premises at Dalhousie Street were obtained. Throughout this period, as described by Brown Henderson, many students enrolled solely to learn the rudiments of the operative techniques and were only interested in this particular class. They had no intention of completing the course nor of sitting the diploma examination. Many were already in practice and others used the class as their sole training prior to opening a dental practice. They had little, if any, knowledge of anatomy and physiology, and had no scientific education.

As a result of this abuse of the teaching facilities, it was decided that, from the beginning of 1909, entry to the Hospital would be restricted to students who could produce evidence that they had passed the first professional examinations in chemistry, physics, anatomy and physiology. A year's notice was given of this change and from there being one hundred students before the new regulations, the number fell to just two.

The training and education of dentists in Scotland is a subject which merits a separate thesis, and it is not possible to deal with it properly within the context of this work. But some flavour of the difficulties which were encountered by many public spirited men striving to develop an educated and scientifically trained dental profession, will hopefully have been conveyed.

Attendances at the Dalhousie premises continued to increase. Between 1903 and 1914, the number of patients seen amounted to 150,087, of which 35,809 received extractions and 81,618 conservative operations. [62] It is interesting note that in 1910, an approach was made to the University of Glasgow with a view to affiliation. The University Court although sympathetic, were not able to consider the idea as the Dental Hospital was not qualified in terms of the Universities (Scotland) Act of 1889 as a 'college', and also it was not sufficiently endowed. The Hospital at this time had no endowments and so the negotiations came to naught. [63]

A new practice at this time by the unregistered city practitioners was to send patients to the Hospital to have their teeth extracted. When this had been completed the intention was that the dentists would then fit artificial teeth. In order to combat this the Governors decided to open a laboratory to supply dentures constructed in the Hospital. These dentures were priced at £2 for a full upper or lower set. The announcement came in the Annual Report:

> To meet this illegitimate use of the Hospital, and to counter-act the entrapping of poor patients by unscrupulous, irregular practitioners, the Board have instituted a mechanical laboratory. [64]

Although well advertised in the local papers, only twenty-three patients availed themselves of the new service offered by the Hospital, but with average wages for all occupational classes being around £80 per annum, £2 for a denture would be a considerable outlay at this time. [65]

Since its inception, the income from students' fees had been used to maintain the Hospital instead of being used to develop the Dental School. It was therefore an important decision when the Governors after listening to the Dean's submissions decided to retain students' fees for the use of the School. This meant that for the first time the teaching staff received payment for their services - £10 per annum. Other recommendations to augment the Hospital income were: increasing the charge for gold fillings, charging one shilling for plastic fillings, hitherto free, and threepence per extraction. The outbreak of war a few months later, meant that much of the scheme could not be implemented, but a new administration had been drawn up both for the School and the Hospital which it was hoped would usher in a new era. But, according to T.Brown Henderson, the failure of the Governors after the war to carry out the recommendations of 1914 "... was a blunder which had the most serious effects upon the work and status of the School". [66] Further developments in the Hospital's history until 1921 will be discussed in a later section.

Dundee also provided dental treatment for the poor of the city, but the exact opening date of the dispensary is not recorded. According to contemporary events it must have been somewhere between March 1857 and March 1858.[67] Shortly afterwards it moved to St. David's Lane, North Tay Street, where Walter Campbell had a dental practice, but, according to Fairley (1988), "... the premises were entirely separate and the Dispensary was properly constituted."[68]
Unfortunately, there are no records of patients treated and when Campbell, who had been the dentist in attendance, was appointed Surgeon to the newly-created Dental Department of the Dundee Royal Infirmary in 1879, the Dispensary seems to have been closed down.

It was not until 1914 that the Dundee Dental Hospital was opened at 6 Park Place, adjacent to the campus of University College. Support for the institution was promised by professional and business men of the city; all professional

services were given free. A year later Walter Campbell was appointed Honorary Consulting Dental Surgeon. [69]

Following the establishment of the Dental Hospital, a School of Dentistry was opened with Dr Graham Campbell as Dean. Two of the the three students who attended the first classes in 1916 were W.R.Tattersall and Hugh Hunter; both qualified in 1918 as LDS at the University of St Andrews.[70]

Of the four major cities, Aberdeen is the only one that apparently never had a Dental Hospital, although dental treatment was available at the Aberdeen Dispensary, Lying-In and Vaccine Institution, opened in 1823. Among the medical attendants listed is W.P.Robertson, Surgeon-Dentist. The Dispensary was situated at Barnett's Close and 61 Guestrow and was opened to supply "... advice and medicine to the sick poor and to such as are unfit patients for the Infirmary, at their own houses. Supported by voluntary contributions...". [71] In 1862, William Williamson, Dental Surgeon, was appointed to the staff of the Aberdeen Royal Infirmary, a post which he held until 1881. Williamson was almost certainly the first dental surgeon to attain consultant status in a teaching hospital in Scotland and undoubtedly the first dental surgeon to give a university lecture. [72] In 1881 he was succeeded by his son William H, who was Medical Officer in charge of the Dental Department until 1898. The first of the Crombie family, James, succeeded him in 1898, his tenure of office extending into the 1930s. [73]

The Aberdeen Directory for 1899-1900 shows that a second dentist, John Cromar LDS RCS(Ed), was appointed to the staff indicating an increasing demand for treatment, whilst The Royal Aberdeen Hospital for Sick Children had Mr A.A.De Lessert LDS attending to the dental needs of the patients. The directory issue for 1916-1917 shows that James Crombie had taken over from De Lessert at the Hospital for Sick Children, whilst retaining his post at the Aberdeen Royal Infirmary. W.P.Robertson was still in charge at the

Aberdeen Dispensary and Vaccine Institution.

Aberdeen Royal Infirmary Annual Reports show that the number of cases treated by the dentist between 1864 and 1881 was 6,897. In the period 1899 to 1914, there were 17,063 dental cases recorded. A detailed break-down of the types of treatment given is not available, but from 1904 to 1917 the number of teeth extracted amounted to 65,164.[74]

The reasons for the lack of an independent Dental Hospital for a city the size of Aberdeen (population in 1911 was 163,891) are not clear. Currently (1994), the situation is unchanged with dental treatment being carried out in the Dental Department of the Aberdeen Royal Infirmary. Undoubtedly, this is an area for further research by dental historians.

Although Dental Dispensaries had been in existence since the middle of the nineteenth century, their emergence had not always met with unanimous approval. In October 1857, an editorial appeared in the The Lancet commenting on the opening of a Dental Dispensary.[75] The article recognised its importance and supported the new institution. However, in the following month, 'a governor of a London Hospital' writing to the Editor, took a different view:

> Sir,- I read with much interest in The Lancet of October 31st the opening of a Dental Dispensary. No doubt this institution supplies a real want. The poor who cannot pay a dentist, cannot expect the parish doctor to stop teeth or supply the place of lost ones. They must therefore go without, suffering the loss of tooth after tooth, and the consequent dyspepsia and other maladies which come upon them, unfit them for work and shorten their lives ... and often not knowing what is the cause of their sufferings. The extent of this evil amongst the poor is very great, probably half the poor, both men and women, who have attained forty years of age, are unable from loss of teeth to masticate their food. ...[76]

The writer goes on to point out that it is unlikely that the poor would be able to form what were known as 'tooth clubs'. These were based on the principle of benefit clubs, where a small amount is paid weekly or monthly and the subscribers receive assistance, wholly or partly, towards the payment of dentures. The correspondent goes on:

> Medical writers and medical practitioners should bear in mind the position they hold in the body politic and the *whole* duties they owe to it; and should well consider the effect and tendency of all their proceedings not only upon themselves, but also upon the nation. For example, it is the fashion of the day to found endless dispensaries &., some general others for special diseases. This may serve the purpose of Mr. A. or Dr B. who want to get into practice or to become noted for some speciality, or to write after their names,'surgeon to such and such a dispensary ' [77]

The writer continues, describing the various choices open to those who can pay for their treatment and to those who cannot: private practitioners, benefit clubs, parish doctors and the 'great' hospitals. He criticises the latter for admitting out-patients without letters of recommendation and then turns his attention to a different aspect:

> ...What is the effect of all this upon the people? Why they find that they never need make provision for the future as regards medical attendance, seeing as they can always get it for asking. What need, then, to subscribe to a benefit club? What need to save a little money to pay a doctor? What need to be provident? They may squander their cash at pleasure, and when ill walk to the nearest hospital for advice and medicine, and demand it as right. Such numbers do this, that many who can well afford to pay become out-patients instead, thinking themselves unnoticed in the crowd.[78]

As the number of dispensaries increased, so did the number of the applicants he said, and the supply, "... forced upon the public created a corresponding demand... ". What was more, he continued, " ...every hospital and dispensary *boasts* of the increasing number of its applicants". Was this, he wanted to know, "... a healthy moral tone of the lower ranks of society ? Are the tendencies thus imparted sound and salutary ones...? ".

The writer develops his argument:

> And for ourselves, as medical men, do we not see how undignified it is thus to thrust our unasked for services upon the public? Can we not discern the signs of the times? Do we not note how everywhere the lower orders take as a right, without thanks,and as if they were doing *us* a favour, our gratuitous services? And, finally, is not the medical profession, which includes some worthy struggling members wronged of many thousands annually by this and other methods of giving advice gratis? ...[79]

The writer's attitude is reminiscent of the moralistic and religious view commonly held by certain classes in Scotland in the latter half of the nineteenth century and exemplified by the teachings of Reverend Thomas Chalmers (see chapter 3). He also introduces a view widely held at this time, on the effect that the hospitals and dispensaries were having on the incomes of the independent doctors. This at a time when their earnings were at an all-time low, due to too many doctors, qualified and unqualified, chasing a limited number of paying patients.[80]

A supportive letter on the subject comes from another correspondent who writes:

> Sir,- The subject of Dental Dispensaries is indeed one that demands the attention and support both of the profession and of the public, and I am glad to see that you are amongst the first to recognise its importance and to advocate its claims. ...[81]

The writer reveals that teeth are removed in a "wholesale manner" at metropolitan hospitals and dispensaries, [presumably London], and that this should be checked not only to improve the appearance of the lower classes, but also to prevent all kinds of disease, of which dyspepsia was only the precursor. The writer goes on to describe witnessing extractions being carried out:

> ... I have frequently seen a man tugging away at a tooth with the first instrument that came to his hand, right or wrong, much in the same manner in which he would take out a rusty bent nail from a tough board, causing the sufferer an agony of pain, while the result is sometimes the fracture of it, and occasionally the removal of a

> good-sized portion of the alveolar process; whereas, with a proper instrument in the hands of a man who knows what he is doing, extraction is at all times a safe and seldom a very painful operation. ...[82]

The correspondent supports the idea of preserving the teeth, which he points out is the principal object. Thousands of teeth were extracted every year; many of these could have been retained and made useful. But to tell the "...poor patient this and to bid him to go to a dentist, is merely to mock at his sufferings, without affording him relief... ". He continues:

> As you very justly observe, the expense attending these dental dispensaries would be but small; the greatest expenditure in these cases is time, and I have no doubt that there will be plenty of good men in this branch of the profession forthcoming, who are willing to devote some portion of their time to the relief of their poorer neighbours. [83]

These letters are just two samples of many which appeared in the medical and dental press throughout the latter half of the nineteenth century. Commenting on one such communication, the British Journal of Dental Science carried an editorial from which an excerpt is quoted:

> The objections which are sometimes raised against the establishment of special hospitals hardly hold good in the case of a dental hospital, which provides the special curriculum necessary for dentists.
> There is of course the difficulty of preventing abuse by people who are able to pay a private practitioner, and this obtains also at the General Hospitals, but we imagine that there is not much scope for the recruiting of private practice by the members of the staff of a dental hospital.
> Mr Henry Sewell however in the *Medical Press* has a different complaint to lodge. He thinks that the money spent upon unnecessary special hospitals should be devoted to the support of the General Hospitals. He instances particularly the case of Charing Cross and after enumerating the various special institutions near to it selects the Dental Hospital in Leicester Square as being a good illustration of the waste of public money. ...[84]

This particular comment was directed at English institutions; it is difficult to find similar criticisms aimed at the Scottish Dental Hospitals, but doubtless there were dentists in Scotland who saw the opening of the Hospitals as a threat to their incomes.

As the dental hospitals continued to treat increasing numbers of patients, and the demand for dental treatment there rose steadily, more and more unqualified and unregistered dentists appeared. In the next section this mounting problem is considered and the steps taken to stem the tide are discussed.

5.6 The Growing Problem of the Unregistered: Prosecutions Against Illegal Practice,

In the Census of 1911, the number of Scots who declared their main occupation to be dentistry was 1,395.[85] This compares with 861 in 1901, an increase of 62%. The Dentists Register for 1911 however, contains 431 names with Scottish domiciles. In other words, there were at least 964 unregistered persons practising in Scotland. The probability is that there would be more who did not declare dentistry as a their main occupation. With a population of 4,760,904, this gave a ratio of 1 registered dentist to 11,046 of the population. The figures for the United Kingdom were 5,037 qualified dentists to a population of 45,370,530, giving a ratio of 1:9,007. Scotland was also worse off than England, Wales and Ireland where the ratio was 1:7,784.[86]

Prosecutions under the 1878 Dentists Act were brought against those persons who claimed or used the title 'dentist,' 'dental surgeon', or who gave the public to understand that they were qualified to practise dentistry by virtue of being registered. Actions were instigated by the BDA acting on behalf of the GMC.

The complaints were usually brought to the notice of the Association by registered dental practitioners. At the Annual Meeting of the Scottish Branch of the BDA held at Aberdeen on 5 June 1885, W.Bowman MacLeod LDS Edinburgh, read a paper on the *The Dentists Act and Recent Prosecutions*. MacLeod pointed out that for the first five years of its existence the Association had devoted its entire efforts to "...promote the advance of dental and the allied sciences, ... and to encourage the founding of educational centres ".[87] It was not until 1885, seven years after the passing of the Act, that steps were taken to prosecute those dentists who were openly defying the law. The first action in Great Britain was taken against one G. Callendar, but this never came before the Court.. The first person to appear in Court was T.C.Holford in February 1884, when he was charged with illegally using the qualification of LDS. [88]

The case was heard at West Ham Police Court and the defendant found guilty. Shortly afterwards, it was decided to initiate a prosecution in Scotland, two cases being selected, one in the Capital and the other in a County town. It was hoped that, being typical cases, the decisions arrived at would act as precedents for all future actions, if unfortunately there were further offenders. As subsequent events were to prove this turned out to be a highly optimistic view. On 25 October 1884, a Mr Robertson was charged at Edinburgh Sheriff Court with infringements of the Dentists Act. It subsequently transpired that Robertson had been a bicycle maker's engineer in London as late as 1881. As he pleaded guilty and promised not to offend again, the Sheriff imposed a mitigated fine of £5.[89] Notwithstanding his promise, Robertson continued to infringe the law and was again charged on 9 January 1885 before the same Sheriff.

The accused again pleaded guilty and this time was fined £20, the maximum allowed under the Act. The next case was that of Alexander Ross French of St Andrews, Fife, lately a confectioner in Dundee. French was charged with unlawfully using the name and titles of 'Dr', 'D.D,S.' and 'Dental Surgeon'. He pleaded not guilty but at the subsequent trial in which the accused defended himself, the judge took the opposite view and he was fined £10. Part of his defence was that the titles he had used did not come under British law and added that it was next to impossible for a working man to make his son a dentist as the fees were so high. Both these cases were brought at the instance of the Association, the nominal prosecutors being the Secretary of the BDA and W.Bowman MacLeod as Honorary Secretary to the Scottish Branch. Commenting on these decisions, Bowman MacLeod said:

> ... guided by the experience gained, we need be under no fear of a reverse should the British Dental Association again find it necessary to establish a prosecution for the protection of the public, the protection of our law-abiding students, or the vindication of our rights. ...[90]

That such a reverse would occur, could not have been foreseen at the time Bowman Macleod uttered these words; but, as this event was to occur some twenty years on and was of such importance to the development of dentistry, discussion of it will be delayed. The first prosecution of an unregistered dentist to take place in Glasgow was on 7 March 1889, when James Gray of 3 Minerva Street was charged with contravention of the Dentists Act of 1878. Gray pleaded guilty to displaying a sign which read 'James Gray, late with B.Sutherland, surgeon-dentist - Teeth extracted'. The solicitor acting for the defence exhibited proof that his client was a time-served dental mechanic with testimonials as to his honesty, diligence and capability. The public had not suffered in the slightest degree by his client's actions.

On the contrary he could have brought forward several patients of Mr Gray to prove that they had been as well attended by him as they could have been by any certificated dentist in the city. His client was only twenty-one years of age and his only reason for not being qualified was the lack of means. Having listened to the prosecution case, that no person who was not qualified and registered should hold himself out to be a dentist, the Sheriff fined him £5.[91]

In November of the following year, Dr Squire Winfield Allen of 40 Queen Street, Edinburgh, was charged with using the title 'Dr' and having on a brass plate the words' Dr Squire Winfield Allen, graduate of New York Dental College, formerly with Dr Hogue'. He also had an entry in the Post Office Directory describing himself as an American dentist and a doctor of dental surgery. After some discussion on the relevancy of the charges, the Sheriff found the accused guilty firstly of setting himself up to be qualified, which he was not, while not being on the Register and secondly,considered that the 'New York College' was not recognised as a valid qualification. Nevertheless, the Sheriff added, it was impossible not to be aware that a doctor of dental surgery of New York had a high qualification. Furthermore, it seemed that the respondent had certainly very special qualifications for dentistry, and his Lordship did not see that the public required in any way to be protected against him. In the circumstances the Sheriff thought that a nominal fine of ten shillings was adequate.[92]

Over the next few years, prosecutions were brought in increasing numbers in various parts of the country, especially in the large centres of population both north and south of the border. However, it soon became clear to the BDA and those actively involved in the welfare of dentistry, that there were considerable inconsistencies in the verdicts and the penalties inflicted by the judiciary in different parts of the country.

In addition, the judges were interpreting the law based on personal views and opinions. An outstanding example of the above, was the case brought before Sheriff Campbell Smith at Dundee Sheriff Court on 17 January 1896, the account of which proceedings were reprinted from The Dundee Advertiser. The case is described at some length, as the opinions expressed reflected an important view on the shortage of qualified dentists and also the inability of the majority of the people to be able to afford the fees charged by them. Its outcome had significant repercussions.

The complaint was brought by the Honorary Secretary of the BDA against A.Davie of South Lindsay Street, Dundee. Eight charges were detailed in the submission, all being breaches of the Dentists Act of 1878. The essence of the charges was that he represented himself as a 'dentist' or 'dental surgeon' when in fact he was not on the Dentists Register. At the preliminary hearing there were exchanges between the agent for the complainant (the BDA), and the Sheriff, during which it was made clear that a Mr Buchanan was acting on behalf of the Honorary Secretary of the BDA, who was the prosecutor. The Sheriff wanted to know under what authority was "...an English gentleman appearing at all as a prosecutor in a Scotch Court...". The explanation which was accepted was that the prosecution was brought under the Medical Act of 1886, which enabled charges to be brought as a private prosecution, and the prosecutor could appoint an agent to act on his behalf.

After further lengthy exchanges on the relevancy of the charges the Sheriff commented that the legislation which resulted in the Dentists Act had set aside certain professions for certain people; the word 'dentist' was sacred to this body and no one was entitled to use it unless a member of that body. This legislation had for its purpose the preservation of innocent and gullible members of the public from believing representations that were made, and from trusting themselves to the skills of persons who pretended to be doctors, chemists and dentists, and who had

no proper skill or qualification. A great amount of mischief might be done to them and it was left to a private person sometimes, and in other cases to public authorities, to prosecute. In regard to the title to prosecute here, there could be no doubt whatever, except that the prosecutor seemed to be an Englishman. In a final conversation with the agents as to the nature of the plea to be tendered, the Sheriff said he did not think it was a serious case at all.

It did not require a gentleman from London to protect the teeth of the people of Dundee, as the Small Debt Court could do it as well. Mr Davie finally denied the charge and the case was adjourned until a later date for trial. At the subsequent hearing Mr Buchanan said he wished to controvert the statement made by the defence lawyer that this was merely a technical breach of the Act. Accused had pleaded guilty to using the words 'surgeon-dentist' on the windows of his premises during a portion of the time between July and December. The following are selected excerpts taken from the transcript:

> The Sheriff: Is it not rather an encroachment on the freedom of English speech to set aside the word 'dentist' for the use of 300 or 400 men? Mr Buchanan: There are some 3,000 or 4,000.
> The Sheriff: The English language would become very scarce of words by-and-by if every 3,000 or 4,000 people were to claim one single word. Mr Buchanan: There is no getting behind the Act of Parliament. The same principle applies to veterinary surgeons and chemists.[93]
> The Sheriff: There is no Act of Parliament against using the word 'doctor' except in a special sense. Mr Buchanan: There is an actual Act of Parliament here. ...using the words 'surgeon-dentist' does not form a merely technical breach of an Act which prohibits an unqualified person using the word 'dentist' at all.
> The Sheriff: He may have been in furnished apartments.
> Mr Buchanan: He has pleaded guilty to being a tenant of the premises.
> The Sheriff: Lodgers cannot meddle with landladies' windows.
> Mr Buchanan: Even if he had been a lodger and used the words he would have been liable under the Act.
> The Sheriff: If he used them; but if he merely looked at them.
> Mr Buchanan: If by the use of the words he induced people to enter his premises and operated on their teeth he would be liable.

> The Sheriff: He is not charged with drawing teeth. Mr Buchanan: He is charged with representing himself as a dentist, and he has pleaded guilty to that.[94]

After an exchange of views with the agents on the level of penalties imposed in previous prosecutions the questioning continued:

> The Sheriff: Acts of Parliament ought to have reason and justice at the back of them. Can you tell me what justification there is in reason for the imposition of a penalty on a man calling himself a dentist. Mr Buchanan: It is to protect the public.
> The Sheriff: That is to say,to secure to the public that the man who does the work of a dentist should be properly qualified? Mr Buchanan: Yes.
> The Sheriff: The public generally can protect themselves against people improperly skilled. Mr Buchanan: Probably, after experience.
> Mr Glenny [Defence solicitor]: My information is that there is only one registered dental practitioner in Dundee who is qualified by University training for the practice of dentistry.
> Mr Buchanan: I am afraid I must contradict my friend.
> The Sheriff: I do not see how it requires a University training to be a dentist any more than it requires such a training to be a cabinet-maker or a jeweller.[95]

The Sheriff then delivered a long and philosophical discourse on monopolies and the protection of the public. The professions of law and medicine were strongly fenced in as monopolies, because a special education and standard of attainment was required in the public interest to protect them. Particularly from people "...with zeal without knowledge, and the irresponsible advices and devices of swindlers and beggars.... ". [96] Returning to the issue he continued:

> ...That dentistry - that branch of the medical and surgical art which related to the care of the teeth - should be constituted a monopoly in the interest of specially qualified persons, but also in the interest of the public, he was very far from doubting ... no one should be induced to trust a single tooth, however ruinous, to an artist who pretended to have had a special dental education of the kind that was guaranteed by his being enrolled in a statutory register, when in point of fact he was not. On the other hand, he did not see why a joiner or a blacksmith or a barber, or anyone that could use pincers, should not draw a tooth if the

> person upon whom he was to operate was not deceived as to the nature and extent of his dental skill. [97]

Turning to the question of monopolies and alleged harm to the public, the Sheriff remarked:

> ...there was no reason to believe that this unregistered dentist ever did any harm to the public or any member of it ... he believed that the accused had rendered cheap dental services to the poor. He doubted if he had deprived any dental registered monopolist of any lucrative part of his business. At all events he did not feel bound to support any monopoly by the imposition of a vindictive punishment. ...[98]

The Sheriff imposed a nominal fine of one shilling and two guineas expenses, subsequently precipitating a considerable reaction from a number of sources. Writing in the issue of the following month, the editor of the Journal of the BDA had this to say:

> A Scotch Sheriff.
>
> The recent prosecution against an unregistered man in Dundee is interesting, not with regard to the issues involved, but with regard to the lengthy and extraordinary judgement delivered by the learned Sheriff. The terms of that judgement are a revelation, at all events to Englishmen who have been accustomed to regard Scotchmen as a shrewd and fair-minded race of men. The judgements of the Supreme Court in Edinburgh are often cited and always listened to with respect by those who preside in the High Courts of Justice in the Strand. Looking at the terms of the decision in this prosecution, it becomes impossible to extend the same consideration to the lesser luminaries of the Scotch Bench. A more woeful misconception of the real circumstances of the case or of the law it would be difficult to conceive.
>
> ... Obsolete arguments spun out by jocosity, on monopolies and the ability of joiners and carpenters to do dental work, are exactly the sort of obstacles which were successfully overcome by those who drafted the Dentists Act and worked for it to become law. ...[99]

The editor goes on to point out that after a committee of the House of Commons had thoroughly gone into the question, it was considered desirable in the interest of the public that those who practised dentistry should undergo a certain course of training.

It was just as much the duty of the Sheriff to follow the opinion of Parliament as expressed in the statute, as it was his duty to follow the reported cases of the superior courts, no matter how well versed he may deem himself to be in social philosophy:

> ...Just as the Sheriff argues about dentistry, so we might argue about the law. Counsel's fees are as fixed as the laws of the Medes and the Persians, and we cannot see him save through a solicitor, who also has his fees fixed, in many instances by the courts. Surely this is trade unionism with a vengeance. A doctor or a dentist can fix his own fees. The Sheriff would at once deal sharply with anyone not duly qualified as a solicitor or counsel who, either from philanthropic or commercial motives, gave clients 'cheap law,' and such law might be excellent in every way. Really the position is too absurd to be laboured. ...Of all the pains that humanity suffers from there are few that can beat a raging toothache.
>
> There are none which are more easily aggravated by unskilled and untrained treatment. Perhaps the learned Sheriff has never suffered himself. If he should suffer in the future we will charitably hope that he will not submit himself to the mercies of advertising quacks. [100]

The editor pursued the matter publishing the following excerpt from the BMJ:

> It is difficult to comment upon such a travesty of justice. ... In the Dundee case, the magistrate went out of his way, and by no means added to the dignity of his position, by treating all qualified men as monopolists. When will the law recognise that the Dental Acts and the Medical Acts were especially framed to distinguish between the qualified and the unqualified, the properly educated and the ignorant? It was not for the purpose of creating a monopoly that these acts were passed, but for the safety of the public from uneducated and untrained pretenders to the healing art in its various branches. [101]

In the 15 August issue of the same year, under the heading *The Sheriff of Bonnie Dundee*, the Sheriff was again in the news when he passed sentence on a Dundee dyer who had injured a police constable's eye to such an extent, that it was deemed necessary to remove it to avoid sympathetic trouble to the other eye.

Commenting on its removal, the Sheriff opined that he did not believe in 'sympathy' between two eyes, and quoted cases where his acquaintances had suffered eye injuries with loss of vision which had subsequently returned without treatment. The excerpt was taken from The Lancet which quoted the Sheriff as saying, "...It was utterly inconceivable by anyone that believed in the beneficence of nature to believe that the taking out of one eye could do anything whatsoever to save the other eye ". [102] Letters to the editors of the Dundee Advertiser and The Scotsman followed - reprinted in the Journal of the BDA - and short excerpts are reproduced below, one from Charles S.Tomes, MA., FRS., Late President of the BDA, Inspector for the General Medical Council of Dental Examination in the United Kingdom, and the other from someone who signs himself 'J.S.'.

Having described an outline of the case and acknowledged the fact that the Sheriff had acquainted himself with the words and spirit of the law, Tomes continued:

> ...As remarked by the Sheriff, 'it was no part of his duty to scrutinise the principles of justice which underlay a statute,' nevertheless, he virtually does so in the course of the case. The legislature has seen fit to secure to the public the power of selecting persons who received an appropriate education, and have - except in the cases of those who were in practice prior to the passing of the Acts - been tested by examination. ...[103]

The same principle, he continued, had been applied to law, medicine, dental surgery, veterinary surgery and in pharmaceutical chemistry. All persons who were not so qualified were prohibited from using certain titles which denoted the possession of these qualifications. It was not an isolated Act of legislation but a general principle adopted in this and nearly every civilised country. It was therefore absurd to speak of the monopoly of a word. Tomes goes on:

> ...That word, or combination of words, is a description, a designation of something particular, reserved for the use of those who are correctly described by it, and forbidden to others. ... it tells the public that the person using it either was in practice prior to 1878,

> and hence has at least eighteen years experience, or has been educated as prescribed by the qualifying bodies. ... [104]

The correspondent, 'J.S.', who wrote to the editor of The Scotsman expressed considerable surprise at the Sheriff-Substitute's unfortunate remarks, "...Coming from so high an authority ... and in such questionable shape as to be capable of grave and hazardous misconstruction... ". [105] He continues:

> ...Surely Sheriff Campbell Smith cannot believe that what he calls 'tooth drawing' constitutes the science of modern dental surgery, or that no surgical education is necessary for its legitimate practice, as it is in aural, ophthalmic or any other special branch of medicine. If such be the general principles he upholds, why should it not be applied to minimising the requirements of his own profession? Why should not the more simple and equally effective methods of Lynch law be adopted instead of observing all the pomp and circumstances of 'the bench,' or even the paraphenalia of a Sheriff Court? It surely does not require a 'University education' to entrap a pickpocket, or to enforce the mandate to 'move on'.
>
> The Sheriff no doubt means well, and acts on the strength of his own convictions. But it is interesting to see a man of his high and cultivated intelligence so forcibly illustrating, as regards the case under notice, that a little learning is a dangerous thing, whether in dentists or Sheriffs.
>
> I am &c., J.S. [106]

Sheriff Fyfe. on the other hand, sitting at Glasgow Sheriff Court in October of 1896, had no trouble dealing with J.H. Hatfield who pleaded guilty to contravening the Dental Act. Hatfield admitted displaying at his house at 5 Trongate, the words 'Surgeon Dentist', whilst not being registered under the Act. He was fined £5. [107]

Prosecutions against the unregistered were taking place throughout the United Kingdom, with decisions being handed down varying from conviction with the maximum penalty imposed, to the opposite extreme where the accused was fined a nominal sum, admonished or found 'not guilty'.

In the latter category was the Edinburgh case of Alexander Emslie, who on 4 March 1897, appeared before Sheriff Orphoot, charged with displaying the words 'American Dentistry' and 'Dental Office' outside his premises. After Sheriff Orphoot had listened to the evidence, he was fined three guineas with two guineas expenses. A similar case against T.Tenant Black was similarly dealt with. Emslie appealed against the decision and the Dental Record reported the judgement given by the Justiciary Appeal Court:

> Lord Justice Clerk said that the Act struck only at a person holding forth himself as being specially qualified to practise dentistry; it was not at the practising of dentistry. It affected them only to the extent of depriving them of the right to sue for remuneration. He could not find in the words displayed by the accused that he claimed to be possessed of any special qualification. If the accused could, without coming into conflict with the criminal law, abstract [sic] or put in teeth, he could see nothing in the statute forbidding him do so. Those words were just an announcement that the accused practised dentistry, and that was not struck at by the Act. [108]

The Court sustained the appeal, quashed the conviction and allowed the appellant ten guineas for expenses. Meanwhile,the dental press carried numerous 'letters to the editor' from resentful registered dentists. Excerpts from one such letter are quoted here as a typical example. The correspondent addresses what he considers were the three grave questions that dentistry had to face: advertising, covering and the unregistered dentist. The latter was the most important for three reasons, firstly, one unregistered practitioner begets others and often trains them, secondly, registered dentists cannot be expected to cease advertising if unregistered dentists cannot be stopped from practising and thirdly, with a few exceptions, dentists do not advertise from choice, but because they are forced to, by the mushroom dental concerns that spring up around them.

The writer is of the opinion that if actions were carried through to the House of Lords, the matter would be resolved, "...as the Dental Act was strong enough to punish any person or company ... no matter what words were used".[109] He goes on to relate one "of dozens of cases" which he knows of:

> ...The brother-in-law of a registered dentist carried on a practice under that dentist's name and flourished fairly well. Taking a walk around some docks a few miles from where he practised, he met a respectable dock labourer, whom he ultimately persuaded to pay him a sum of money (£30) to teach him to be a dentist. The ex-dock labourer is practising dentistry at the present time, and evidently to his extreme satisfaction. The brother-in-law of the dentist, for reasons better imagined than described, removed to another town (where there are some very large docks) some three or four years ago. I should not be surprised if he had converted a whole army of dock labourers into dental practitioners by this time.[110]

The writer goes on to the subject of advertising and relates his own experience:

> Two years ago I was in practice in a large manufacturing town; ill-health and severe competition ...caused me to sell out, and I commenced practice in a very small country town, no dentist being there. Two months after I started, a Limited Company opened a branch there, and scattered bills about periodically, insinuating that dentists were extortioners &c., but this company were philanthropists and supplied a complete set of teeth inlaid with gold for forty shillings, though to my certain knowledge they have charged as much as fourteen guineas for a black vulcanite set of teeth. ...A chemist in a neighbouring town also I have to contend with - an unqualified and unregistered practitioner who styles his place a dentorium and a dental depot. [111]

The writer was a *bona fide* registered dentist who had been in practice before the passing of the Dental Act and had twenty seven years experience. In a near-by town which he also visited, another dentist called and let it be known to the local trades people that he was 'a step higher' than the writer. This dentist apparently was an LDS,Ireland. The correspondent adds, "...if I ever go in for a diploma it will be one worth having, and I shall not go to Dublin for it... ". [112]

The letter concludes with the comment that there is more illegal practice to-day than ever, and many dentists advertise to keep pace with the quacks who surround and overshadow them, with their lying bills and advertisements.
"...Stamp out illegal practice, and advertisement by dentists will cease as sure as night follows day. " [113]

It can be seen from the tenor of that letter, which is only one of many appearing in the dental journals over the next few years, that there was intense antagonism between the registered and the unregistered. Moreover, the turn of the century brought further competition in the shape of limited companies springing up all over the country and specialising in extracting teeth and supplying dentures. At the first visit, the teeth would be extracted and some weeks later, the 'dentist' would return to take impressions to make artificial teeth.

One example of the operation of such a company is illustrated by a prosecution brought a few years later and reported in The Dental Surgeon of 12 November 1904. The respondent was one Oscar Farkasch, carrying on business at the Hygienic Institute, Elmbank Street, Glasgow. He was charged under the Dentists Act 1878 by dint of the fact that he was not a registered dentist. He pleaded 'not guilty'. Giving evidence, a former assistant-dentist said that Farkasch was the only partner of the firm that he knew of. The Hygienic Institute had one of the largest dentistry practices in the kingdom [i.e.,United Kingdom]. In one week the drawings were £180 and as far as he knew, no registered dentists were employed. A number of witnesses were examined including a private detective who claimed that the accused had tried to bribe him not to say anything detrimental in court. Giving evidence, Farkasch explained that there was another partner and that the business was run on the basis of payments by instalments.

Travellers were employed to 'influence' orders. He was not a dentist himself and had never claimed to be. There were as many as 150 employees including eight apprentices, two of whom were registered, and they supervised the unregistered. He also denied the bribery charge. Having listened to both the defence lawyer and the prosecutor, the Sheriff adjourned the case to consider the evidence. When the Court re-convened, His Lordship delivered the following judgement:

> ... the case was ruled by the decision of the High Court in the case of Emslie and Paterson, [Hon. Secretary of the BDA], and he must find that the prosecutors had failed in their complaint. Continuing, His Lordship expressed regret to have to come to this decision. It would have been for the public benefit if people like the respondent could be suppressed. The Dentists Act did not forbid the practice of dentistry by unregistered persons. If it did it should apply to the respondent. The Sheriff had no doubt in the sense of the Act he did practise dentistry, but he did not operate himself. He supplied the capital, by which he employed unregistered persons to operate. All the Act forbade was the use of the name,title,addition, or description implying that he was a person specially qualified to practise dentistry. It was to be regretted that the Act did not forbid the practice of dentistry except by registered persons. If it did he would say that the public would be saved much suffering at the hands of ignorant imposters. [114]

The final nail in the coffin of the Dentists Act of 1878 was well and truly driven home by a decision in the case of Bellerby v Heyworth and Bowen. This was a test case brought by an organisation known as The Incorporated Society of Extractors and Adapters of Teeth (ISEAT) on behalf of three unregistered dentists. ISEAT played an important role in the final negotiations which led to an amended Dentists Act. Briefly stated, Bellerby entered into an agreement with Heyworth and Bowen. The relevant clause stated that if either of the partners contravened the Dentists Act the partnership would automatically be dissolved.
Subsequently, all the controversial descriptions were displayed at the premises of the partners, and a prosecution took place. The decision of the Court was that a contravention of the Act had taken place and the partnership was pronounced dissolved.

At the subsequent Appeal in May 1909, this decision was reversed. Finally, the case was taken to the House of Lords and on Friday 10 April 1910, their Lordships affirmed the decision of the Appeal Court.[115]

There is no doubt that the decision was seen as a severe setback to the cause of dentistry. Writing in the British Dental Journal of 2 May 1910, the editor comments on the Lords' decision. "...It may, in a sense, be said that the Act of 1878, as to its penal and prohibitory clauses, is a dead letter; leaving us but the shreds and patches of empty titles ".[116] To add insult to injury, a further cause for resentment was the reference by their Lordships in delivering their judgement to dentistry as a trade. In the same issue of the Journal, a special article by the Chairman of the Penal Cases Committee referred to the decision "...as a public misfortune and a serious blow to the prestige and status of our profession... ". [117] He continued:

> ...It appears to me that the door is consequently open to the unlimited use of colourable of title and to practically unfettered statements as to ability and skill by the untrained and unregistered. Further, a premium is now placed upon a training insufficient to admit to the L.D.S. Diploma and upon non-registration; for registration will do no more than place the practitioner under the General Medical Council's authority, while the unregistered man, being free from all restrictions is, from the purely business point of view, far better off. ... [118]

Whilst there were other points of view, principally from the unregistered dentists, the majority of the registered dentists considered the decision nothing less than a charter for the unregistered, and once again dentistry was facing the same situation in the first decade of the twentieth century that it had faced prior to the passing of the 1878 Act. Meanwhile quacks and charlatans proliferated all over Britain, and in the next section the exploits of one of the most infamous will be examined.

5.7 Quacks and Charlatans: 'Sequah'- A Case Study.

Much of the material in this section draws on an article written for *Illustrations from the Wellcome Institute Library* by Schupbach.

Towards the end of the nineteenth century, quackery of all kinds was on the increase. One of the most notorious of the mountebanks was 'Sequah', arguably the arch prince of charlatans who first made his appearance in the 1890s. [119] He is described as, "...the most celebrated medical operator in Britain outside the capital... ". [120] Sequah started his medical career at Portsmouth in September 1887. In January 1888 he was practising at Brighton and in June 1888 in Dublin. Reports from these and other towns throughout the United Kingdom reveal the technique behind his triumphs:

> ...The inhabitants of the town would be shaken by the sound of a brass band and a bass drummer parading through the streets in a colossal golden carriage and handbills distributed by local gamins informed them that Sequah had arrived. ...[121]

Who Sequah was would be revealed at 3 o'clock in the afternoon and again at 8 o'clock in the evening at the place advertised, which was generally a circus ground, market place or town centre. At the appropriate time, Sequah arrived in a horse-drawn wagon dressed in the manner of an American cowboy accompanied by a troop of other cowboys and American ('Red') Indians in feathered headgear. In appearance he was tall and sallow and spoke with an American accent. He reminded one journalist of Fennimore Cooper's *Last of the Mohicans*.

Having mounted the golden chariot, Sequah began his work with an exhibition of tooth-drawing and, showing a set of over a hundred dental instruments, offered to extract bad teeth gratis and without pain from anyone who cared to step up. A queue would soon form, glad to save the fee of five shillings charged for the same service by a local chemist or

dentist. According to the reports of local papers the following is an account of the proceedings:

> ...Sequah strapped an electric lamp to his forehead and set to work with his forceps apparently removing teeth with astounding speed, fifty teeth in half as many minutes at Cardiff or at Hastings 317 teeth in 39 minutes - 8 per minute. The patient had scarcely opened his mouth before Sequah had pulled out a tooth, held it up to the crowd, put it under the patient's hat and sent him on his way. The operations were accompanied by the continuous playing of the brass band which distracted the patient and drowned any cries of pain. ...[122]

The speed of the performance caused the spectators much amusement, which was indeed the object. Having obtained the applause and goodwill of the audience he then went on to give a serious talk on dogmatism in medicine. Although doctors knew all about anatomy and physiology they could not cure disease. Medicine was still an inexact science. He condemned the fact that so little time was spent on therapeutics and drugs. He quoted examples of the discovery of quinine and cocaine from the Peruvian Indians.

This brought him to the revelation that he himself was in possession of two remedies that he had come across by studying the pharmacopoeia of the Apaches and other American tribes. He regaled his audience with tales of his adventures amongst the Indians, describing how he had discovered certain roots and herbs in Dakota and Montana which he had learned to combine with a special mineral water only found in the Far West. The result was a medicine called 'Prairie Flower', which contained ingredients unknown to medical science and which when used together with another Indian remedy, in the form of an embrocation, gave instant relief from rheumatism.

There followed a demonstration of the efficacy of the remedies on a 'volunteer' from the audience who had been suffering from rheumatism. The dramatic change in his condition was proof enough of the amazing properties of the cures. Sequah then offered to give the medicines free to

anyone who could prove that they could not afford the price. Then the real business began with the selling of the medicines. Sometimes people fought and shoved each other in order to get to the carriage to buy his cures which also included his 'Indian Dentifrice'. Invariably, Sequah would stop selling before the demand was satisfied. There would be more opportunities to buy Prairie Flower, Oil and tooth paste.

Several analyses were made of the medicaments and during Sequah's visit to Edinburgh in December 1888 the Edinburgh Evening Despatch commissioned the city's public analyst to analyse the preparations. He reported that the Indian Oil consisted of, "... oil (possibly whale oil) and turpentine, and possibly a small quantity of some essential oil...". Prairie Flower was "... aloes, alkaline carbonate (potash or sodium), alcohol and probably extract of capsicum or pepper, whilst the dentifrice was carbonate of lime [chalk] and starch ". [123] One fact which did emerge was that the preparations did not cure the rheumatic conditions as claimed. Many of the conditions were exaggerated and there was a fair degree of acting. The miracle cures were never subjected to any kind of follow-up and later accounts suggest that there was a prior arrangement with many of the 'patients'. [124] Turning to the tooth-drawing exhibition, a hostile witness reports as follows:

> ...I have seen the quack draw several teeth with great rapidity, and I have twice seen him make no less than ten efforts at one tooth without drawing it. He has then bundled his wounded patient off and extending his fingers towards the crowd in front, shouted 'ten' in such a way as to make his audience believe he had drawn ten teeth. ... [125]

The same witness also reported on another case as follows:

> ...A local dental surgeon was summoned to attend a man whom he found thoroughly prostrated as a result of copious haemorrhage and shock to the system...his condition was brought about by the treatment he had received at the hands of the "Yankee quack" who, in attempting to extract the lower right molar managed to close his forceps at random betwixt that and the first

> molar, which was sound,the former being carious. The consequence was that he smashed both teeth, leaving the roots embedded in the gum. An examination revealed that severe injuries had been inflicted, the alveolus [the bone supporting the teeth] being actually fractured, while the gum was extensively lacerated. This exposed pulp being in a state of hyperaesthesia [extreme sensitivity], gas had to be administered before the dental fragment could be removed with the aid of a surgeon who was called in. ... [126]

Nevertheless, there was no shortage of patients willing to show how brave they were:

> ...the novelty of having your teeth drawn with a trombone playing near your right ear, a big drum beating near your left, and the eyes of a delighted crowd following every contortion of your features has an attraction in it almost irresistible. ... [127]

The extraction was as much a trial of the patient's courage and good humour as of Sequah's dexterity. If they failed to cooperate, their cowardice not Sequah's incompetence would be presented as the cause. In order to attract publicity and good-will, he participated and contributed to many charities - he even had clergymen and mayors commending him for his good works. His advertisements were unusual too, and he published his own newspaper the Sequah Chronicle.[128] He made sure that when he left, the local pharmacies had purchased large stocks of his cures and the newspaper reports of his exploits were inserted in the local paper of the next town he would visit. For example:

> ...Sequah has been doing a roaring trade (Dundee), Sequah has fairly captivated the people (Oldham), Sequah is carrying all before him (Leeds), Sequah is attracting large audiences (Ipswich), Sequah has taken the city by storm (Lincoln). ...Sequah's preparations - 50,000 bottles already sold in Edinburgh. ... [129]

He was reported to have been in Edinburgh in December 1888 where a lady in the audience recognised him as her long-lost brother and therefore the son of an Edinburgh brewer. It was claimed that he was a medical student at the University but left before he completed the course to become a showman in the Wild West.[130]

But another account by a Dundee reporter in 1908 and one quoted in the Chemist and Druggist on 11 July 1908, was that Sequah had told him that he was a Scot born in the village of Bankfoot in Perthshire and simply had adopted the American name Sequah for professional purposes. [131] A considerable number of accounts of Sequah's exploits are reported in the Chemist and Druggist because of his activities in the field of patent medicines and his questionable dealings with the local chemists. These activities fall outwith the scope of this work, therefore only an abridged version has been given.

Returning to the identity of Sequah; his real name was William Henry Hartley,and he was probably born in Yorkshire in 1857. It soon became clear that there were several Sequahs active throughout the country, each one with his own exhibition; in other words, Hartley was operating a franchise business. [132] Many called themselves dentists; for example, William F.H.Rowe who toured as a Sequah. Another was Charles Frederick Rowley, also a Sequah. The organisation continued to grow with Hartley himself as Managing Director and in March 1889 it became a limited company with its head office in London. The lynchpin of the Sequah organisation was James Norman, an old fairground professional and proprietor of a travelling freak-show. Norman helped Hartley to recruit Sequahs and hire grounds and sites around the country. He was also much in demand as a trouble-shooter in the not infrequent disputes between the Sequahs and their associates. By September 1890 there were twenty-three Sequahs on the road throughout the United Kingdom.

Although Scottish towns had been visited on many occasions by the Sequah circuses, a special connection with Glasgow was established when Norman introduced into the business two young Glaswegians, Peter Alexander Gordon and his wife Betty. They had been part of Norman's travelling road show, in which they performed a mind-reading and clairvoyant act under the stage names of James and Esther Kasper. Peter

Gordon had a talent for public performance which was handed down in his family as he was the son of Dr J.F.S.Gordon, Episcopalian Minister of St Andrews, Glasgow Green. Dr Gordon was not only a scholar but also a vigorous and unconventional preacher who attracted huge crowds to his Sunday evening lectures. [133]

Kasper was given a job as secretary to the Sequah in Cork ostensibly to take charge of stock and accounting, but was also told to report every other day to London on the activities of the Sequah. After a number of incidents which he had handled well, he returned to London where he was appointed a Sequah and given his own wagon. He was given two weeks training in extracting teeth and a salary of £3 per week plus 12 1/2 % on all sales over £50. The contract obliged Kasper to carry on business "...in and through Great Britain and Ireland, the Colonies of Great Britain, Europe and the United States of America, Mexico, South America and the West Indian Islands... ". [134] Eventually as the business continued to expand, Sequah launched Sequah Ltd. as a public company with a share capital of £300,0000. (The scale of this flotation can be gauged from a comparison with that of Boots, the chemist, whose share capital in 1888 was a nominal £80,000). Amongst the shareholders were eighty men in the pharmaceutical retail trade, six surgeons, five medical practitioners, eleven clergymen - but no dentists.

Sequah performed in Edinburgh in the old Waverley Market twice daily in December 1888. Often fighting broke out between Sequah and the medical students whom he had attacked and vilified. The students would heckle, shouting, 'Science against quackery!' and it was only the intervention of the police that would prevent a riot.[135] Sequah and his employees were also involved in numerous appearances before the courts involving breach of the peace, assault and fraud. Many of the charges arose out of actions by Sequah's employees who frequently intimidated local chemists who would not buy stock from them. Window smashing was their favourite activity. Eventually Sequah's empire started to

crumble when the Inland Revenue caught up with him in connection with the Medicine Stamp Act, first introduced in 1783. Vendors of proprietary medicines were required to affix stamps whose value depended on the selling price of the medicine. Additionally, those who sold medicines had to have a licence to do so. Sequah was refused a licence because his mobile wagons were not in accordance with a newly-passed law that the licence was for a 'set of premises', and his wagons did not meet this description. His singular method of selling was now illegal.

Although the Medicine Stamp Act was the instrument which brought Sequah's activities to an end in Great Britain, another factor was that around this time fresh attempts were made to regulate fairs, stamp out freak shows and control other trades. There were rumours that the Government had used the new Act to destroy Sequah on behalf of some other faction, possibly the police, magistrates, the pharmacists or even influential medical men.[136] All had reason to regard him as a menace. Sequah turned his attentions overseas and sent Sequahs to Cape Town, Madras, Kingston, Jamaica, Buenos Aires and Gibraltar. In addition representatives were in Belgium, France, Spain and the Netherlands. Monte Video was also visited as was Ontario, Canada. There were even Sequahs sent to Java, the Straits Settlements, Burma and Japan. [137]
But competition and Government restrictions on medicine selling in ever-increasing areas gradually proved too powerful and the company was finally wound up on 12 October 1895. [138] The creator of Sequah, William Henry Hartley, died at the age of sixty-six on 16 January 1924 leaving the sum of £734. [139]

The Sequah story illustrates, to some extent, the perception of dentistry held by a considerable section of the population. Tooth extraction was still a subject fit to be seen at the Music Hall; an entertainment which, along with the exhibitions of 'laughing gas', had drawn the crowds in the first half of the nineteenth century. Dentistry was

not viewed as being an integral part of health care, it was more akin in many people's minds to the province of the corn remover and freak-show manipulator. Sequah's contribution had been to perpetuate this image by his superb showmanship, psychological insight and business acumen. He was a past-master in the use of these methods to exploit to the full the widespread gullibility of the majority of the public in the field of medicine and dentistry in this period.

An illuminating post-script to the Sequah saga is provided by the Journal of the BDA in November 1890.[140] The journal published an extract from the Medical Press and Circular which in turn quoted the Wexford Free Press. This paper reported the proceedings of the Kilkenny Board of Guardians. It appears that there had been a visitation of Sequah to the city of Kilkenny and the usual scenes had been enacted. The maimed, the halt, the lame and the blind assembled with crutches, eyeshades, splints and so forth as the evidence of their locomotor and other incapacities. Having been ushered into the Sequah carriage, they were "...rubbed with the prairie flower, restored to vitality and sent on their way bereft of crutches and rejoicing; and from that day afterwards they were seen walking the streets with gratifying agility".[141]

Three of these patients, however, were in receipt of poor-law outdoor relief because of their condition, and as they were now seen to be able to walk the streets and to work if they pleased, the Board stopped their weekly allowance. They now appeared before the Board to show cause against the stoppage. The first of them, confronted with the fact that he had been seen about the town without the stick which he had always carried as long as the Guardians subsidised him for doing so, pleaded that while Sequah was in town he had been obliged to get along without artificial aid, because if he had been seen using the stick he would have lost the daily wages that Sequah paid him. He asserted that the 'Medicine Man' from the Far West was in the habit of renting

cripples who appeared amongst the crowd, were duly hustled into the wagon, rubbed and 'cured' and got two shillings for every day during the visit on the strict condition that they carried no stick and walked with an erect carriage.

Another of the patients stated that if any of them absented themselves for a day from the show, he received an immediate post-card requiring his attendance. The article concludes with the proviso that the truth of the statements cannot be vouched for, bearing in mind that "...the word of an outdoor relief pauper is not good for much, especially when money is in the question, but we think it well to give our readers the opportunity of judging for themselves... ". [142]

In the next chapter, a number of factors will be identified which directly or indirectly were responsible for the increase in the incidence of dental caries in the late nineteenth and twentieth centuries. Allied to this incidence, was a significant rise in the demand for dental treatment. The close relationship between these components is discussed in parallel in the next chapter.

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Chapter 6

The Rise in Dental Disease. The Increasing Demand for Dental Treatment: The Factors Involved 1821-1921.

In this chapter, a number of causative factors which influenced the rise in dental decay and concomitantly, the demand for dental treatment are examined, establishing that there was indeed an increase in dental disease was in itself a stimulus to further demand. Although some causes may have been more influential than others, they are not listed in order of importance, but are presented in a sequence which is considered to reflect the pattern of development in dentistry during this period.

Nevertheless, priority is given to population increase, as this factor might be considered to have been a *sine qua non* for all subsequent developments; it is therefore placed first. Each factor played an important role in the overall development, interacting with, and having an effect on the others, to produce further responses and reactions.
They come under the following headings:

1. Population increase and demographic changes.
2. Changes in diet and manufacturing processes.
3. Socio-economic and socio-cultural trends.
4. Epidemiological surveys, social enquiries and reports.
5. Advances in science, medicine and dental technology, including anaesthesia.

6.1 Population Increase and Demographic Changes.

The population of Scotland at the 1821 Census was 2,091,521. The 1921 enumeration showed that this number had risen to 4,882,497, a percentage increase of 133%.[1] The geographical distribution of the population had also changed. In 1821, 27.5% of the Scottish people lived in towns with a population of 5,000 or more, whereas in 1921 this had increased to 61.3%.[2] Furthermore, the urban growth referred to in a previous chapter was becoming more concentrated in the Lowland belt and from 1841 onwards, the proportion of the population living in this region was never less than 87% of the total urban population. In 1921 it reached 88.5%.[3] As pointed out in a previous chapter, the population increase seen in the late nineteenth and twentieth centuries was probably more associated with a fall in the mortality rate, rather than as in England, a higher fertility rate.[4] Immigration was more than outweighed by emigration and has never been an important factor in Scottish demographic history.[5]

An important component of the mortality rates is the infant mortality rate. From the beginning of the nineteenth century until the third decade of the twentieth century, there were two relatively short periods of major change in the history of Scottish mortality. Flinn notes a first stage of "...a generally rising and fluctuating mortality, from the early 1830s to the mid-1850s; the second, of rapid all-round decline from the mid-1870s to the 1920s. "[6] Some idea of the sharp fall can be gauged from the fact that in 1790, the mortality rate for the Scottish Lowlands has been estimated at 186 per thousand live births. The figure for the whole of Scotland less the far North was 163.8. (The parish registrations for the North were not considered to be reliable by Flinn).[7] In the period 1920-1924 the infant mortality rate had fallen to 92.[8]

A further statistic of relevance to the increase in the demand for dental treatment was the expectation of life, which in 1790 was around 40 years. [9] By 1910, the figure was 50.1 for boys and 53.2 for baby girls.[10] A more germane statistic in the context of this work is the age-specific death rates for Scotland. In 1861, there were 38 deaths per thousand living in the 1-4 age group. By 1921, this had dropped to 13.9. In the 10-14 age group, the figure for 1861 was 5.2; by 1911 this had dropped to 2.6. A further reduction was recordedby 1921 in the 10-14 age group.[11] The significance of these values is that there was a greater number of people living in an age span who had the potential to be in possession of a practically full dentition - from five to sixteen years of age or, if the survivorship figures are considered, would be living in an age span which in all probability would require extractions and dentures. In either case there would be an increase in the demand for dental attention. On the following pages, Tables 6.1.1 and 6.1.2 illustrate these points.

Table 6.1.1: Infant Mortality Rates Scotland 1855-1924.

(Annual means of deaths under age one per thousand live births)

Period	Rate	Period	Rate	Period	Rate
1855-1859	118	1880-1884	118	1905-1909	114
1860-1864	120	1885-1889	118	1910-1914	109
1865-1869	122	1890-1894	126	1915-1919	106
1870-1874	125	1895-1899	130	1920-1924	92
1875-1879	120	1900-1904	122		

Source: Scottish Population History : Flinn, Table 5.5.9.

Table 6.1.2: Age-specific Death Rates Scotland 1861-1921.
(Decennial means of deaths per 1,000 living in each age group, both sexes).

Census year	0	1-4	5-9	10-14
1861	141.8	38.0	9.4	5.2
1871	143.5	33.6	8.7	5.2
1881	137.2	27.7	6.6	4.2
1891	147.3	24.8	5.1	3.4
1901	136.2	20.7	4.2	2.8
1911	110.8	18.1	3.8	2.6
1921	93.4	13.9	2.6	1.8

Source: Scottish Population History: Flinn, Table 5.5.8.

From the foregoing figures, it is clear that the pre-requisites for an increase in the demand for dental treatment are present: an increased population with increased longevity during the infant and adult dentate periods.

In the next section the effects of dietary changes on the dental condition of the Scottish population will be explored.

6.2 Changes in Diet and Manufacturing Processes.

It is a well-established fact that residual carbohydrates on the teeth are a predisposing cause of dental caries (decay).[12] Writing in The Lancet in 1983,Sheiham summed up the unanimous opinion which currently prevails. He quoted Bowen, who had delivered a paper at a symposium on dental nutrition, as saying:

> ...Evidence incriminating sugars has continued to accumulate from the results of epidemiological and animal research, and has now reached such proportions that no reasonable person would deny that frequent consumption of sugars by caries-susceptible humans will result in the development of dental caries. ...[13]

It is known that observant Greek and Roman physicians were aware that the symptoms of tooth decay were related to diet. Aristotle is said to have cautioned, "... that figs when soft and sweet, produce damage to the teeth because small particles adhere between the teeth where they easily become the cause of putrefaction... ". [14] It was also recognised that grape eating caused tooth decay. [15]

Sugars are soluble carbohydrates of fundamental importance in providing energy for the maintenance of life. Combined in chains they form starch, an important food store for energy and cellulose (the structural framework for plants) which by the process of photosynthesis builds sugar units from carbon dioxide and water. It is this stored energy which gives plants their major nutrient property and when consumed by humans is broken down by the body's metabolic processes.[16] Glucose is the most abundant sugar unit in nature, but sucrose is the most widely used food in the United Kingdom. It is composed of two simpler sugars, glucose and fructose. Other commonly found sugars are lactose, found in milk products including human milk, and maltose, used in sugar confectionery items. Investigating the connection between diet and tooth decay, many researchers have found that the type and site of caries has altered over the centuries corresponding to changes in dietary habits and in the preparation of food stuffs.[17]

In a classic series of investigations between 1971 and 1976, Moore and Corbett, traced the distribution of caries in teeth over a period of some two thousand years.[18] They examined the skeletal remains particularly the dentitions, of Anglo-Saxon, Romano-British, Medieval and nineteenth century inhabitants.

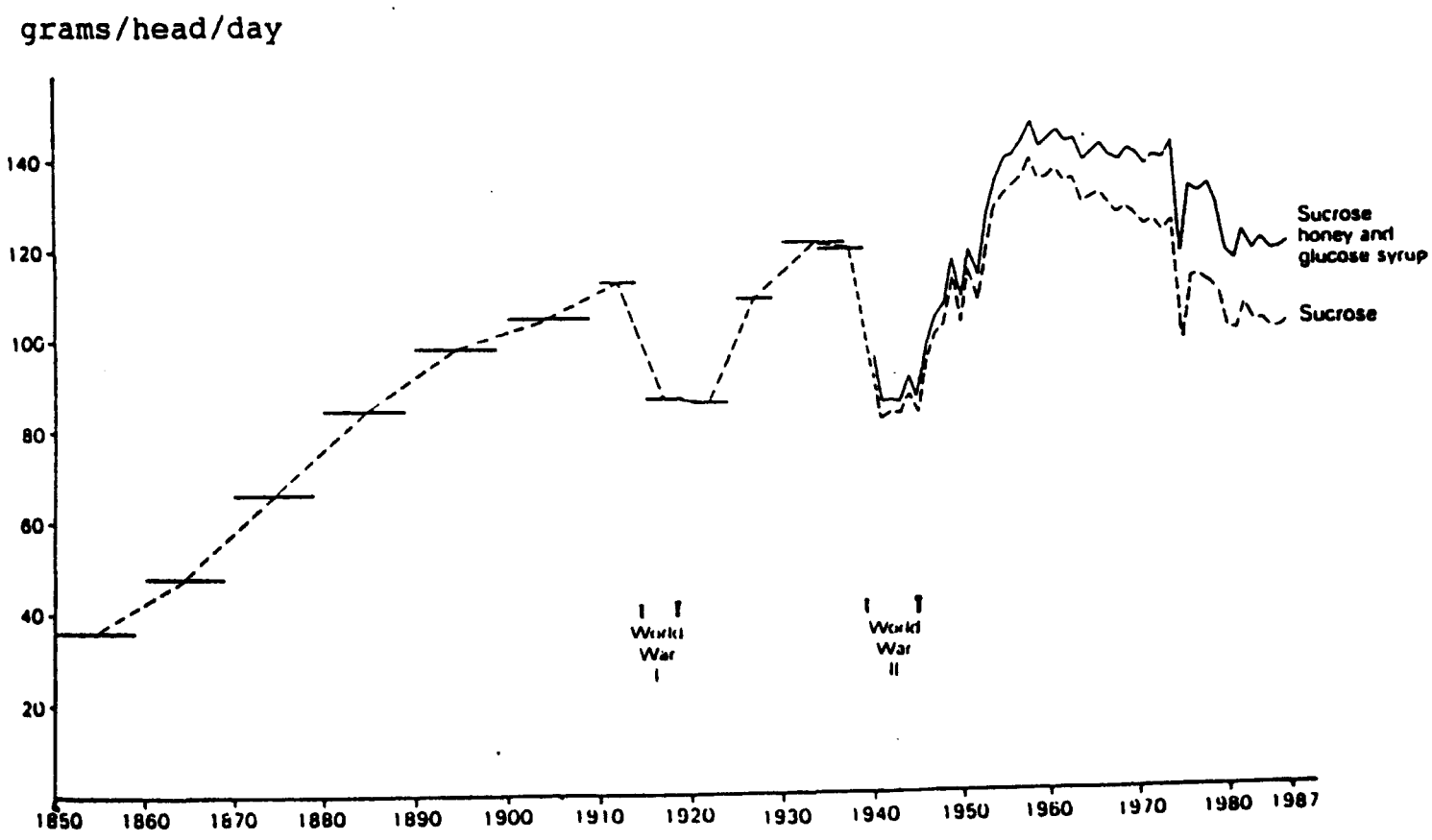
The first investigation on Anglo-Saxon dentitions showed that caries was commonest at a particular site on the tooth, the cemento-enamel junction (the area of the tooth where the surface layer of the crown the enamel, meets the surface layer of the root, at the neck of the tooth). This suggested that it was due to wear rather than from residual sugars. The researchers added that the lack of sugar in the Anglo-Saxon diet was an important factor in the rarity of cavities in the occlusal surfaces of the teeth (the biting surfaces).

In further papers, Moore and Corbett continued their investigations throughout the Romano-British and Medieval periods with similar findings. Seventeenth century dentitions however, showed evidence of patterns of carious conditions much closer to those found in modern Britain. [19] The total prevalence of caries had increased considerably and the contact areas (adjacent surfaces of the teeth in contact with each other), were now the most frequent site of caries. Cavities in the occlusal fissures had also increased in number. "...These trends accompanied changes in the diet resulting from increases in the consumption of cane sugar and finely milled flour, especially in the seventeenth century ".[20]

Researches carried out on the dentitions of the inhabitants of the nineteenth century, showed a continuation of the trends previously observed in the seventeenth century. Total caries had increased as had the frequency of caries at the contact areas and in the occlusal surfaces.[21] The authors point out that these trends had made only moderate progress pre-1850, but had intensified greatly after that date.

Consequent on the establishment of sugar industries in the New World, the increase in sugar consumption continued throughout the eighteenth century. By the early decades of the nineteenth century, sugar consumption had reached an annual level of 20lb (9kg) per head of the population. Consumption remained at this level for the next forty years because import duties kept the price high. But from 1845, there was a progressive reduction in the duty and sugar consumption rose rapidly to almost 90lb (40.5 kg) per head of the population by 1900. This trend continued up until the outbreak of World War I when a sharp fall occurred which lasted until the end of the period under review. Much of the sugar was eaten in the form of jam, treacle, biscuits, etc., and this aspect will be discussed later. The accompanying graph (fig.1) illustrates the sugar consumption from 1851 in grams per head of the population.

Fig.1. Supplies of selected sugars since 1850 expressed as grams per head of the population per day.



Source: Department of Health - COMA Report p82.

Although the location of the excavations in the above-mentioned research was Ashton-under-Lyne in Lancashire, similar results have been obtained from Scottish researches, although the chronological range of the studies is narrower. The first of these was carried out by Lunt who examined skeletal material at various sites throughout Scotland from the Neolithic to the Medieval period. Lunt's main conclusions are that "...the pattern of caries prevalence in Scottish pre-historic and mediaeval population groups was similar to some English populations from comparable periods". [22]

A further Scottish study has been carried out by Kerr on the skeletal dentition of a Scottish Medieval population.[23] The principal finding relevant to the issue under discussion, was that there was less caries at the root surface [of the tooth] than is found in modern times. It is suggested that factors which may be responsible for the observed differences are firstly, a lower intake of refined sugars as compared with modern times and secondly, the presence of heavy deposits of supragingival calculus (tartar attached to the tooth above the gum margin). The latter is usually a sign of poor oral hygiene.

Turning to the effect of changes in bread making, the nineteenth century witnessed major changes in the manufacture of flour and in the baking industries. Wheat prices in the first half of the century were high but began to decline after the repeal of the Corn Laws in 1846. This trend continued during the 1870s and 1880s due to mass imports from North America and India.[24] Accompanying this reduction in wheat prices, was a decline in home baking, in urban areas initially, which soon spread to rural areas. By the end of the century part of the 'servant problem' for the middle class was the difficulty of finding servants who could bake bread.[25]

A significant change in the production of flour was the introduction of more efficient roller mills, replacing the stone wheels and silk gauze to sift the bran from the refined flour. The availability of this finer flour led to the establishment of a flourishing biscuit industry.[26] As Corbett and Moore point out:

> ...Although all classes probably partook in the great increase in sugar and fine white flour consumption, it would undoubtedly have been the poorer people who would have been most attracted by these cheap but tasty carbohydrates. Indeed in many industrial areas bread and jam and sweetened tea were the staple diet. ...[27]

The dietetic value of bread had often been the subject of the dental journals and in the November 1899 issue of the British Journal of Dental Science the writer points out that what is sold as 'wholemeal' bread is made only from roller flour with the addition of some bran and contains very little, if any, of the wheat germ. On the other hand, stone-ground flour contains particles of all parts of a grain of wheat, making excellent bread of great nutritive value.[28] The writer then asserts that:

> ...From various experiments and investigations which I have conducted, I am convinced that the fact of the stone-mill having been so largely replaced by the roller-mill is the chief cause of the increasing prevalence of irregularities of the teeth and dental caries. ...[29]

The poor diet of the working classes was the subject of much comment in the late nineteenth century, especially by the medical profession. Tea, which thanks to people like Thomas Lipton and Andrew Cochrane, was now cheap and available to the working classes, was the basic diet of the poorer sections of the community. It was given to children of two years and upwards and always with lots of sugar.[30] Dispensary reports quoted by Pennington stated that, ".. many of the children's teething problems were due to debilitation from malnutrition,... their mothers lived on tea and a bit of bread...". [31]

Further evidence of this is furnished in the 17th Annual Report of the Glasgow Medical Mission, quoted by Pennington:

> ...The substitution of tea and white bread at breakfast time for porridge and milk, and at dinner-time for broth and potatoes, is a habit which not only continues to exist, but we believe, extends itself among the working classes of our city [Glasgow]. [32]

There is no doubt that the latter part of the nineteenth century saw the start of a swing away from the basic diet of porridge and potatoes to white bread and a variety of products containing sugars, such as biscuits, cakes and jams.[33] Potatoes though, were still an important item in the diet; the consumption rose from 176lbs per year in 1889-93 to 189lbs in 1904-8. It is suggested that the increase was due to the introduction of chips throughout the country, previously confined to Lancashire.[34] But perhaps the most important factor in the evolution of diet was the 'retailing revolution'. This term was applied to describe the transformation which took place in many areas of retailing in the half-century before 1914. [35]

The 1870s and 80s saw the introduction of the multiple-branch grocery firm, of which there were two kinds: the high-class carrying a large range of goods and the second rate geared to the working-class market. The latter concentrated on a limited range of items with mass appeal. [36] Their founders were themselves working class and so were aware of their problems. The most famous of all was Thomas Lipton, later Sir Thomas, who opened his first shop in Stobcross Street, Glasgow on his twenty-first birthday in May 1871.[37] Concentrating on a few items, he bought in bulk, obtaining advantageous rates and sold cheap, eliminating the middle-man wherever possible. The range of items he stocked were mostly imported foodstuffs, such as ham, cheese, butter, tea, bacon, eggs and later margarine. These items with bread were becoming the staple diet of the working class. [38]

By 1919 he had 24 shops throughout Scotland with 12 in Glasgow alone, and soon branches were opened in Belfast and many English cities. It was not for nothing that he was dubbed 'King of the Dairy Provision Trades'.[39] Other Scottish grocers whose names became household words were Alexander Massey, Andrew Cochrane, William Galbraith and the Templeton brothers, all supplying a more prosperous working-class with an ever-expanding range of food-stuffs, which included jams, jellies, treacle and tinned milk. The latter, when sold as 'condensed' milk, was, at 8d per tin bought in preference to liquid milk at 2d per pint. The former could be diluted with water to produce 5 pints or more, and from 1870 onwards, was despite warnings, fed to infants and children as a substitute for fresh milk. It generally contained little more than a solution of cane sugar.[40]

Although the diet had become infinitely more varied as compared to that of the sixteenth and seventeenth century, still many of the poorer working-class suffered from poor diet and under-nourishment.[41] Deficiency diseases, particularly the lack of vitamins and trace elements, cause systemic conditions which affect the teeth and oral tissues. These do not come into the category of cariogenic substances - likely to cause caries - such as the sugars.

Having established that there was an abundant supply of cariogenic food-stuffs, the social, economic and cultural milieu will now be examined.

6.3. Socio-economic and Socio-cultural Trends.

The latter part of the nineteenth and beginning of the twentieth century saw the mass of the Scottish people with more money than they had ever had before. Although there was still considerable poverty, there was also a real improvement in living standards.[42]

In the period 1850-1914, wage trends in Central Scotland could be divided into three phases. From 1850, it was a low wage-area; half-way through the period, wages were near the national level, and by the early twentieth century, it was one of the four highest wage regions in Britain.[43]

The Central Region, as defined by Hunt in his Regional Wage Variations in Great Britain, comprised the counties of Dunbarton, Renfrew, Stirling (now Central), Lanark, Fife, Linlithgow (now West Lothian) and Lothian, (now divided into East Lothian and Mid Lothian) which included Edinburgh. The population of this region at the 1921 census was 3,380,450 or 69% of the total population of Scotland.[44] This area also contained the majority of the dentists (see earlier remarks). In the context of this work, 'average wages' are used as a broad guide to the general economic situation. It might be more appropriate to use the term 'general wage level'.

The wages in each trade or occupation varied considerably according to a number of factors, discussion of which is outwith the scope of this work. However, one element which was and still is deemed important was demand for labour. Hunt says:

> ...There appears to be a fairly strong case for regarding the level of demand as a major determinant of wages in Central Scotland. The long-term demand for labour was buoyant and wages were characterized by long-term improvement relative to other parts of Britain. ...[45]

As a general guide to comparative earnings, agricultural wage rates are considered to be "... the most useful single guide to wage levels in different parts of Britain...". [46] Taking these as a general indicator, Scottish agricultural wages were on a par with the British average in the period 1867-1870, but above the average in both 1898 and 1907. If Northern Scotland is omitted from the figures, Central and Southern Scotland showed wage rates that were above the G.B. average for all three periods.

Southern Scotland was consistently above the British average. Table 6.3.1 illustrates these points.

Table 6.3.1: Scottish Agricultural Wage Rates 1867,1898,1907.

Scottish Regions	Earnings per week		
	1867-1870	1898	1907
Southern	15s	18s	19s 4d
Central	14s 3 1/2d	19s 4d	20s 2 1/2d
Northern	13s 2d	16s 3d	17s 6 1/2d
Scottish Average	**14s 1 3/4d**	**17s 3d**	**19s**
G.B. Average	14s 1 3/4d	17s 2 1/2d	18s 2 1/2d

Source: Regional Wage Variations in Britain 1850-1914. Hunt, p64.

Although agricultural wages increased in the period 1921-1924 by 68%, [47] the index of consumer goods and services also rose, by some 75%, so that as far as these workers were concerned this was a period where their purchasing power declined.[48] Nevertheless, in all seven occupational classes as defined in the census of 1951, average wages for both men and women in 1922/24 were 196% of 1913/14, thus there was a real increase in spending power.[49]

Proof that earnings were being spent on the provision of dental treatment is difficult to supply directly. There is no evidence from private practitioners as to the amount of work they carried out in any given period, unlike the dental hospitals whose annual reports gave a considerable amount of information on the numbers of patients treated (a topic which will be considered in the next section). Consequently quantification of the amount of dental treatment provided by dentists is not readily available, even though individual dentists would keep some kind of records.

However, some indication can be obtained by studying dentists' incomes over a period. The average income for a dentist in 1913/14 was £368 per annum whilst in 1922/24 it rose to £601. [50] If this rise was due to inflation alone over the period, the value expected would have been £408. It can be seen that there was roughly a 50% increase on this figure which, broadly interpreted reflects an increase in the amount of dental treatment carried out. [51]

Increase in spending power was one factor; reduction in family size was another. [52] According to Hamish Fraser, "...No social development of the last century has been so important for the welfare of the country's inhabitants as this phenomenon...". [53] Although largely confined to the middle and upper classes, the tendency towards smaller numbers was beginning to show in the working man's family. The introduction of compulsory education in Scotland in 1872 was a contributory factor; more children had a better education and greater knowledge as a result. There was greater independence for women and a desire for higher personal consumption. All these factors acted as stimuli for further expansion in these fields, just as the increase in the amount of dental decay led to an increase in the demand for dental treatment.

A rising standard of living meant that a greater number of Scots than ever before had a surplus to spend on more varied food, on a wider range of clothing, on more elaborate furnishings for their homes and a great variety of leisure pursuits. "...For the first time most people had a choice of how and where to spend their money...".[54] The purchase of dental treatment was about to become one more commodity among many in the demand for goods and services.

The first decades of the twentieth century brought considerable advances in technology affecting every-day life, although the outbreak of World War I was to leave an indelible scar on the British people.

On the domestic front, lighting by gas was giving way to electricity. One advertisement pronounced, "Electricity - The Healthy light, no fumes - no smoke...". [55] A further, full page advertisement in the Glasgow Herald of April 1920, for "...electric lighting for offices, homes and shops ...", carried the following legend:

> ...You need not switch it on a second before you want it, nor keep it alight a moment longer than your work or play requires. All electric light users acquire the "switching-on-and-off" habit. It is an economy you cannot practise with any other form of lighting. ... [56]

On the same page 'electric vacuum cleaners' were being sold at prices ranging from 14 guineas to £25. At these prices the average unskilled worker would require seven to twelve week's wages to purchase one. The 'situations vacant' columns of the Glasgow Herald for 1910 carried advertisements for vacancies: in the spirit trade, 30s per week for a person aged 26; a cutter for tailoring, 36s per week; a clerk for a structural firm was offered 30s whilst a flavour of a quondam age is conjured up by an advertisement for a coachman at a wage of 22s per week.[57]

The increase in earnings between 1910 and 1920 is well illustrated by a perusal of the Glasgow Herald for 1920. The spirit trade was now offering 90s per week, albeit for a charge-hand in the Partick district of Glasgow, whilst a barman was wanted at a wage of 35s per week. A 'smart lad' required for an 'office in town' was offered a salary of £40, presumably per annum whilst a cashier and bookkeeper for 'a law office in town' could expect to receive £200 a year. [58] At the other end of the earnings spectrum, members of the professional and upper classes could inspect the latest '1920 Maxwell' motor car being sold for £500. But other models (for example, the 'Supreme Sunbeam') were priced at from £850 to £1,400. Other cars on display at the 18th Scottish Motor Show held in the Kelvin Hall from the 21st to the 31st January 1920 were Rovers, Arrol-Johnstons and Humbers. Albion lorries and the 'Argyll' cars were

being made in Glasgow, the latter models at the Hozier Street works.

The motor car in 1905 was still something of a rarity; nevertheless, 16,000 private motor vehicles and 9,000 goods vehicles had been sold in that year. By 1920 this figure had increased to 187,000 and 101,000 respectively,[59] a further indication of the rise in the standard of living, at least among the upper and middle classes. But the greatest expansion was seen on the railways, from the outset a popular and relatively inexpensive method of travel in the latter half of the nineteenth century. By 1846 the railways covered 2,441 miles of Great Britain and carried 30.4 million passengers. These figures increased to 20,312 miles of track open and 1,579,000,000 passengers carried in 1920.[60]

Entertainment in the form of classical music was provided by the Scottish National Orchestra (reserved seats 12s, 7s and 4s9d), whilst the unreserved were 3s and 2s. The Glasgow theatres were in full swing with attractions at the Theatre Royal, King's, Pavilion and Princess's. The Empire featured 'Red Riding Hood' with Miss Florrie Forde whilst the Coliseum staged 'Jack and Jill' with "... that bad lad George Formby".[61] For home entertainment there was the gramophone; records and needles could be purchased from Patersons Sons and Co. Ltd., Glasgow, where the would-be purchaser could listen to the records "in specially constructed booths" before buying.[62] Meanwhile Lipton continued his advertising campaign in the Glasgow Herald announcing his latest prices for Lipton's Jams, 1lb for 11 1/2d 2lb for 1s 9 1/2d.[63]

A further reason for seeking dental treatment has been suggested by Hillam. She put forward the idea that it had become fashionable to visit the dentist, many young people went because of vanity.

Certainly there were numerous advertisements in the press offering dental products guaranteed to beautify and improve not only the teeth but also the appearance.[64] The Glasgow Herald of November 1921 carried a quarter page advertisement by the "Pepsodent" company extolling the virtues of their latest tooth-paste. Having delivered the message that "cleaner and whiter teeth was now available to millions ", it went on to describe how the results of dental science had been incorporated into their new tooth-paste. A short excerpt illustrates the message. "...These results mean prettier teeth, cleaner teeth, better teeth. See them and judge for yourself. They may lead to benefits life-long in extent...". [65] Those who would like to try the new tooth-paste could have a tube sent free by filling in the coupon provided.

Popular works on the care of the teeth were not unusual in the previous century and one article reprinted in the journal Dental Cosmos in 1899 is an outstanding example of the approach. It dwells on aesthetics as well as the benefits to health and was written by the Rev. J.O.Bevan. It was entitled, Dental Hygiene, Especially in Relation to Children and Schools. The subject-matter is divided into four sections: Appearance, Health, Comfort and Happiness and Success in Life. In the section dealing with 'Appearance', the author states:

> How detrimental to good looks is the loss of teeth, or the possession of those which are irregular, or in a state of decay. When one is led to 'wreathe the face in smiles' what is more unsightly than to disclose the secrets of a charnel-house? Again how materially it affects women in respect to their power to charm. 'The glory of a woman is her hair'; yes, but equally so, the glory of a woman is in her teeth - they are an essential part of good looks. The prettiest fairest face is spoilt by a bad or imperfect dentition. The poets have discovered this, and have always endowed their heroines with 'rows of pearls' or 'sets of gleaming ivory.' [66]

Under 'Health,' the writer emphasises the connection between bad teeth and the proper mastication and digestion of food and that among the products of decay will be an offensive and foetid breath: "...What's more distressing to oneself or noisome to one's dearest friends! What an interference with the exhibition of all those sweet tokens of affection rendered by wife to husband, parent to child!...". [67]
Section three on 'Comfort and Happiness' describes how decay affecting the nerves (of the tooth) "... causes acute and even intolerable pain - interfering with our powers of taking and assimilating food and rendering us incapable of thought and action". [68] In the section entitled 'Success in Life', the emphasis is on the effect that the appearance of the face has on the potential employer. "... Every face is imperfect when the mouth is imperfect..." and how important it is for people such as clergymen, lawyers, members of parliament etc. not to be "... handicapped by a lisp or a thick and indistinct utterance.. .". [69]

These defects were mainly due to defects in the dentition. The author then goes on to enumerate the pre-disposing and immediate causes of dental decay. He highlights in particular "...the use of soft pulpy food, as well as of emasculated and decorticated food-stuffs, such as highly refined flours and sugars...". [70] Having stressed the importance of prevention the writer advises both parents and teachers that the teeth of all pupils be examined at last twice per year. Considering that the article was written almost a hundred years ago, its farsightedness is remarkable in that it contains much of the material being taught today in the sphere of dental education.

Among other popular works to appear were Rules to be Observed in the Care of the by Teeth by J.Rayner published in 1902 and Our Teeth, How Built up, How Destroyed, How Preserved by R.D.Pedley and F.Harrison in 1908. The BDA brought out a leaflet on The Preservation of the Teeth in 1906 and this was followed by another publication by R.D. Pedley in 1910, The Care of the Teeth During School Life.

In 1912 a publication appeared entitled Unemployment and Diseases Caused by Decay and Loss of Teeth by a 'Dental Surgeon'. During World War I, How to Take care of your Teeth appeared as part of the Soldiers Handbook Series in 1917.[71] The popular magazine Tit-Bits carried snippets of information on the care of the baby's teeth:

> Many mothers do not recognize the fact that a baby's teeth should be cleaned, not only as soon as they arrive, but even long before - as soon as the baby itself arrives in fact. Many a chubby little face is kept shining with scrupulous cleanliness on the outside, but it is really more important to keep the inside of the mouth clean than the outside. ...[72]

Again, advice on the treatment of 'hollow teeth' is given in another issue of the same magazine:

> ...A hollow tooth becomes a receptacle for fragments of food and unless they are removed, they undergo decomposition making the breath offensive. The use of a toothpick does not suffice. One must use a brush and some antiseptic powder or wash. ...[73]

The article goes on to describe how to make a tooth powder and remarks that its use "... will also tend to arrest the spread of decay to other teeth...", [74] an indication that the writer knew little of the current ideas on the causes of tooth decay. But the advertisements for tooth-paste also ignored the known facts in the interests of selling their products:

> Has no one been struck by the fact that in spite of the regular daily cleansing with tooth powder and tooth pastes the teeth (and particularly the back teeth) frequently become decayed and hollow? and is that not a convincing proof that tooth powders and tooth pastes are completely inadequate? ... the absolutely certain effect which Odol produces has been scientifically proved. ...Proper care of the mouth and teeth is therefore extremely simple. You only have to accustom yourself to rinsing your mouth daily with the dentifrice Odol. [75]

Significantly, in these advertisements, there is no advice to consult a dentist. It is only in the 1920s that the makers of Forham's -'checks pyorrhoea'- paste, advise that, if, "...gum shrinkage has already set in, use Forham's according to directions and consult a dentist for special treatment...". [76] The attainment of beauty linked to romance, however, was the magnet used by most advertisers.

Inside the front cover of the Home Magazine, the makers of 'Vinolia' tooth-paste ran a series of advertisements on the theme of beautiful women in fiction. One such heroine apparently was Amy Robsart:

> ...The love story of Amy Robsart holds a wealth of both romance and tragedy. Beautiful indeed was she - very lovely in the happiness of her marriage; still lovely but 'like a broken lily', when her happiness and even her life were sacrificed to the ambition of her husband and the deceit of the treacherous Varney. ...
> ...The milk white of the necklace which she wore, the same which she had just received as a true-love token from her husband, were excelled in purity by her teeth and by the colour of her skin. ...
> .....
> Beauty is always enhanced by sparkling white teeth. ...the use of Royal Vinolia tooth paste keeps the teeth sound and glistening white. ...[77]

These few examples give some idea of the then current trend towards dentistry as a fashionable pursuit. But, only the better-off could afford the luxury of tooth-pastes and dental treatment for cosmetic reasons.

Having sketched the broad social, economic and cultural factors, discussion now centres on an examination of the evidence to support the contention that there was an increased need for dental treatment.

6.4 Epidemiological Surveys, Enquiries and Reports.

During the latter part of the nineteenth century, the dental journals repeatedly carried editorials on the declining state of the nation's teeth. One example taken from the British Journal of Dental Science for June 1885, gives an indication of the prevailing situation:

> ...it is a melancholy fact that the teeth of the lower-middle and lower classes of Society are as a rule hopelessly decayed and past redemption long before the limits of middle-age are reached ... even the most casual observation made on the patient's oral cavity reveals a most calamitous state of affairs. ...

The quotation, taken from a hospital report, continues:

> teeth stunted,chipped and discoloured to a most hideous extent are found together with stumps of teeth broken off at the alveolar edge. The gums swollen and often the seat of more or less pyorrhoea, while when the teeth have survived the ill-usage to which they have been subjected, they are almost buried beneath in crustations of tartar. So foul are the emanations from the breath of an average hospital out-patient that we are tempted to enquire how the victim can himself endure the charnal house exhalations which he carries about with him. ...[78]

Whilst this state of affairs was well known within the dental profession, the situation at community or national level was unknown, or more precisely had not been recognised. This ignorance of the amount and distribution of disease within communities, began to be dispelled with the development of the new science of epidemiology, concerned with the identification of disease, its distribution and methods of control. . Epidemiology was to prove an important factor in the issue of the medical and dental health of the nation. Responsibity for the health of the community now rested on the newly appointed Medical Officers of Health (MOH). They were also responsible foe epidemic control and sanitation etc. The first MOH to be appointed in Britain was in Liverpool in 1847.[79] In Scotland, it was not until 1861 that Henry Duncan Littlejohn was appointed by the city of Edinburgh, whilst

Glasgow followed a year later by selecting William Tennant Gairdner for the post on a part-time basis.[80]

Dentists were slow to follow their medical colleagues into the field of community health, but the first unofficial epidemiological survey in dentistry can be said to have been carried out by William Macpherson Fisher, a Scottish dentist from Dundee. At the Annual General Meeting of the BDA held at Cambridge in August 1885, Fisher read a paper on The Compulsory Attention to the Teeth of School Children.[81] In it he drew attention to state of the childrens' teeth in this country, especially those of the working and lower middle classes. Fisher related to the meeting the results of inspections carried out on board the *Mars*, a training ship for homeless and destitute boys situated in the Firth of Tay. His minute examination of every boy's teeth revealed that out of 380 boys, only 80 had perfect mouths; 300 needed the care of a dental surgeon. Fisher went on to point out that these boys were well looked after and:

> ...are in receipt of everything which is possible to develop a strong and burly type of manhood ...there is not one in this country where I would expect to get a better average of good teeth than in these boys. [82]

His dental findings with girls drawn from similar backgrounds to the boys, revealed that about 75% required treatment. Fisher goes on to point out that the cases he brought to the notice of the meeting were not exceptional:

> ...You will mark that I have not taken exceptional cases but the reverse. Those children I have brought under your notice are drawn from a portion of our country where bone and muscle are supposed to be second to none. They are all clean, well-housed, clothed, regularly dieted, and living under the best circumstances for tooth development. ... [83]

That there was a connection between the dental health of school children and the needs of the military became clear to the Government in the latter half of the nineteenth century and the first decade of the twentieth.

Disquiet and misgivings about the state of the nation's health followed reverses suffered by the British forces in the South African Wars of 1880-81 and 1899-1902. The first official comment came from the Director-General of the Army Medical Services, Sir William Taylor in 1903. In a Report to Parliament he said:

> A deep interest has been aroused, both in the lay and medical press, by the writings of Sir Frederick Maurice [Inspector-General of Recruiting] and others, who have brought into prominence certain observations pointing to the fact that there is an alarming proportion of the young men of this country, more especially among the urban population, who are unfit for military service on account of defective physique. ... [84]

The survey showed that sixty percent of men offering themselves to the Army were unfit for service due to a number of causes. Lack of dental fitness now assumed a prominence as a cause of rejection. In 1902, out of eleven categories, it had become the second highest cause after 'under chest measurement'. Commenting on this fact the Director-General says:

> ... It will be observed that bad teeth and flat feet, causes of rejection to which considerable importance was attached in Sir Maurice's paper in the 'Contemporary Revue,' occupy a comparatively low place in the list. But with regard to loss or decay of teeth, it must be pointed out that the numbers rejected on this account during the past 4 or 5 years have shown steady increase, until this cause of rejection has come to regularly occupy a high place on the list. Whether the increase in the rejections for bad teeth is an indication of increased prevalence of physical unfitness is open to question, the increase may partly, at least, be due to the more common use of articles of food which readily undergo acid fermentation, and partly also to examining Medical Officers having gradually come to place a high value on soundness of teeth as a matter of the greatest importance in its relation to the maintenance of the physical efficiency of the soldier on service. ...[85]

The following table is reproduced from the report:

Table 6.4.1: Causes of Rejection on Inspection with ratio per 1,000, 1891-1902.

Cause of reject.	1891	'92	'93	'94	'95	'96	'97	'98	'99	1900	1901	1902
Under chest meas.	93	96.	109.	110	126	140	89	74	66	60	50	57
Defective vision	40	42	42	43	40	41	41	43	42	36	36	39
Under weight	33	28	40	40	37	36	46	35	34	26	25	22
Under height	27	33	33	29	29	29	25	22	20	15	14	12
Imperfect debil.	18	10	9	5	4	4	4	5	6	5	3	4
Disease of veins	16	16	17	16	16	16	15	16	15	12	14	12
Disease of heart	16	14	18	20	21	19	18	17	16	13	17	17
Defects of extr.	16	17	14	17	18	18	18	18	14	11	10	12
Varicocele	13	12	13	14	12	13	13	12	12	11	14	13
Flat feet	11	10	12	15	13	18	17	12	12	11	14	13
Loss or decay of teeth	11	15	15	16	18	20	24	26	25	20	27	49

Source: Memorandum [Cd1501] 1903, p6.

(Note. In order to accommodate all the information, the figures have been rounded up or down to the nearest whole number.)

As a result of the above memorandum, an inquiry was authorised on the subject of the nation's putative physical deterioration. Meanwhile, a Royal Commission Report on Physical Training (Scotland) was published in 1903. Commenting on the need for the Report, Hamilton remarks that its *raison d'etre* is not clear, but points out that one reason may have been the Government's fear that a physical decline would lead to a national decline. He continues, "... A further factor in the new governmental concern was the growing power of the working class who had obtained the vote in the reforms of 1885".[86] Hamilton adds, "... some riots in Scotland and England were a reminder to government of the lack of social insurance and health care for that class, a group that also provided the bulk of the soldiers for the forces". [87] Perhaps a more cogent reason suggested by Hamilton was that Scotland was a highly successful recruiting ground for the Army.

Thus the first statistical evidence on the inferior physique, and concomitantly the poor state of the teeth of the working class came from Scotland, so starting off what was to become the subject of a national debate.

Even before the publication of any report and in the aftermath of the Boer Wars, the Dental Record reported the comments of a rejected Army recruit. He wondered what all the fuss was about; "...he was going to fight the Boers not to eat them ". [88] Giving evidence to the Royal Commission on the Physical Training Enquiry, Mr Robert Wilson Bruce LRCPS(G) commented on the nature of the diet in one of the homes he visited:

> ...the dietary in three of the stated homes is very satisfactory, but I am all but certain that tea was more frequently used than my informants cared to admit. A meal which is easily cooked though it is of low food value, is preferred to one of richer nourishment which takes time to prepare or trouble to cook. It is largely from that cause that porridge,broth and potatoes have disappeared from the meals of the poor. Bread,cheese, ham, jelly and butter with tea are the articles out of which most meals are formed. ...[89]

If these items seem familiar it is because they were the major stock-in-trade of the multiple grocers mentioned in a previous section. Apart from diet, the enquiry concentrated on the type of home in which the children inspected lived. The main findings of the Report were that the number of rooms furnished a good indication of the social status of the children, and that children who lived in three or four-roomed houses were better developed and healthier than children drawn from two-roomed houses.[90] As a consequence, the Commission were of the opinion that, "...We cannot doubt that the quality of the houses where the children live corresponds among other adverse factors with the quality of food they receive".[91] A footnote reads:

> The large number of children in both towns [Edinburgh and Aberdeen], who present decayed teeth is remarkable but the bearing of this upon physical education is an indirect one. [92]

The Report contained two tables comparing the teeth of school children in Aberdeen and Edinburgh. In Aberdeen the children were drawn from three and four-roomed houses, whilst the Edinburgh children came mostly from two-roomed houses. In the latter city, more than a quarter of the children had unclean teeth; only 5% used a toothbrush. Out of 591 cases examined with primary teeth, 571 were found to have several decayed - 4.5 per child. The permanent dentitions examined were slightly better with an average of 2.5 decayed teeth. In the Aberdeen schools the situation was no better, although 12% brushed their teeth daily. The average number of decayed milk teeth ranged from 2.8 to 4.8. The average number of decayed permanent teeth ranged from just over 2 in the younger age groups to just over 3 in the older groups.[93] If anything, the decay was worse in this group.

The Report recommended *inter alia*, that School Boards should have the authority to give medical advice and assistance in the supervision of schools, keep systematic records of physical and health statistics and that a small number of medical and sanitary experts should be added to the inspecting staff under the Education Department.[94] In the following year, 1904, the Interdepartmental Report on Physical Deterioration was published.[95] This was a comprehensive survey covering a variety of issues from overcrowding and smoke pollution to the provision of crèches and the establishment of school courses in cookery, hygiene and domestic economy for older girls. The recommendations covered 53 topics and considering that it was published under the auspices of a Conservative administration, it was remarkably socialist in its tenor. The state of the nation's teeth figured prominently, no doubt because the memorandum highlighting the rejection of army recruits due to bad teeth formed part of the evidence. The following quotations are taken from the Report:

> ...There is no doubt 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...the real cause of dental degeneration [was due] to the change that had taken place in the character of the food in common use. ...[96]

On behalf of the BDA, Mr W.H.Dolamore laid before the Committee a statement of the results obtained by a Committee of the Association on the condition of school childrens' teeth and a Report of the Hygienic Committee of the Association on the alleged increase in dental caries; both confirmed the previous opinion. [97] Continuing, Dolamore went on to say that:

> ...He had no doubt that bad teeth were a condition of the feeding that accompanies high civilization. The ruder and coarser sorts of food at one time in use not only kept the jaw in action ...but had the effect of a tooth brush in keeping the teeth free from the settlement of toxic agents. ...[98]

It was generally agreed that although bad teeth often accompany deterioration of physique and are frequently the result of bad conditions in childhood, there were no grounds for associating dental degeneracy with progressive physical deterioration. The Report goes on to comment on the results obtained from dental examinations at two Edinburgh schools:

> ...It is not a little curious that the ratio of defective permanent teeth per 1,000 children was 158.2 in the school for children of well-to-do people, and 273.2 in that for the children of a better class, professional men and merchants. ... According to Mr Dolamore, 'it is undoubtedly the better class schools, in my experience, where the teeth are the worst - the higher the class the worse the teeth' and this appears to be the general rule.[99]

The reason for these findings, which showed up in the previous report, is generally held to be that the children of better-off families can afford richer, refined food with a consequent increase in the damaging carbohydrate content. The next paragraph in the Report dealt with a recent Admirality and War Office Interdepartmental Conference on the subject of dental unfitness. It was agreed:

> ...that the deterioration of teeth is intimately connected with a variety of intricate causes affecting the health of the nation, but that malnutrition plays but a very small part in the production of dental caries as compared with the more common use of articles of food which readily undergo acid fermentation, and that it is neglect to keep the mouth clean that is chiefly responsible for the decay of teeth. [100]

Concurring with the above opinion the Committee made the following recommendations:

> 1. That the teaching of the elements of hygiene should be made compulsory in schools, and in this teaching the care of the teeth should receive special attention.
>
> 2. That daily cleaning of teeth should be enforced by parents and teachers.
>
> 3. That systematic examination of the teeth of children by competent dentists, employed by school authorities, should be practised where possible, to prevent caries extending, to stop carious teeth, and to remedy defects of teeth. [101]

Prior to the publication of the Report, the Royal College of Surgeons replied to the Memorandum sent by Sir William Taylor. He had invited their observations on the statistics contained in the table of rejections. Was an enquiry into the causes of physical deficiency necessary and what would be the best possible means of remedying defects? The reply by the Committee appointed by the College was as follows:

> ...there is no evidence before the Council that the physical disabilities of this class [the unemployed] taken by itself has increased or are increasing. ... the table [in the Memorandum] shows a diminishing proportion of rejections in each of the assigned grounds of disqualification, excepting that of 'loss or decay of teeth' . ... [102]

Thus the reason for the report, namely the supposed deterioration in the Nation's health proved to be unfounded in the view of the authorities. However, the attention focused on the state of the Nation's teeth showed authoritatively for the first time, not only that there was a compelling need for dental treatment, but that there was

also an urgent requirement for legislation to reform and regulate the existing state of affairs.

It has been argued that judging by a real increase in dentists' earnings, there had been a rise in the amount of dental treatment provided. Further evidence that an ever-increasing number of the poor and working class people of Scotland were receiving dental treatment comes from a more reliable source, the annual reports of the country's three Dental hospitals; only the statistics are dealt with here, a more detailed account of the role of the Dental Hospitals during and after World War I will be given in the final chapter.

Along with returns from Aberdeen Royal Infirmary, the annual reports showed that they continued to treat many thousands of patients throughout the years of World War I and beyond to the end of the period under review - 1921.

In the following table 6.4.2; five years have been selected corresponding to Census years. This enables a comparison to be made between the decennial increases in dental treatment and the population increases. The figures quoted are a reasonable guide to the number of treatments carried out, but should be regarded as numerical values only, having regard to the methods of computation discussed earlier. It can be seen that the increase in treatments far outweighed the population increases. The results have not been subject to statistical analysis.

Table 6.4.2:

Comparison of Amount of Dental Treatment with Population Increases in the Years 1881,1891,1901,1911,1921.

Year	Hospitals	Treatments	Total	% increase (decennial)	Population of Scotland	% increase (decennial)
c. 1881	Glasgow	1,835				
	Edinburgh	6,279				
	Dundee	-----				
	Aberdeen	378	8,492			
				----	3,735,573	-----
c.1891	Glasgow	4,381				
	Edinburgh	5,855				
	Dundee	-----				
	Aberdeen	45	10,581	24.6	4,025,647	7.8
1901	Glasgow	7,607				
	Edinburgh	12,180				
	Dundee	-----				
	Aberdeen	1,084	20,866	57.0	4,472,103	11.1
1911	Glasgow	14,957				
	Edinburgh	18,454				
	Dundee	562				
	Aberdeen	1.084	35,057	68.0	4,760,904	6.5
1921	Glasgow	23,722				
	Edinburgh	21,211				
	Dundee	5,641				
	Aberdeen	467	51,041	46.0	4,882,497	2.6

Sources: Annual Reports - Edinburgh and Dundee Dental Hospitals. Glasgow data compiled from History of the Glasgow Dental Hospital and School 1879-1979, T.B Henderson. Statistics on the Aberdeen Royal Infirmary are derived from records of dental patients treated at the Out-patients'Department. Census Returns Scotland 1881,1891,1901,1911,1921. [103]

The specialist Dental Hospitals were not the only providers of dental treatment for the necessitous poor. General hospitals in Scotland attracted patients seeking relief of pain of dental origin, no doubt because hospitals had always been associated with the treatment of the sick. As a result, most hospitals appointed dental surgeons to their staff; the first on record on 4 October 1877 was that of Dr J.Cowan Woodburn to be Dental Surgeon to the Glasgow Royal Infirmary. [104] Other hospitals soon followed. The following data deals only with three Glasgow hospitals and is presented as a further example of the amount of dental treatment which was being provided outwith the field of the

independent dental practitioner. In the period 1879-1921, the Glasgow Royal Infirmary treated 35,620 patients of whom 802 were 'in-patients.' The Western Infirmary of Glasgow in the period 1881-1921 saw 17,696 dental patients and the Glasgow Hospital for Sick Children later The Royal Hospital for Sick Children, dealt with 17,028 in the years between 1889 and 1921. [105]

Having established the likely causes of the increase in dental caries, the growing need for treatment and the response to this demand, the next section deals with a further stimulus to the upsurge, namely advances in science, medicine and dental technology, and most importantly, anaesthesia.

6.5 Advances in Science, Medicine and Dental Technology.- The Development of Anaesthesia.

6.5.1 General Anaesthesia.

A survey of the historiography of anaesthesia shows that there is very little literature dealing with the socio-economic effects of the introduction of anaesthetics and its impact on the the demand for dental treatment.[106] In this section, an outline of the development of anaesthesia is presented noting the principal landmarks, with emphasis on Scottish connections and contributions, noting particularly its application to dentistry in Scotland.

On the most superficial reading of the literature of anaesthesia, it soon becomes clear that dentists played a prominent role in this sphere and made major contributions, experimenting, modifying and developing new apparatus and techniques.

Amongst those whose names are linked with anaesthetics were Wells and Morton (both American dentists), Simpson (obstetrician and Scottish pioneer of chloroform), Rymer (a noted campaigner in the Reform Movement), Snow, Fox, Bigelow

and Coleman (anaesthetists and surgeons).[107] All stand out as giants in this field, but there are many, many more less well known who also made important contributions.

Anaesthetics revolutionised the whole course of surgery and dentistry, allowing operations to be planned and carried out without haste on the part of the operator, and enabling the newly acquired knowledge in physiology and pathology to be utilised to the full. Primarily, the most dramatic consequence was the removal of pain and intense suffering which inevitably accompanied surgical operations and dental extractions, ushering in a whole new era in surgery and dentistry.

It is difficult to imagine the conditions under which surgical and dental operations were carried out in the years prior to the introduction of anaesthetics in the 1840s. "... The barbarism of the health professions was shocking. ...apart from the lack of anaesthetics there was no sterilization ... the surgery involved in both medicine and dentistry was crude and agonizingly painful...".[108] Because of the enormity of the pain involved, any contemplated surgery had to be extremely fast. In the summer of 1846, dentists accepted the belief that pain must accompany every procedure. As Guember says, " ... it was natural and no one searched for a better way... ". [109] An excerpt from Guember's article paints a graphic picture of conditions during early 19th century operations:

> ...The surgical arena looked more like a chamber of the Spanish Inquisition than anything else. Were you able to choose to live in that time and should you further have the bad judgement to develop gangrene of the leg, you would be in a fearsomely tragic position. Your options were grisly and only two in number: let the leg fester to kill you or let them tie you down for the naked severance. ...
>
> ...They worked without washing and in their street clothes. They wiped their bloody hands and knives on the lapels of their frock coats and wore them proudly about town - for the 'best' surgeon was considered to be so by virtue of his heavily encrusted coat. ...In the

course of a busy day the floors of the amphitheatre became slippery with blood and vomit; the smoky walls sponged up the never-ending screams of the unfortunate ones.

Brevity became the willing catalyst to the surgeon's reputation. Speed, speed and more speed. Paramount and imperative it was the victor over accuracy. Some of the speed records of the nineteenth century include the following: Amputation of the shoulder joint - nine seconds. Leg amputation, less than thirty seconds: (in his haste to beat his own record for amputation of the leg, a famous London surgeon removed a leg at the expense of the patient's left testicle and two important fingers of his own assistant.)

These men were not sadists. They were simply men. Men who could not afford the comfort and luxury of involvement or the bending of mercy. Many approached the operating table with two bottles of whiskey; one for the patient and one for themselves. They forced opium down the patient and it was but a weak shout in a tornado. Then they took the opium themselves to fight their conscience - witness to such agony. ...Men of science saw the butchery and heard the screams. They smelled the stinking clinging death of it all, and they looked away in silence. .They lied to their patients. Many patients had heart attacks from fright - others simply killed themselves rather than face the naked dirty steel. ... [110]

The production of surgical anaesthesia by inhalation of a gas was only made possible through the accumulated knowledge of a succession of distinguished scientists, and although the introduction of an anaesthetic for the extraction of a tooth is usually attributed to Horace Wells, a Connecticut dentist, in December 1844, the use of a gas as an anaesthetic was actually suggested by Humphrey Davy in 1800.[111] For one reason or another, this suggestion was not followed up although Henry Hill Hickman carried out experiments with carbon dioxide, under which surgical procedures were carried out on animals without pain.[112] However, he did not receive any encouragement in his researches and it was not until 1841 that Crawford Williamson Long, a physician and surgeon practising in the State of Georgia, used the gas ether to remove a tumour from the back of a patient's neck on 30 March 1842. [113]

n 1844, Dr William T.Morton was a practising dentist in Boston. His partner was Dr Horace Wells, but the practice was ailing and Wells decided to leave to take up practice in Hartford, Connecticut. One evening in 1844, along with his wife, he attended a demonstration of 'laughing gas' held at Boston's Union Hall. The participants inhaled the gas in large amounts and reached the stage of excitement leading to the performance of all kinds of boisterous antics for the benefit of the audience. Although everyone laughed and applauded, only Dr Wells sat silent and pensive throughout the evening. [114]

To quote Raymond H Guember, " Then something happened that changed the pathways of man forever...". As the gas took effect on a young man named Samuel Cooley, he went through the usual antics, but then eluding the others on the stage, he ran into the audience racing around the hall, and in the process stumbled over a bench and gashed his shin severely.[115] His run continued as though nothing had happened. Out of the entire audience, only Wells had noticed that the accident had apparently caused the man no pain. The next morning Wells obtained a supply from the chemist who had given the gas and the same day persuaded a colleague to extract one of his own wisdom teeth.

History records that the first authenticated dental extraction was carried out not by Horace Wells, but by another dentist, Dr Riggs. On awakening Wells was reputed to have said, "A new era in tooth pulling." [116] Unfortunately, the demonstration which he subsequently arranged at the Massachusetts General Hospital, was a failure and his method was discredited.[117]

Wells gave up dentistry and moved to New York City where it appears he became a chloroform addict, ending his life by committing suicide on 24 January 1848.[118] Former partner of Wells, William Thomas Green Morton, decided to use ether. Morton practised in Boston, Massachusets and on 16 October 1846 at Massachusets General Hospital he

demonstrated that ether could produce satisfactory surgical anaesthesia. Dr Warren was the surgeon and at the end of the operation he turned to the audience and uttered the now famous words, "Gentlemen, this is no humbug." [119]

The introduction of anaesthesia to Europe followed swiftly; the first authenticated case of an operation under ether anaesthesia was carried out on 19 December 1846, when James Robinson ,a London dentist, extracted a lower molar tooth from a Miss Lonsdale under ether administered by Dr Francis Boot.[120]

A few days later, on Monday 21 December, Robert Liston performed the first surgical amputation at University College Hospital.[121] This is widely held to be the first use of ether for general surgery in the Old World, but there is a considerable body of evidence to suggest that this honour belongs to Scotland and that ether was used prior to 21 December 1846 in the Dumfries and Galloway Royal Infirmary. Apparently on the same day as Liston was operating, several hundred miles away, Dr William Scott, Surgeon to Dumfries and Galloway Royal Infirmary, operated on a patient whom he had anaesthetized with ether. This operation was carried out in the presence of Dr William Fraser, Mr James McLauchlan and other professional colleagues.

The details of this story are told in Thomas W.Baillie's From Boston to Dumfries, and subsequent corroboration came from Sir James Y.Simpson, Scottish obstetrician and champion of the use of chloroform.[122] In a letter to the Lancet of 18 October 1872, Dr Scott makes the claim that he used, or to use his own word - exhibited - ether prior to Liston and quotes Sir James Y.Simpson in support:

> 'Sir, Dr Vivian Poore in his *Clinical Remarks on Chloroform and its Administration*, published in your last number, states that Mr Liston was the first person in this country to exhibit ether previous to an operation.

I beg to state that I have a prior claim to Mr Liston, as I exhibited ether on 19th December 1846, to a patient in the Dumfries and Galloway Royal Infirmary. My much esteemed and lamented friend, the late Sir J.Y. Simpson, having investigated the facts, with the statement I have made, was so satisfied with the authenticity of it that he not only in his lectures to the students attending his class, but also in his lecture on Anaesthetics delivered before the Royal College of Surgeons in March 1868, stated the priority of my claim to Mr Liston.
I may add that I received my information relative to the anaesthetic properties of ether from the late Dr Fraser, surgeon of the Cunard steamer which brought the important news from New York, and I operated as I have said within forty-eight hours of the discovery being brought to this country.

Your obedient servant,

Wm. Scott, MD,

Surgeon to the Dumfries and Galloway Royal Infirmary.

Dumfries, October 15th, 1872. [123]

Subsequently, Sir W.G.Simpson, Bart. BA, in the course of editing his father's collected works in the year following the latter's death, added this footnote to a paper entitled, *On the inhalation of Sulphuric Ether in the Practice of Midwifery* : "... in a lecture delivered to the Royal College of Surgeons, Edinburgh on 27 March 1868, Dr James Simpson stated that Scott of Dumfries was the first in this Country to make trial of Sulphuric ether in Surgery (ed).".[124]

Following their success with the new agent, local practitioners were becoming bolder and The Dumfries and Galloway Courier of 23 February 1847 carried the following:

> The use of this antidote to pain in surgical operations seems to be becoming a regular adjunct in the operating room. In a number of instances lately, it has been employed with perfect success in the Infirmary here,

> particularly in toothdrawing, although from the difficulty of getting patient's mouths opened, this might have supposed the least likely operation to be performed. Persons who have suffered the annoyance of toothache for weeks and months rather than bear the separating pang, are now eager to get quit of their troublesome grinders under the deadening influence of the ether.[125]

An interesting aspect of the whole subject of anaesthesia, is that its pain reducing properties were widely known from around the 1820's as old playbills of the Adelphi Theatre show. One in particular dated Saturday 5 June 1824, announced positively the last appearance of M.Henry at the Adelphi Theatre, Strand. The act included the administration of nitrous oxide or 'laughing gas' to any of the audience "who chuse [sic] to inhale it... ". [126] Stage acts and demonstrations inviting the audience to participate by coming on to the stage and inhaling the gas were quite common, and although Davy himself mentioned that it might be used in Surgery, no one seems to have taken him seriously until Horace Wells used it in the USA to extract a tooth.

Its alternative description - 'Laughing Gas'- indicates the general attitude to the gas by the public and the prevailing climate of opinion amongst practising surgeons and dentists.[127] Another curious aspect is that at this time, nitrous oxide was being used to alleviate pain **after** the extraction of teeth, and it was not until much later in the century that it came into use before extractions, chloroform and ether being the favourite agents until that time.[128] Chloroform was also being experimented with by many including James Young Simpson, Physician and Professor of Midwifery at Edinburgh Royal Infirmary in 1839. He was using chloroform in November of 1847.

> ...I have not had an opportunity of using Chloroform in any capital surgical operation, but have exhibited it with perfect success in toothdrawing, opening abscesses,

> for annulling the pain of dysmenorrhoea and of neuralgia ... etc. I have employed it also in obstetric practice with entire success.[129]

But it was soon apparent that chloroform was not all that its supporters claimed and reports of fatalities accumulated and continued to increase, even though it was given the Royal Cachet by Queen Victoria, who consented to have the anaesthetic for the birth of her son Leopold in 1853, and again for the birth of Beatrice in 1857.[130] That chloroform was being used extensively in dentistry can be gauged from an excerpt written by Snow concerning differences of opinion on the use of chloroform with Frances Gibson, Resident Surgeon at Nottingham General Hospital.

> It is the custom in the Medical Journals and Medical Societies, to object occasionally to the use of Chloroform in toothdrawing, as if the operation were not sufficiently severe to require it ...I have notes of 867 cases in which I have administered Chloroform during the extraction of teeth...the number of teeth extracted at an operation has varied from one to nineteen but [both dentists and Snow himself] ...have thought it better as a general rule to make more than one operation when the number of teeth to be drawn exceeded ten, in order that the mouth might not contain too many wounds at one time and that the loss of blood might not be very great.[131]

Snow goes on to say that the extractions were all carried out with the patient sitting in an 'Easy' chair, presumably upright, except in a few cases where the patient was too ill to sit up. It was not until 1911 that A Goodman Levy demonstrated that chloroform could give rise to Ventricular fibrillation (irregular rhythms) of the heart without warning, even in light anaesthesia, indeed light anaesthesia was a predisposing cause.[132] There was therefore a continued search for the 'perfect anaesthetic gas'; various combinations of gases were tried, but all had their

drawbacks. Meanwhile in 1864, The Royal Medical and Chirurgical Society (now The Royal Society of Medicine) appointed a committee - ' The Chloroform Committee' - "to give their anxious attention to devise means for obviating such accidents "[fatalities]. [133] Many of their conclusions had already been reached by John Snow, but the main conclusion was that chloroform depressed the action of the heart causing syncope (fainting); ether was less depressive but could induce failure of respiration.

At about this time, nitrous oxide and ether began to come back into fashion. The former was now being used in American dental practice. It was Gardner Quincy Colton who back in 1844 had been giving exhibitions of the effects of the gas around the country and had supplied the gas which had been used to extract the tooth from Horace Wells on 11th December of that year. [134] Wells was reported to have used nitrous oxide to extract teeth in some dozen cases before the ill-fated demonstration at the Massachusetts General Hospital.[135] The renewed interest in nitrous oxide soon reached England and in January 1864, it was used in The National Dental Hospital by Samuel Lee Rymer.[136] But after Rymer's trial of nitrous oxide the gas was again forgotten in the United Kingdom.

One of the problems of administering nitrous oxide was in the preparation and storage of the gas, at that time produced by mixing specific ingredients in suitable, but bulky apparatus in the surgery; but by 1870 it was being supplied in steel cylinders by Messers Coxeter and Son, who charged 3d per gallon on exchange of empty cylinders for full ones.[137] Improvements continued to be made and in December 1868, Charles James Fox, a practising dentist, administered nitrous oxide with atmospheric air, thus enabling the anaesthetic to be prolonged indefinitely.[138] E. Andrews, Professor of Principles and Practice of Surgery in the Chicago Medical College, had been experimenting with

nitrous oxide and oxygen and found the mixture to be satisfactory.[139]

The end of the century brought improvements in the methods of administration of anaesthetics and although the physiological changes occurring during anaesthesia were not fully understood, more and more surgery was performed under inhalation techniques. In January 1893, a report prepared under the aegis of the British Medical Association showed that 25,920 cases had been completed under an anaesthetic.[140] It should be borne in mind that these were the recorded cases carried out in hospitals, many anaesthetics would have been given elsewhere and not recorded or reported.

That dental anaesthetics were being given by persons other than dentists is evidenced by many letters found in the correspondence columns of such journals as the Chemist and Druggist. At this time, chemists and druggists were extracting teeth (reference will be made to this epoch later), but typical of the times is a query by a correspondent in the aforementioned journal on the mechanics of 'giving gas'. He is answered as follows:

> Sir, in reply to 'Lux', [the pseudonym of the letter writer] I would advise him to give up the idea of using gas for extracting teeth and go in for Cocaine ....[141]

Only months after news of the use of anaesthetics in the U.S.A. reached the United Kingdom, dentists were using the discovery and advertising this 'new wonder' in the newspapers; the latter had reported the news, but inconspicuously under 'Items of Interest' or 'Miscellany'. In the mid-nineteenth century the newspapers carried advertisements making outrageous claims of cures for practically every known ailment under the sun. An item appearing in the Glasgow Courier for January 1847, reads as follows:

> MEDICAL DISCOVERY - One of the most eminent of the medical men of Boston, United States, [Dr Bigelow] has lately read a report before a Medical Society upon the discovery of a perfectly manageable process for producing insensibility to pain during surgical and dental operations . It is done by the inhalation of a prepared Ether (the composition of which is not disclosed, as it is covered by a patent), and accounts are given in the report of eight or ten of the severest surgical operations, during which the patients rendered insensible by inhalation suffered no pain, but remembered the interval as a dream of indistinct pleasure . The great respectability of Dr Bigelow and the freedom with which the profession have been admitted to the experiments leave no doubt as to the satisfactory completeness of the discovery.- Morning Chronicle.[142]

A further item appeared in the Courier on the 16 January dealing specifically with the use of ether in dental extractions:

> DENTAL SURGERY
> The extraction of teeth during the effects produced by the inhalation of Ether has just been successfully applied in practice by Mr Lewellin, dentist of this city.... the removal of a tooth (a molar in the upper jaw) was effected without causing the slightest pain or inconvenience of any kind. The patient was perfectly conscious of the removal of the tooth but only so far as it related to the simple process of carrying it away....In the present case the patient declared himself to have been perfectly at ease and felt no change further than the vacuum caused in his jaw. The simple method of overcoming the sensation of intense pain will no doubt prove of immense advantage during surgical operations as it will tend to alleviate considerably the agony usually felt by the subject of the operation. As this application is one of considerable moment to the medical profession, Mr Lewellin will be happy to give

> any practitioner an opportunity to witness the result - Communicated."[143]

The last word of the excerpt -'Communicated' - reveals that this communication is in reality a 'puff' for Mr Lewellin and this is reinforced by the fact that in a later issue, the Courier carries a advert from Mr Lewellin with a similar content. Other dentists in Glasgow were not slow to get in on the act and the Glasgow Chronicle of 21 January 1847 carries the following announcement:

> DENTAL SURGERY
> Mr Buchanan, Surgeon-Dentist, has now in his possession an "Ether Inhaler" similar to what has recently been used in London by Robert Liston, and others with such eminent success.
> By this process, the most painful operations in surgery may be performed without inconvenience to the patient.
> 150 Bath St.
> 21st Jan. 1847 [144]

This advert. was followed by an 'editorial' in the Courier on 26 January:

> We learn that Mr Buchanan, Surgeon- Dentist of this city, has introduced the vapour of Ether in his practice. Mr Buchanan was the first to employ this powerful agent in Scotland having used it successfully on the 5th instant, although at that time the apparatus employed was a simple bent glass tube, yet the effect was most satisfactory - Guardian.[145]

Although Buchanan's claim was challenged, it is given credence by remarks made by his cousin, first Professor of Clinical Surgery at Glasgow University. Speaking at his inaugural address in November 1874, he described how after giving ether for an amputation at University College Hospital in London on 21 December 1846, Mr Robert Liston had written that night to his cousin giving details of the

apparatus and the anaesthetic used in the operation. On receipt of the letter, probably on the 23rd, he and his father, also a surgeon, along with Buchanan the dentist experimented with ether but without success. Apparently another cousin who was acquainted with chemistry was brought in and Professor Buchanan inhaled the ether and became unconscious. At this point a lancet was inserted under his nail sufficient to draw blood but without causing pain. [146]

During the month of January, further articles appeared in the Glasgow press and the Courier published an item on the 30 January pointing out the beneficial qualities of the new drug:

> The success and great advantage of this discovery are now generally admitted by the medical profession and although it is only a few weeks since it was first divulged, it has already been adopted in the principal hospitals in the kingdom ... it is certainly among the most important discoveries of modern years and an unspeakable boon to suffering humanity. [147]

But although numerous accounts of the efficacy of ether appeared in the newspapers and the medical and dental press, an item from The Glasgow Argus shows that there were still many problems with the drug:

> I am assured on the best authority that the accounts which are now going the rounds of the London papers in reference to the use of Ether in surgical operations are of the most exaggerated description. In the various Hospitals of London, more cases of failure than of success have been recorded ... The applicability of the Ether therefore in surgical cases is almost as much a problem now as some weeks ago. [148]

Although anaesthetics were being more widely used during the period under review and dentists were not slow to advertise the new agent, their use still met with considerable opposition, even up to the end of the century. Reasons which were put forward against the use of these new drugs were based on scientific and moral grounds. The scientific reasons were, that ether dissolved red blood cells, diminished blood fluidity and amongst other things caused madness. The moral grounds are more interesting - anaesthesia was merely a state of dead-drunkedness, as could be seen by the 'stupor' that the patients were exhibiting. In midwifery it was also opposed on religious grounds because anaesthesia was said to be at variance with the Bible:

> Unto the woman He said I will greatly multiply thy sorrow and thy conception: in sorrow thou shall bring forth children.
>
> Genesis Chapter 3 v16.

As the controversy continued, another quotation was to be used:

> And the Lord God caused a deep sleep to fall upon Adam, and he slept; and He took one of his ribs, and He closed the flesh thereof.
>
> Genesis Chapter 3 v21.

It is difficult in the late 20th century to understand these attitudes, but up until the 1840's all surgical operations were accompanied by pain and suffering - it was accepted as a fact of life. During the last decades of the nineteenth century the use of general anaesthetics for dental extractions became more widespread. Many reasons can be advanced for this trend ranging from the technical advances in storage, preparation and administration of the gas, to the simple fact that it had become accepted that teeth could now be removed without pain. A further contributing factor was the opening of the dental hospitals in Edinburgh and

Glasgow. The latter opened in 1879 and in its first year, although functioning only for two hours six days a week, performed 800 extractions, of which 32 were done under a general anaesthetic. [149]

Edinburgh Dental Hospital reported that for the year ended 1894 218 patients had chloroform administered and 297 had nitrous oxide. In the following year, 959 patients had a general anaesthetic, of whom 620 were given nitrous oxide, 293 chloroform and 46 a mixture of gas and ether.[150]

The number of anaesthetics given by dentists outwith the dental hospitals is not known precisely, but the final report in 1872 of a committee set up jointly by the Odontological Society and the Dental Hospital of London, mentions the figure of 58,000 known cases.[151] The pages of the Chemist and Druggist from the last decades of the nineteenth century are filled with advertisements for assistants able to carry out extractions.

Many of the issues carry advertisements for the sale of apparatus for the use of anaesthetics, hence it is not an unreasonable conclusion that anaesthetics were also given by chemists and druggists during this period. Francis Brodie Imlach, a friend of Sir James Y.Simpson, was an Edinburgh surgeon, who practised dentistry exclusively. He is reputed to be the first person to have extracted a tooth using chloroform early in November 1847. His first patient was one of his apprentices, James D.Morrison, who later became a surgeon-dentist. Within a period of nine months Imlach administered chloroform in more than three hundred cases without an accident.[152] The use of chloroform continued longer in Scotland than elsewhere due to the influence of the late Sir James Y.Simpson.[153] Simpson's contribution to anaesthetics has been universally recognized although he is often wrongly claimed to be the inventor of the drug. Neither was he the fist to use it. His major contribution was that he consistently publicised its use, principally in

obstetrics, and rebutted his critics, especially those who opposed the use of the drug on religious grounds.[154]

Simpson's studies showed that the amount of pain suffered during childbirth had a direct bearing on the maternal survival rate. In his pamphlet of 1848, *Remarks on the Superinduction of Anaesthesia in Natural and Morbid Parturition,* he said, "... All pain is *per se,* and especially when in excess, destructive and even ultimately fatal in its actions and effects. " [155] His own researches into the effects of amputations, with and without anaesthetics on survival rates, encompassed thirty or forty hospitals throughout Great Britain and France. He found that the administration of an anaesthetic not only spared the patient, "...from agony and torture ... but actually preserves him too from the chances of danger and death." [156] This profound observation associated with his evangelical enthusiasm for the use and value of anaesthetics was Simpson's great contribution to surgery and anaesthesia.[157]

6.5.2 Local Anaesthesia.

Historically speaking, the use of local anaesthetics in medicine and dentistry is of comparatively recent origin, although it is known that the Peruvian Indians were well aware of the unusual properties of the leaves of the plant *Erythroxylum Coca,* from which the alkaloid cocaine was first extracted by the French chemist Gardeke in 1855.[158] The Incas regarded coca as a symbol of divinity and originally it was controlled and used exclusively by the Royal family. The Spanish conquistadors in the middle of the sixteenth century removed this restriction making the coca available to all, subsequently imposing taxes on the product. [159] Its properties to relieve fatigue and hunger were soon appreciated by the natives as it allowed them to work long hours without food.[160] Additionally, "...it granted new strength to the tired and exhausted and made the unhappy forget his sorrows... ".[161] Its widespread use gave rise to addiction and the inveterate 'coquero' as the addict was

known, became a common sight in Peru. This evidence of addiction was overlooked by the early workers with cocaine and led to tragic results. [162]

The discovery of the anaesthetic properties of cocaine was first demonstrated in eye operations and is usually attributed to Carl Koller who published a paper on the drug in October 1884. Sigmund Freud, the Viennese psychiatrist also played a part and his contribution is acknowledged by Koller.[163] But although the drug had been used in various parts of the body as a surface anaesthetic, particularly in the nose and throat, its dental use was restricted to its obtundent properties on the dental pulp.

It was not until 1853 that a Scottish physician from Edinburgh, Alexander Wood, modified a syringe patented by the American Zophar Jayne of Illinois. This instrument was introduced beneath the skin through an incision made by a lancet. Wood's instrument has been described as the first true hypodermic syringe and in an issue of the British Medical Journal for 1858, Wood gives details of his modifications and the information that it could be obtained from Mr Archibald Young of Princes Street, Edinburgh.[164]

Although the anaesthetic properties of cocaine had been known for a number of years, it was not until 1884 that true dental injections were carried out by the American, William Stewart Halstead at Bellvue Hospital, New York City. Halstead was one of the first to give a regional 'block' anaesthetic to a patient suffering from 'tic douloureux' (trigeminal neuralgia). Halstead became addicted to cocaine but made a complete recovery, unlike his associate and two assistants who all died from the effects of self-experimentation.[165]

In Britain, W.A.Hunt of Yeovil reported in the Journal of the British Dental Association in January 1886 that he had used cocaine for dental operations.[166] However, it soon became clear from the repeated references in the literature

to addiction, poisoning and a number of fatalities, that cocaine was a dangerous drug and a gradual decline took place in its use during the 1890s.[167] Even at the end of the century, local anaesthesia was still very much an imperfect science and it was not until 1905, when Alfred Einhorn synthesised the less toxic procaine, that local anaesthesia made a real contribution to the development of dental treatment.

Prior to the introduction of cocaine there were other attempts to produce insensibility to pain in restricted areas of the body using a variety of methods, such as pressure, cold, and the use of electrical currents (galvanism). Cataphoresis was used in the first decade of the twentieth century and depended for its effect on the electrolysis of a cocaine solution placed in the cavity, achieved by passing a current of electricity through two electrodes suitably positioned. [168]

More common in the 1890s was galvanism, requiring the use of electrical machines which generated an electric current passed through the tooth. These methods were unpredictable, unreliable and often caused damage to the tooth pulp.[169] Local anaesthesia by the use of electrical methods was reintroduced in the 1970s. Strictly speaking, anaesthesia is a state characterised by loss of sensation or feeling in a part, therefore the term which should be used is local analgesia, but by dint of usage, dentists and others use the term local anaesthesia.

A more reliable method currently in use, were agents which produced a rapid lowering of the temperature of the part - freezing. Benjamin Ward Richardson (1828-1896) was much in demand as an anaesthetist in the nineteenth century, and to him is given the credit for the introduction of the ether spray. Rapid evaporation of the ether caused a sudden drop in temperature giving the freezing effect. The apparatus used in 1866 was operated by a hand bellows or bulb which directed a fine stream of ether on to the operating area.

This method was much used for the extraction of teeth and minor surgery. A notable use in 1871 was its use by the surgeon Robert Liston to incise an abscess in the axilla of Queen Victoria.[170]

The introduction of anaesthesia, both general and local, allied to the 1878 Dentists Act with its provisions for recognised standards of dental education in Edinburgh and Glasgow, gave a tremendous fillip to the demand for dental treatment in Scotland. The introduction of anaesthesia must have been one of the most cogent reasons why patients would be more willing to pay a visit to a dentist. To have a tooth removed painlessly would have been looked upon as impossible at the beginning of the nineteenth century; by the end of the century it had become a reality, most dental practitioners had acquired anaesthetic equipment and were not slow to advertise the fact. Strangely enough, local anaesthesia did not become available until the first decades of the twentieth century. Unfortunately, records of the number of patients so treated by independent practitioners are difficult to find. However, one source which does provide a considerable amount of information on anaesthetics administered are the Dental Hospitals.

Between 1896 and 1900, Edinburgh Dental Hospital administered a general anaesthetic to 4,724 patients. Whilst in the period 1901 to 1914, anaesthetics were given to 35,873 patients for extractions. As far as can be ascertained these numbers relate to the actual number of patients treated.[171] Due to staff depletion during the war years (1914-1918), the numbers fell during the period 1915 to 1921 to 14,005.

Although Dundee Dental Hospital only opened in 1915, by 1921, nearly a thousand patients had been given general anaesthetics. This was a sizeable number considering that in the beginning there were only two rooms in use.[172]

General anaesthetics were given at the Glasgow Dental Hospital and School from an early date, but a detailed break-down of the agents used is not consistently available until the 1880s. Ether, nitrous oxide, ethyl chloride and chloroform were all used at different times, sometimes as a 'cocktail' of two or more. It probably depended on the anaesthetist on duty and on which anaesthetic was 'the flavour of the month'. Between 1888 and 1902, about 335 patients were given a general anaesthetic for the extraction of teeth.[173] This number increased to 2,945 in the period 1903-1913, still a small proportion of the total number of extractions which amounted to 32,279. The incidence of carious teeth in children is reflected in the number of extractions carried out on patients under 15 years of age - 10,533. [174]

Over the period of 11 years, the mean number of extractions carried out was 2,934.45 per year. It is interesting to note that the last use of chloroform at the Glasgow Dental Hospital was for two cases in 1903 whilst The Royal Hospital for Sick Children continued to carry out dental extractions under chloroform as late as 1921. The record shows that chloroform was administered to 6,259 patients in the period 1910-1921. [175]

At the Glasgow Dental Hospital, in the period 1914-1921, the number of general anaesthetics administered fell to 698, due to the introduction of local anaesthetics; nevertheless, 27,307 extractions were carried out which gives an annual mean of 3,413.37 extractions over a period of 8 years, a real increase in numbers in spite of staff and student depletions during the 1914-18 War.[176]

Earlier, an outline was given of the history of anaesthesia and the important role played by dentists, especially in the field of general anaesthesia. It was also pointed out that it was nearly forty years after the introduction of general anaesthetics that local anaesthetics were developed when cocaine was introduced in the 1880s, and then not by a

dentist but by an ophthalmic surgeon, Karl Koller. Because of the disadvantages associated with the use of this drug, efforts were made to find an alternative and in 1905, Alfred Einhorn a German chemist, synthesised Procaine (Novocaine). It was called the 'ideal substitute for cocaine'. [177]

Unfortunately, in the case of Edinburgh Dental Hospital, there are no separate returns for the number of local anaesthetics given, but at Dundee Dental Hospital in the period mentioned, 2,673 local anaesthetics were administered. Surprisingly, in the same period, 5,237 extractions were carried out, apparently without any anaesthetic. [178]

The decline in the number of general anaesthetics administered at the Glasgow Dental Hospital and School from 1906, was due to the introduction of local anaesthetics (LAs). In March of 1909, the record shows that two patients were successfully given this form of anaesthesia for the first time. From then on, LAs were given in ever-increasing numbers as general anaesthetics declined steadily. In his *History of the Glasgow Dental Hospital and School*, T.Brown Henderson notes that in 1879, W.S.Woodburn was experimenting with cocaine hydrochloride, but found it unsatisfactory and abandoned its use. [179]

During 1909, 22 local anaesthetics were given; increasing to 316 in the year 1913; in the Annual Report for 1921, it was noted that this number had increased to 2,265.[180] Whilst general anaesthetics declined to 698 in the eight years 1913-1921, the number of LAs given was 6,987. [181] Commenting on the use of local anaesthesia for the first time, the writer of the yearly report for 1909 says that "...the administration of local anaesthesia was brought about mainly by the demonstrations of Mr J.C.Gardner. [one of the members of Staff]... it is desirable for the sake of teaching that this be continued... ". [182]

It can only be assumed from the records that the remainder of the extractions were carried out without any anaesthetic, although it is possible that an ethyl chloride spray was used, but there is no evidence for this. It is also likely that local anaesthetics would be used in other Hospital departments where the procedures might give rise to pain; however, once again there is no record. Other developments, such as the introduction of aseptic techniques and X-rays would not in themselves attract patients, but as treatments improved as a result of these developments, and were shown to be successful, patients' confidence might be increased along with a readiness to seek treatment.

Although the discovery of X-rays was made in 1895 by Wilhelm Conrad Röntgen, there were no facilities available in the Glasgow Dental Hospital until 1929. However, in the early part of 1896, Dr George Mcintyre had installed apparatus in the Glasgow Royal Infirmary and exhibited radiographs of parts of the skeleton. According to the British Medical Journal, it was the first British hospital to install an X-ray laboratory.[183] As McIntyre concentrated in the face and neck region it is not unlikely that dental x-rays were also taken at this time.

Perhaps the advances made in dental materials would have acted as a stimulus to seek treatment. Although 'Vulcanite' was not the ideal material for dentures, it was biocompatible to a degree. Its accidental discovery in 1839 by Charles Goodyear was a considerable improvement on the material used hitherto, when denture bases were carved out of various types of bone and ivory, which soon deteriorated in the mouth with most unpleasant effects. An American patent was taken out by Goodyear in 1844, but in Britain, Thomas Hancock having analysed the new product, patented his improved version a year earlier. [184]

The improvement in dental mechanics as it was termed then, meant that artificial teeth could now be made with a degree of accuracy, and could be worn with relative comfort. The teeth themselves were now produced individually from porcelain, a material which gave a much more pleasing appearance. Initially, the porcelain denture and teeth, made in one piece, had been made at Sèvres, near Paris in 1776 to the prescription of Alexis Duchâteau. Later Nicolas Dubois de Chémant having obtained a patent improved on the original. It was left to the Italian, Guiseppangelo Fonzi in 1808 to invent a method of making individual teeth which could be attached to the base plate. This method became the basis for the modern porcelain crown.[185] The replacement of broken and missing teeth by the use of crowns and bridges made from porcelain and metal usually gold, ushered in a new era of 'fashionable dentistry' referred to earlier. Dental treatment for aesthetic reasons was now possible.

Advances made in medical science, such as a better understanding of the micro-organisms associated with dental disease and improvements in the microscope, all resulted in a more successful outcome to dental procedures, as did advances in dental science. The surgery itself had been transformed since the introduction of electricity, not only for lighting but to power the dental engine used to drive the dental drill. The electric motor replaced the foot-engine making the preparation of cavities for fillings, not only less time-consuming, but somewhat more tolerable. The first rotating drill using a flexible shaft was based on the work of the Scottish engineer, James Naysmith in 1829.[186]

After World War I, many dentists wore white or sometimes coloured operating jackets in contrast to the Prince Albert type coat and fancy waistcoat of Victorian times and adjustable dental chairs replaced the modified armchair. [187] It can be seen that there was a discernible attempt by registered dentists to encourage patients and to improve on the widely-held image of the unqualified, unregistered and often unscrupulous practitioner.

This chapter has demonstrated that there was a genuine national need for dental treatment not only in Scotland but throughout the United Kingdom. Also, that although the increasing demand was being partly met by the Dental and General Hospitals there was still a shortage of qualified dental manpower in Scotland. The next chapters will explore how the developing dental profession dealt with its own internal problems, the changing climate of public opinion and the solution proposed by the belated intervention of Government action.

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Chapter 7

Treatment by the Unqualified - The Nation's Teeth and the Needs of the Armed Forces. 1900-1921.

The optimistic view held by the dental reformers after the passing of the Dentists Act of 1878, had by the turn of the century rapidly evaporated. There was general agreement inside and outside the dental profession that the teeth of the nation were in a deplorable condition. Only one example of this widely held opinion is given here, but it epitomises the general concensus. Speaking at a meeting in November 1904, of the Metropolitan Branch of the British Dental Association on the Report of the Committee on Physical Deterioration, Mr W.H.Dolamore, (President of the BDA from 1915-1918) had this to say:

> ... I take it that we as dentists are agreed what is the general condition of the teeth today. They are bad. We think they are bad. Anatomists, physicians, military and naval authorities, preachers and teachers, all agree that the teeth of the populace are in a truly deplorable condition. As a well-known man said to me, speaking of the Report of the Committee on Physical Deterioration, 'The teeth seem to be one thing on which all agree.' For our purposes this unanimous verdict is sufficient, and however interesting for scientific purposes the question may be as to whether or no teeth are deteriorating, it is, for the scope of the debate to-night, enough to recognise that the teeth of the nation are so bad as to be a real danger to the commonwealth. ... [1]

In this chapter, the effects of a proven shortage of qualified practitioners combined with the uncontrolled spread of unskilled dental treatment will be described. Specific reference is made to a few of the cases that were brought before the courts in Scotland as a consequence of the attentions of many of the unqualified dental practitioners.

These examples illustrate not only the state of the dentistry at this time, but also the divisions which had once again opened up old wounds between the established dental factions. In addition there were some newcomers to the scene, whose organisations were growing in numbers and strength, concerned to protect their interests in view of the anticipated legislation affecting dentistry.

An exploration of the connection between the campaign to introduce compulsory school dental inspections with the possibility of treatment, and the dental needs of the Armed Forces was another important factor in this period, and following the dental experiences of the South African and First World Wars, the necessity for organised dental treatment for the Services. The 1914-18 War had also highlighted the value of women in the pursuit of the War effort and the growing numbers of Scotswomen in dentistry is discussed with particular reference to their perceived role by a male dominated profession.

7.1 Unqualified Dentistry - A Danger to the Public.

In earlier chapters, reports of court actions against dentists focused on prosecutions brought for contraventions of the Dentists Act of 1878. Independently, many cases were brought as civil actions for damages against dentists on the grounds of negligence, by patients or relatives. The following are only a few which were reported in the Glasgow Herald; how many patients suffered at the hands of untrained dentists and did not take the matter further is a matter for conjecture. It is reasonable to assume that the reported cases were only a small proportion of a very large number of culprits who were not discovered or taken to litigation.

One of the most notorious of these miscreants was the 'Hygienic Institute,' a company which had branches all over Scotland and whose representatives had appeared before the courts on numerous occasions (see Chapter 5). In this example, heard before Sheriff Fyfe at Glasgow Sheriff Court in February 1910, the Institute had been sued by a patient, James Lawson for £500 on the grounds that during an operation to remove 17 teeth, he had suffered a broken jaw and severe lacerations to his mouth.[2] The teeth were being removed 'to make room' for an artificial set. After treatment, he had been confined to bed for a considerable time, his general health had been seriously affected and, in particular, the formation of his mouth had been so altered that it was not likely that he could ever be fitted with a set of artificial teeth. The Sheriff found that the injuries were the result of the incompetency or the carelessness or negligence of the defenders' employee, the operator, and that the defenders were liable in reparation. He awarded the pursuer £100 with expenses. The subsequent appeal by the defendants was dismissed.

A more serious case brought against the same operators had been heard a month previously. Samuel Edward Thresher sued the Institute for £500 damages in respect of the death of his wife Catherine. The defendant's servant had called at Mr Thresher's house on 30 April, and pulled certain of Mrs Thresher's teeth. In consequence of the negligent manner in which the operation was performed, Mrs Thresher contracted septicaemia and died on 31 May 1909. The pursuer alleged that this was a direct result of the defendants failure to sterilise or disinfect his instruments. The defendants denied any responsibility for her death and added that their servant had acted outwith the scope of his employment because it was Company policy not to pull teeth unless there was an order for artificial teeth. There had been no such order in this instance.

The case was adjourned and it was subsequently intimated that the case had been settled out of court.[3] Another case involving the same company was heard at Airdrie Sheriff Court, where the Hygienic Institute was found guilty of negligence in "...causing to the pursuer's mouth unnecessary violence, tearing away a piece of the jaw-bone and causing permanent enlargement." Damages of £30 were awarded and again the appeal against the decision was dismissed. [4]

Evidence that the Government were now well aware of the prevailing situation in dentistry, is afforded by the publication of an official report of this time - (1910), entitled, the Report as to the Practice of Medicine and Surgery by Unqualified Persons in the United Kingdom. One section deals with the subject of dentistry generally throughout Great Britain.[5] It identifies four different types of unqualified dental practice which, it adds, " ... is reported to be assuming larger proportions."[6] These are:

(1) The *Chemist*, qualified or unqualified who undertakes this class of work, and whose dental practice is sometimes very large.

(2) *Dental Companies, Hygiene and other Institutes* do a large amount of dental surgery, largely through agents. They canvass from house to house and charge fees as high as qualified dentists. Many unqualified dental firms make periodical tours of the towns, advertising the particulars of their visit in the local press beforehand and hiring a consulting room *e.g.*, at a hotel for the occasion.

(3) *Unqualified dentists* often advertising *"American Dentistry,"* settle in a district, and occasionally build up a large practice. They sometimes visit patients at their own homes and administer local anaesthetics.

(4) *Itinerant Quacks*, who take up their positions in markets on market days, do a considerable trade in extracting teeth, simply for the purpose of drawing a large crowd together, in order to sell their quack medicines, pills, &c.

Referring to the effects on Public health, the Report comments that the effects produced are on individuals only, but there is much evidence that bad results are brought about by the practice of unqualified dentists.

It cites one instance where tooth extraction by a chemist resulted in necrosis (death of the tissues) of the jaw, which nearly ended fatally. Dental Companies, it added, make almost their entire profit out of the sale of artificial teeth, whilst the qualified dentist having a sense of duty, tries to preserve for further use all the teeth that can be saved. In practice, the dental companies sacrifice 'on an enormous scale' both healthy teeth and teeth that might be saved, 'to the detriment of the public.' Additionally sepsis is sometimes caused due to the inefficient methods used and the false teeth supplied are often ill-fitting. Furthermore, cases of poisoning had been reported after the use of cocaine as a local anaesthetic, the extractors having no technical knowledge of its effects. As for the itinerant quacks; their careless and dirty methods in extracting teeth were strongly condemned.[7]

There is a section in the Report dealing with unqualified practice in Scotland. This information was submitted by the Medical Officers of Health, who at this time were employed by the Local Government Board (The Scottish Board of Health did not come into existence until 1919). The unqualified dealt with consisted of " bone-setters, unqualified dentists, counter-prescribing chemists, eye and ear specialists; cancer-cure specialists, herbalists, vendors of proprietary medicines, prescribing clergymen and the likes."[8]

The Medical Officers of Health were asked two questions:-
(1) Whether the practice of medicine and surgery by unqualified persons is assuming larger proportions and (2), whether such practice produces any effects upon the public health.

In the section dealing specifically with unqualified dentists the report has this to say regarding unqualified dentists:

> There are some indications that unqualified dentists are on the increase. Both in the country districts and in the small towns, the unqualified dentists seem to have considerable vogue. In one small town, it is said that 'unqualified dentists are rampant.' In several others unqualified dentists are bracketed with bone-setters. ... [9]

The Report concludes with a summary of replies from the Counties, Burghs and Districts of Scotland, a few of which are given below.

Huntly (Burgh), replied that a bone-setter and several unqualified dentists practised, and quack medicine vendors ply their trade. Considerable harm was done by the bone-setters. Lochgilphead reported that there were unqualified dentists, as did the Burghs of Ayr and Prestwick, adding that there were "evil effects from the work of unqualified dentists and sale of quack medicines." [10] Clydebank answered that unqualified practice by dentists (and chemists) was assuming larger proportions and that many people suffered as a result. The reply contained a view which was becoming widespread, namely that "working classes could not distinguish unqualified persons." [11]

Dumbarton, Dumfries, Annan, Langholm, Lockerbie, Sanquar and Moffat, all reported increases in the number of unqualified dentists. The County of Fife which included 20 burghs reported a minority view that, "the people are well informed as to the status of the unqualified." [12] The Burgh of Leven in its reply, added that a severe case of septicaemia resulting from the ministrations of an unqualified dentist ended fatally, whilst Pittenweem described the situation as "Unqualified dentists rampant."[13]

In their general remarks, North Berwick stated that, "a notorious 'Hygienic Institute' has detrimental effects on public health." [14] The North of Scotland did not escape the predations of the unqualified either. The Lewis District of Stornoway reported that there was unqualified practice by native 'experts' who bled pneumonia patients indiscriminately. District Nurses and an ex-schoolmaster were also indicted, the latter it was said, " ...had an extensive following". [15] The report added that the credulous islanders were prone to be made a prey of by quacks. The District of the Northern Isles had 'herbalist homeopaths' and a 'parson-doctor' who administered drugs, drew teeth and operated for tongue-ties &c.[16]

Two common complaints were firstly, that harm was done because of the delay in recognising the early stages of disease and serious conditions, and secondly, infectious diseases could be allowed to spread by incorrect diagnosis by the unqualified. The conclusion reached by the Report was that it confirmed information received from other sources that " there is fair ground for a more detailed inquiry." [17] Due to the outbreak of war the inquiry into the state of dentistry was not authorised until 1917. Meantime, dental politics had become concentrated in London. as the problem of the rising numbers of unqualified was recognised as being soluble only by Government legislation. Although there was unanimous recognition of the problem by the dental bodies, there was no such agreement on the best method of reaching a solution.

Following on the decision of the House of Lords in 1910, (Bellerby v Heyworth and Bowen - see chapter 5), the Incorporated Society of Extractors and Adaptors of Teeth changed their name to the Incorporated Dental Society (IDS) in 1911. The Society had its own magazine, the Mouth Mirror, a quarterly journal which had been in existence since December 1904.

Through the magazine, the Society was able to put forward its views and press for recognition and representation in the negotiations which would lead to the anticipated amendment to the Dentists Act of 1878. The IDS membership increased to somewhere in the region of 2,000 with 23 branches throughout the United Kingdom. Scotland had 3 branches, East, West and Northern whose branch secretaries were respectively J.Stewart, L.B.Gow and L.E.Skinner who was succeeded by W.T.Whent. [18] It can be assumed that Scotland would have had about 200 members on the basis of its population ratio to that of Great Britain. (The Census return for 1911 showed that there were 992 persons in Scotland who had declared dentistry to be their main occupation, but were not on the Register).[19]

Although the Society represented the unregistered, care was taken to ensure that only those who could be regarded as ethical in the eyes of the IDS were accepted as members. Whilst the right of members to advertise was recognised, "... the more blatant forms which became generally adopted were frowned upon, whilst canvassing and the practice of calling upon people in their homes was forbidden." [20] In addition to a library, the Society provided lectures, demonstrations and encouraged members to keep abreast of current dental knowledge. The IDS ethos is best summed up in the words of one of their declared objects:

> To support and protect the character, status and interest of Unregistered Dental Practitioners, and to promote honourable practice, to repress malpractice, and to decide all questions of professional usage or courtesy between and amongst Unregistered Dental practitioners. [21]

As expressed by Condry,the author of the history of the IDS, the serious minded, successful and able members of the Society had created a nucleus of a new type of unregistered practitioner. They had gathered round them a circle of patients, satisfied with the treatment they provided and

who were aware that their 'dentist' was unregistered; nevertheless, he had their sympathy and their confidence. [22]

The reality of the situation with regard to the different groups of 'dentists' practising was, that the 'Dentists 1878', who had been admitted to the Register 'by declaration', in many cases had received no formal training. They had now become implacable opponents of the new unregistered since 1879, many of whom, represented by the IDS, were competent and ethical but unqualified [23] Both these groups were bitterly opposed by the qualified and registered whose attitude and views were symbolised by the aims and objects of the British Dental Association. A further group practising dentistry were the chemists and druggists. Perusal of the Chemist and Druggist journal showed that from at least the middle of the nineteenth century, many chemists carried out extractions and other dental operations. Evidence of the extent of the practice was revealed with the publication of the first Dental Register in 1879 when 125 persons in Scotland declared that they practised dentistry in connection with pharmacy, representing over 35% of all the Scottish dentists on the Register. [24] (See chapter 5). An article in the August 1914 issue of the Chemist and Druggist quoted the Departmental Committee of the Board of Education's figures for the number of persons practising dentistry.

In addition to the already quoted 2,000 members of the IDS, there were 6,000 dental chemists, herbalists and others plus 5,000 apprentices and assistants.[25] These figures applied to Great Britain as a whole. The chemists who practised dentistry set up their own society in 1910, The Chemists Dental Society, and at the third Annual General Meeting held in May 1914,it was reported by the Pharmaceutical Journal and Pharmacist that "...the organisation continues to receive attention and it is hoped to make some arrangements for the interests of the Society to be watched in Parliament." [26]

A further powerful reason why the various dental factions were strengthening their negotiating positions, might have been because of the suggestion that the new National Health Insurance Scheme involving some 13,000,000 insured persons might contain provisions for dental treatment. Those dentists who would take part could see that there could be rich rewards, but official recognition was a pre-requisite. There was also the question of whether some 5,000 qualified dentists could cope with such numbers.[27] An editorial comment in the Chemist and Druggist observed that the suggested extension of Insurance Act benefits to include dental aid, might act as an impetus to legislation in view of this discrepancy. [28] This then was the situation prior to the outbreak of the 1914-1918 War. Once again a divided and assorted collection of interests with all the factions proclaiming their rights to practise dentistry, but seemingly unwilling to compromise for the common good of all.

In the next section, the link between the dental health of school children and the Armed Services is explored and the increasingly important role of women in dentistry is discussed.

7.2 Dental Treatment for School Children - An Outline of the Development of the School Dental Service in Scotland: 1885-1921.

Although at this time dento-political activity was increasingly being conducted on a Great Britain basis, Scottish dentists continued to participate and make significant contributions to the development of dentistry. One such individual was William MacPherson Fisher whose seminal ideas on the need for dental treatment for school children were first expressed at a British Dental Association meeting in 1885. Of the 130 members present,15 came from Scotland - just over 11%.[29]

Fisher (mentioned in chapter 6) was an outstanding campaigner on the issue of compulsory dental treatment for school children. He was a qualified dentist practising in Dundee, at that time a city with a population of some 150,000. At the Annual General Meeting of the British Dental Association held at Cambridge on 27 August 1885, he read a paper on the *Compulsory Attention to the Teeth of School Children.*[30] It has been said that this event marked the beginnings of a Public dental service.[31]

Fisher was particularly concerned with the state of the teeth of children, especially those of the working and lower classes. He could speak from experience as most of his patients came from these classes. "...These people generally seek the aid of a dental surgeon for their children only when driven to him by pain... ". [32] He believed that every child ought to have his or her mouth examined at the start of their schooling and occasionally throughout school life. This should be carried out "... by a thoroughly competent, curriculum qualified dentist ... no child to be allowed to commence its studies, until every tooth stood an equal chance of existence with every other organ of the child's physical existence.". [33]
Dental caries was, he contended, an enervating disease that, ".. was tending to lower the physique of the life of the country.". [34] Fisher went on to describe how the plan could be carried out:

> ...On the examination of every child's mouth I would have handed to the parents a note of the shortcomings therein - if any - so that they might be corrected. In cases of large families needing aid, the parents of which were in possession of small means, I would have a well-considered system of relief adopted for each school, or the schools of that special town. Then for those who were quite unable to pay, and needing dental aid, I would have this borne by the State or parochial relief, just as outdoor medical relief and education are given at present ... What I emphatically urge before our Association is the necessity of compulsory attention to the teeth of school children of the working and lower middle classes. ...[35]

Fisher went on to give an account of his own dental surveys at Dundee, and linked the findings to the state of the teeth of the fighting forces, particularly the Royal Navy.[36] He drew attention to the appointment of the first qualified dental surgeon to the North Surrey District Schools for pauper children at Anerley, which, he went on to say, "... fulfils my desire in every way...". [37] He ended his address with an appeal to his dental colleagues, to carry out what they were now so well-fitted to do, "...by the faithful practice of all the principles of advanced dental surgery, to all classes from the youngest to the oldest, and from the poorest to the richest." [38]

George Cunningham was a powerful ally of Fisher in the campaign for compulsory dental treatment for school children. At the Cambridge Conference on the Condition of School Childrens' Teeth held in 1892, he combined the surveys carried out in Scottish schools with his own findings in English schools.[39] Cunningham revealed that out of 5,249 mouths inspected, there were only 485 which required neither fillings nor extractions - just 9%, and that furthermore, these 5,249 children had between them 20,976 unsound teeth.[40] The chairman at this Conference was Sir James Crichton-Browne FRS. In his address, he commented on the poor state of the children's teeth:

> ...It is impossible to believe that the British Empire would have become what it is today if amongst these hardy Norsemen who pushed up their keels at Ebbs Fleet and entered upon the making of England there had been only one sound set of teeth in every ten. ...I am not going to argue that sound teeth are the passports to power or that biting and grinding capacity have determined the course of history but this I will maintain that no nation has ever climbed to pre-eminence when its teeth are no more and that it behoves a conquering people jealousy to look after its teeth and to keep them, not less than its weapons, bright and sharp. ...[41]

As a result of the efforts of Cunningham, Fisher and others, the School Dentists Society was formed on 23 July 1898 with William M.Fisher as vice-president, although it was not until 1909 that medical and dental inspections became mandatory duties of the Local School Boards in Scotland.

In 1898 the British Dental Association brought out its Seventh Report on the Condition of the Teeth of School Children.[42] Their findings dealt with the children in English schools and as in former reports recommended that Local Government Boards appoint dentists to provide treatment for the school children. The results of the examination of the English school children were very much in line with those of other European countries, showing on average that there were 84 children with carious teeth in every 100 examined. [43] This figure as will be seen, was slightly better than the Scottish findings.

The passing of the Education (Administrative Provisions) Act 1907, gave England and Wales the authority to provide medical and dental treatment as a discretionary power, to the local authorities. By then, the first specialised, school dental clinic to be set up in Great Britain had been opened at Cambridge, funded privately and under the supervision of George Cunningham since 1907.[44] The history and development of the School Dental Service in Scotland is a topic which has attracted little if any research. In this thesis, only the broad outlines can be sketched with emphasis on what are seen as the significant factors which contributed to the development of dentistry in general. As Glasgow and its environs constituted a considerable percentage of the school population of Scotland, this region has been used for sampling.

The 'populations by age' tables of the 1911 Census, show that there were 1,003,892 children between the ages of 5 and 14 in Scotland.[45] The number of children on the school rolls administered by the Glasgow and Govan School Boards was 166,826. [46] This represents some 17% of the total

population of the school age group in Scotland, albeit from an urban sample.

The Education (Scotland) Act of 1908, made no reference to the provision of medical or dental treatment if and when it was found necessary, and as late as 1911 the School Board of Glasgow was not clear as to whether it could legally provide dental treatment for necessitous children. The Glasgow Herald reported a meeting of the Board on 12 October 1911 at which the matter had been discussed at length. The Medical Officer had stated that over 90% of the children had bad teeth and 50% 'very bad teeth'. The decision reached was that the Board should seek a legal opinion on the matter. [47] But it soon became clear that due to defective draughtsmanship in drawing up certain clauses in the Education (Scotland) Act 1908, the Education Committee of the Privy Council was unable to give a definite ruling.[48] Consequently, a 'friendly' case was arranged between the School Board of Glasgow and a Miss Spence, a ratepayer residing in Kelvinside, Glasgow. [49]

The decision of their Lordships in the Court of Session was that the Board were not entitled to pay for any medical or dental treatment out of School (ratepayers) funds under their administration. This applied even where the parent was by poverty or ill-health unable to provide the necessary medical or dental treatment. It would require an amendment to the Education Act of 1908 to enable them carry out their desire.[50] A year later, 28 September 1912, the 'Scotch' Education Department intimated that a grant of £1,500 would be given from Government funds for the medical (including surgical and dental) treatment of necessitous children.[51] Shortly after, the passing of the Education (Scotland) Act 1913 legalised the position. [52]

The medical and dental inspection of school children was initiated in Scotland as a result of the passing of the Education (Scotland) Act 1908. Administration of education and the new medical responsibility was carried out by Local School Boards under the general supervision of the 'Scotch' Education Department. [53] As early as June 1907, Govan Parish School Board appointed ten part-time medical officers at a salary of £50 per annum. Apart from regular medical inspections and reports, their responsibilities were widespread, ranging from the state of ventilation, heating, lighting, cleanliness and the condition of the lavatories to the preparation of schemes to promote and preserve good health. An important additional duty was the instruction of teachers in the recognition of common school ailments and the teaching of first aid and general hygiene. Medical Officers were also responsible for the fitness of teachers and of pupils to undertake certain physical training courses. [54]

Included in the Annual Report for the School Board of Glasgow for the school session 1908-1909, was this comment:

> ...In regard to the care of the childrens' teeth, all the examiners agree that the parents seem strangely unconcerned. Thus one medical man [said] '..It was the rule to find decayed teeth in every mouth. ...' A mother will call in a doctor when her child shows a badly swollen neck, but will not consult a dentist about the decaying teeth, which very probably have been the original cause of the swelling. ...[55]

The Govan School Board Medical Officer commented that dental decay was as bad in the children of well-off parents as in that of children of the poorer classes. He produced a table showing the amount of decayed teeth found in the children examined. "...This table clearly demonstrates the deplorable condition of the teeth of our school children." Continuing, he added, "...caries may have actually commenced in a tooth and can only be detected by a fine dental probe; such minute examination however is not required in ordinary medical inspections."[56]

The Report for the following year for the Govan Board included this comment, "...The amount of dental disease from which school children suffer is evident to the most superficial observer...". [57] The examinations revealed that in all the school groups, categorised I,II and III, according to Social order, the average number of decayed teeth per mouth was 3.8. [58] That there was a problem in dealing with the extensive amount of dental decay can be gauged from the comments in the report:

> ...the most difficult problem ...which emerges at the present time is undoubtedly devising some organised and efficient method of preserving and improving the teeth of school children. The problem presents great difficulty because of the magnitude of the work which must be undertaken to obtain efficient and permanent results. ... somewhere between 80 and 90% of all school children suffer from dental disease. ... [59]

George Arbuckle Brown was the Chief Medical Officer to the Govan Parish Board at this time and he took a particular interest in the dental conditions prevailing. He outlined the past history of School dentistry pointing out that it had originated at Strasbourg in Germany in 1902, and that dental treatment for school children was being carried out in 45 German cities employing 90 dentists. He was also aware of the dental clinic which had been established at Cambridge in England and of another in Dunfermline, not so well-known, established under the auspices of the Dunfermline Carnegie Trust and employing a dentist who devoted part of his time to the school children.[60]

The Govan Parish School Board report for the year ended 1911, displayed the following information in table form:

10.8% of boys of all ages had no decayed teeth.
56.4% " " " " " " 1-4 " "
32.8% " " " " " " > 5 " "

The data in regard to the girls was no better:

11.4% of girls of all ages had no decayed teeth.

55.1% " " " " " " 1-4 " "

33.3% " " " " " " > 5 " "

Source: Govan Parish School Board Report Year ended 1911.

The Report adds that, "...the table is a very instructive one and gives a very fair idea of the deplorable condition of the teeth of the children...". [61]

On 28 September 1912, the Education Department intimated that it was prepared to grant funds for treatment including dental, to necessitous children but only for the period ending 28 February 1913. [62] The Glasgow Board consequently established two centres for dental treatment, one at Calton School Annexe and the other at 35 Elmbank Crescent; the latter would also deal with skin and eye conditions. To carry out the necessary work the Board engaged 8 dentists and 5 nurses as well as 3 oculists, 1 dermatologist and an aurist. [63]

Although Glasgow was quick to take advantage of the new funding, Govan had already acted in anticipation and before the end of June 1912 had opened and equipped two school dental clinics, one at 27 Govan Road to serve the area of the Parish south of the River Clyde, and one at 3 Eldon Terrace Partick for the Parish area north of the Clyde.[64] As the clinic at Partick would be temporary, gas was used for lighting, and this clinic dentist had to use a foot drill for the preparation of cavities. The cost of the equipment is itemised in the report as follows:

> Dental equipment: Comprising oil pump dental chair, flush spittoon, electric dental engine, movable electric light, bracket table, dental cabinet, electric steriliser, complete set of dental instruments.
>
> Approximate cost £140:-
>
> Equipment for the Oculist: Ear, Nose and Throat instruments, cabinet, plus skin department and X-ray apparatus. £282:-
> Cost of Outfits for two Clinics .... .. £332:- [65]

A further clinic was opened at Eastpark School Annexe by the Glasgow Board and in addition to the 8 dentists already appointed, 3 anaesthetists had been engaged. During this session, 1912-1913, 1,294 children were treated at the Elmbank Crescent dental clinic and 796 at the Calton School centre. [66] During the War years, 1914-1918, there was no further expansion of the dental services, due to considerable depletion of staff and other more pressing matters. War Service had taken away the Chief Medical Officer, 2 Assistant Medical Officers and 7 part-time Medical Officers; 4 part-time dentists and 9 nurses. [67]

In terms of the Education (Scotland) Act of 1918, the disparate School Boards serving Glasgow and its environs were amalgamated into the Education Authority of Glasgow, and as from 16 May 1919, this new body was responsible for the administration of 210 schools throughout an extended area of the City. The new Authority representatives were elected to office on 4 April 1919.[68]

The total number of children in the new administrative area, for session 1919-1920, was now 198,551, whilst the total number of children of school age in Scotland had fallen to 967,339. The children attending the schools in the new Education Authority of Glasgow now represented 20.5% of all Scottish school children. [69] But although Government grants were now on a permanent basis, only necessitous children received dental treatment, the parents having to sign a declaration that their income was below a certain level. It is interesting to note in passing that the Education (Scotland) Act of 1918 authorised the establishment of Nursery Schools for children aged 2-5 years.[70]

That the post-war period was a time of stress due to economic recession is reflected in the reports of the number of 'free' meals issued by the Education Authority. Many children paid a nominal sum but the proportion of those receiving free meals rose at this time.

The total number of meals in 1920 was 1,200,000 rising to 11,331,175 in 1922, of which 91% were issued free.[71] This fact is mentioned because under-nourishment is recognised as being responsible for a number of diseases of the dental and associated oral tissues (see previous chapters).

The situation in the field of school dentistry in the period under review, is perhaps best summed up in the words of Geo. Arbuckle Smith, Principal Medical Officer to the Govan Parish School Board. In his Report for the year ended 30 June 1913 he had this to say:

> ...With the figures before us it may be interesting to attempt to define the magnitude of the task before the Board in dealing with the treatment of defective teeth in our clinics. ...We know that *more than* 88 per cent of the children examined each year have at least one defective tooth. At least 30 per cent have 5 *or more* decayed teeth; while the remaining 58 per cent have from 1 to 4 decayed teeth. These figures almost certainly understate the case. ... if only 10 per cent [of the 88% representing 9,500 children] are taken as necessitous children, then 950 or roughly 1,000 children would require to be provided for each year. The remaining 8,500 are, meantime left out of account, since they are supposed to be looked after by their parents, who are assumed to be able to pay for their treatment. ... [72]

The Report goes on to say that on the average 4,000 teeth would require attention among these 1,000 necessitous children alone, which represents ten times the figure dealt with by the dentist in the two clinics. Arbuckle Brown concluded his report by stating that in his opinion, "... the present system is inadequate to meet the requirements of the necessitous children alone...".[73]

In the next section the belated recognition by the Government that there was a connection between the dental needs of the Armed Forces and the poor state of the childrens' teeth is examined.

7.3 Dentistry and the Armed Forces - A Legacy of the Neglect of Childrens' Teeth.

Long before the publication of the various Government reports of the early twentieth century on the condition of the teeth of recruits, the dentition had played a major role in the requirements of the fighting soldier. Since 1626, the war with France, the English military authorities were aware that the possession of some functional teeth was necessary for the efficient functioning of the musketeer - the latter formed two-thirds of the men of the infantry units in the early seventeenth century. The reason for this was, that these men required incisor teeth to open the bandolier (wooden tubes about 4 inches long attached to a shoulder strap containing gun-powder).[74]

From 1696 to 1865, the cartridge superseded the bandolier; it contained both powder charge and bullet, necessitating the use of incisors *and* canines to tear open the cartridge. Grenadiers were also required to use their incisors to open the fuse of the grenade. The 'Words of Command' for the Musketeer were:

> No. 21: " Open them with your teeth"- the explanation for this was, "Bring the charger to your Mouth, pulling off the Cap with your Teeth and the help of your thumb"
> No. 22: " Charge with Powder" - "Bring your charger to the muzzle, turning it up, pouring the Powder in the Barrel." [75]

By 1740, all Infantry men in the British Army were required to use their teeth to bite off the top of the cartridge. The 'Words of Command' being slightly changed, the cartridge was to be brought to the mouth, "...holding it between forefinger and thumb, and bite off the top of it...". [76] The use of cartridges of this type is reputed to have been one of the causes of the Indian Mutiny (1857-1858). The Sepoy troops refused to use the cartridges which it was believed, (and there appears to have been some foundation for this), were greased with a mixture of cows' and pigs'

lard; to have had oral contact with it would have been an insult to both Hindus and Muslims. The long prison sentences which they were given incensed their comrades and on 10 May at Meerut, they shot their British officers, marched on Delhi and proclaimed the native King of Delhi the Emperor of Hindustan. The seizure of Delhi provided the focus and set the pattern for the whole mutiny which spread throughout Northern India. [77]

With the introduction of breech-loading Enfield rifles in 1866, the British infantry man no longer required to be in possession of incisor and canine teeth in order to fire his rifle.[78] Perhaps this was one of the reasons for the military and Government indifference to the dental condition of the Services until the publication of the Report on Physical Deterioration in 1904. There was no such apathy among the concerned dentists campaigning for dental attention for the teeth of the nation's school children, highlighted in the above-mentioned 'Report'. Commenting in 1887 in the British Journal of Dental Science, the editor linked the state of the childrens' teeth with the needs of the Services. On the question of State 'Interference' he had this to say:

> ...State interference in the health of the masses is practically the outcome of the last few years, and the outcry for sanitation which has aroused the minds of thoughtful men, have of late been re-echoing throughout the dental world. In a series of articles in this Journal, the subjects of State intervention for the better attention to the teeth of the masses and the study of personal hygiene of the teeth, have been fully discussed; and in the present issue we complete one of the most important papers yet written on the subject of State protection of the teeth of children under its immediate charge. Mr MacPherson Fisher has done a most marked service in collecting the facts recorded in his paper, and in marshalling them so as to render the conclusions irrefragable. ... [79]

The editor goes on to link the work of Fisher with George Cunningham:

> ...in a thoughtful paper, [Cunningham] deals with another branch of State Medicine, namely, the due supervision of the teeth of men engaged in the services. We have ourselves pointed out how largely the well-being of a community, indeed of a nation, depends upon the condition of the teeth of the individuals who go to form the nation itself. It is therefore incontestably of the first importance to insist upon dental supervision alike of all children under state control whether as school children, or as *employés* in State offices, and of adults who come under the State's inspection from their occupations. ... [80]

Two years later at the First International Congress held in Paris in 1889, George Cunningham again urged the regular employment of dental surgeons to treat men in the services.[81] At the Cambridge Conference on the Condition of School Childrens' Teeth already referred to, he said:

> It is, for example, a well-known fact that a large proportion of the young men declared unfit for naval and military service are rejected solely on the ground of dental disease such as might with ease have been prevented by a comparatively small amount of proper attention at an earlier age. ...[82]

The outbreak of the South African War in 1899, marked an important event in dental history, when Frederick Newland Pedley was selected to accompany a voluntary hospital unit to Cape Town in 1900. He was the first dentist to treat British troops on active service, providing most of the dental equipment at his own expense. [83]

In the aftermath of the War, the concern of the dental profession was shared by public opinion when it was disclosed that 5,574 men had been killed by the enemy; 16,000 died from disease in one form or another and 2,451 were invalided home because of dental disease. [84]

The British Medical Journal had also been contributing to the on-going debate on the state of the teeth of army recruits and the need for dental treatment for school children:

> ...Many a man of good physique is rejected both by the Army and Navy Medical Examining Boards on account of defective teeth. It is, we believe taken as a broad rule that when the teeth are lost or decayed there is no chance of the recruit being admitted to either service. Not only amongst the men, but also amongst those who wish to enter the services as officers, the question of good or bad teeth is an anxious one. For the recruit who wishes to join the ranks to be refused is not an actual monetary loss, but for a young man qualifying himself for a competitive examination, involving considerable expenditure of time and money, to be rejected for having one more or less defective is a serious matter. ...[85]

The 'Journal' editor goes on to ask:

> ...Can children with carious teeth grow into healthy adults? Can a race thrive whose children are so afflicted? When one has obtained full growth it may not matter much whether the food is masticated by natural or artificial means, provided it is properly done; but with children it is a different matter and the state of our childrens' teeth is a question of national importance. ...[86]

Following strong representation from the British Medical and Dental Associations to the Secretary of State for War, four dental surgeons were sent to South Africa in 1901. [87] In addition, two further dentists were appointed to the Army at home with a salary of 20s a day. They were required to provide their own instruments and "...not surprisingly proved quite inadequate to cope with the demand for dental treatment...". [88]

The British Dental Journal in 1903, published the following account vouched for by an officer at the front in South Africa. According to him, a Militia Battalion of the Cheshire Regiment, one of the last to be embodied, was sent out to fight in the South African War. It would be expected therefore, that they had been carefully scrutinised as to

the state of the men's teeth. However, there was so much suffering from gastric and intestinal troubles following the ingestion of rough and imperfectly masticated food, that a general medical inspection was ordered.

The inspection revealed an absence of 'grinding' teeth among the men and as a result of this, orders were given for the immediate supply of mincing machines. These were sent up from the base in numbers equal to two machines per company or as the men were distributed in the block houses. The result appears to have been satisfactory as far as the men in the block houses were concerned, as the report concludes that the latter duty, "... offered greater leisure for culinary operations than was the case for the men at the front...".[89]

An editorial in the British Journal of Dental Science in 1907 reports on the Annual Meeting of the BDA held at Cardiff. The subject under discussion was the teeth of the nation and what steps could be taken to bring about an improvement. It was pointed out that 'enormous' wastage due to defective teeth had occurred during the South African War posing a threat to the nation. Numbers of men had, "... lacked sufficient teeth to masticate ordinary food, and to the same cause is due a large proportion, if not the majority, of the rejections of otherwise suitable army recruits at the present time...".[90] The solution, according to the writer was, "... to educate the people to regard the care of the teeth as a matter of the highest importance and check decay in the teeth of school children...". [91] An interesting comment on the cost of providing skilled attention for the teeth of all elementary school children, put at £1.2 million per year, was that this amount should be treated as a national charge and not allowed to fall on the shoulders of the ratepayers.[92]

The official Government response to the widespread criticism on medical and dental grounds surrounding the South African Wars, was reported in the September 1908 issue of the British Dental Journal. The Director-General of the Army Medical Department, Sir Alfred Keogh, reported to the Secretary of War:

> ...Loss or decay of teeth caused about 17% of all the rejections from the Army, and this is nearly double the number of rejections due to any other defect, apart from mere failure to attain certain physical standards of size....the inefficiency caused by defective teeth during the war in South Africa made recruiting Medical Officers think that a very high dental standard in recruits was absolutely necessary. The inefficiency attributed to defective teeth during the war was much over-rated. A great deal of it was really the effect of scorbutic taint and of lowered vitality brought about by a very prolonged campaign. ... Men tired of field service also sometimes made use of bad teeth as an excuse for going to hospital. A more lenient standard of dentition was adopted in April 1906. and a rapid decrease in the rate of rejections followed. ...[93]

If the Army authorities thought that the need for an efficient dentition had receded with the introduction of breech-loading weapons, they seemed to have forgotten the well-known adage, attributed to Napoleon Bonaparte, that an army marches on its stomach. The issue of defective dentition in the Army refused to go away, and the following exchange of questions and answers took place in the House of Commons in September of 1909:

> Mr. W.Thorne (West Ham, S. Lab.) asked the Secretary of State for War if he could now state whether the eleven soldiers who were discharged during the week ending September 19 1909, at Colchester on account of bad teeth were discharged from the Army entirely, or only discharged from the Colours to the first-class Army Reserve.
>
> Mr. Acland (Yorkshire, Richmond), Financial Secretary to the War Office: Thirteen men of the 8th Hussars, who are under orders for service in India, were rejected as medically unfit on account of defective teeth. The sum of £1 per head is granted for men with defective teeth, but as the cost of such treatment was assessed at a larger sum for these men, they were given the option of paying the extra amount required to make their teeth sound or of being discharged as medically unfit for

> further service. Three men elected the former course and ten the latter.
>
> Mr. Lee (Hants, Fareham): Are we to understand that the only reason why these men could not get their teeth put in a proper state is that it would entail a certain expense to the public?
>
> Mr. Acland: We do not think it justifiable to pay more than £1 to put men's teeth right. If the teeth are so bad that expenditure is not sufficient, we prefer to dispense with their services. [94]

Later on a questioner asked the Secretary of State for War, if in view of the fact that many otherwise qualified recruits were rejected because of defective teeth, means would be taken to rectify this failing. The reply was that if in the opinion of the recruiting medical officer, dental treatment will render a recruit efficient, the necessary treatment is now given, provided that the cost of such treatment does not exceed £1. Mr. Ward, who asked the question:

> Is that really the estimate of the value of a recruit? Mr. Haldane (for the War Office): No, it is not; but we do not provide false teeth for 50,000 recruits. [95]

The Admirality it would appear, were even less concerned about the efficient dentition of their sailors and issued a statement to the effect that *no* dental standard would be expected of men already serving in the Navy, or that any man would be invalided out of the Service on account of the state of their teeth unless they were suffering from some consequent disability which already in itself incapacitated them from the performance of their duties.[96]

Scottish dentists were also concerned with the declining dental standards applied to the Services. At a joint meeting of the BDA and the Odonto-Chirurgical Society held at Edinburgh in January 1909, H.G.H.Cowell, LDS, formerly Army Dental Surgeon to the Scottish Command spoke on the subject of *Army Dentistry.* [97] Cowell pointed out that the acceptance of a recruit as being dentally fit, depended on the medical officer's interpretation of the phrase "the

recruit must have sufficient teeth to masticate his food." One interpretation of this regulation had led to the acceptance of a considerable percentage of men whose teeth are, "... practically non-existent through the ravages of dental caries, both jaws presenting the unfortunately too well-known appearance of rows of carious teeth protruding through a mass of spongy, inflamed and pus-exuding gums." [98] A certain number of medical officers would have no hesitation in rejecting such men, but others would accept them. Cowell referred to one such person, namely, Lieutenant-Colonel S.Westcott CMG, RAMC, who was late Medical Inspector of Recruiting, Northern Command. Westcott, to quote Cowell, was "... an apostle of the toothless brigade and to whose influence is popularly attributed the late reactionary policy with regard to army dentistry...".[99]

Westcott's explanation of the cause of the poor dental condition of the troops in the South African Campaign included the observations, that the caries found had no connection with that of the ordinary decay of peace-time, nor that with the standard of teeth which should be required of recruits. Cowell went on to quote from a paper that Westcott had written, called *The Teeth of the Soldier*:

> ...it is rather a question of the preventive hygiene of war, and must be classed with enteric, dysentery and scurvy as a disease of long and trying campaigns. It was due to the attack of organisms of extreme peptonizing and acid-forming powers on the alveoli, gums and teeth of those rendered susceptible by exposure to the reducing influence of long-continued active service. It was of the nature of an epidemic, and prevailed to a greater extent than was suggested by the returns. It was simply an outcry from exhausted Nature for a period of recuperative rest, and it will happen in any country under similar circumstances, and can be prevented by obvious means. ...[100]

Cowell urged that the employment of an adequate number of regular army dentists was the best solution to the problem of dental decay in the Army - the American Government was already doing this.

In addition he showed that from a financial point of view the employment of regular dentists would actually save the Country money by eradicating the cost involved in invaliding men out of the Army. [101]

In spite of the persistent efforts of concerned dentists, not a single dentist was included in the large expeditionary force that was sent to France on the outbreak of war in August 1914.[102] It is said that in October of that year, Sir Douglas Haig, Commander of the First Army was suffering severe toothache and it was discovered that there was no army dental surgeon in the whole Expeditionary Force.[103] Soon after this incident the first group of dentists was despatched to France. Eleven dental surgeons were sent in November with suitable equipment. They were given the rank and pay of Lieutenant and were attached to the RAMC. It was also announced that dental officers would be sent to the military hospitals on the same basis.

A detailed description of the development of dentistry in the Services, during the 1914-1918 War, is outwith the scope of this thesis. Only the briefest of accounts can be given where events, or views and opinions, reflected on the state of dentistry. Many decisions were taken, which were to have a significant bearing on the future development of dentistry in general.

The newspapers were a continuous source of information during the war years, much of it independent of official sources; and although a major amount of space was devoted to reports of battles in the various theatres of war, the Glasgow Herald occasionally carried items pertaining to dentistry. In an article published in January 1915, entitled, *Overhauling the Army's Teeth*, the comment is made that "... as a nation Britishers have not been mindful of their teeth, and we are paying the penalty to-day in the rejection of many men otherwise physically fit for the Army...". [104]

The article goes on to state that the War Office has relaxed the 'dental test' slightly, since the outbreak of war, and was relying on vigorous measures being taken unofficially to overhaul deficiencies among the troops. Dental and other hospitals in London were carrying out extractions and voluntary workers were supplying dentures. One such organisation was the 'Soldiers Dental Aid Fund.' The paper reported that hundreds of men, some sent home from the front for the purpose and many ex-service men, had been treated and as the numbers were growing daily, it was evident that a big effort would be required in this direction.

It will be recalled that Edinburgh Dental Hospital treated thousands of Army personnel in the first years of the War until the Army set up its own Dental Centres (see Chapter 5.5). The reporter interviewed the secretary of the Aid Fund. "...Teeth are not a picturesque subject... but there is no more practical form in which the public can assist the national cause than in helping this important work...". [105] An RAMC officer stated that nearly every man of his corps required something done. A Glasgow Herald report in April of 1915 commented on the fact that the War Office had authorised grants for the provision of dental treatment by voluntary agencies - "a revolution in War Office tradition," according to the Herald. [106] The Soldiers' Dental Aid Society had now provided new dentures for 2,500 soldiers, and voluntary work with a Naval Division had established the fact that 30% of the men were dentally deficient. The report concluded with the lines, " ..'Appalling' was the epithet applied to the dental state of many of the applicants who came from Scotland...". [107]

A further editorial comment in August of that year drew attention to the fact that the German Army had been well supplied with dentists from the beginning of the War. Dental students who were in the Army were being recalled to practise dental work. In addition German Army doctors were supplied with assistants skilled in dentistry for the special purpose of attending to wounds of the jaws.[108]

It had also been found that broken dentures were a frequent occurrence and dentists from base hospitals went to the front lines to carry out repairs.

The issue of the best distribution of dentists between the demands of the Services and that of the civilian population was frequently raised. Tribunals throughout the Country had been set up to adjudicate on whether certain occupations were exempt from conscription which had been introduced in January 1916. [109] The Glasgow Herald reported in February 1917 on a hearing of the London Appeal Tribunal. The chairman commented on the case of a dental mechanic who had come before them. He understood that "...the Army was now badly in need of dentists and dental mechanics and accordingly the appeal for exemption was refused...". [110] The Chairmen continued his remarks, which were reported in the paper:

> ...The decision and the grounds for it had received wide publicity in the press... he had received a large number of letters from qualified dentists and mechanics who were serving in the ranks and who stated that the authorities declined to use them in their professional capacity.[111]

The Chairmen went on to say that he had been informed by the British Dental Association that out of 2,300 registered dentists of military age, only 560 were serving as dental surgeons. A considerable number of them were serving in the combatant ranks and some were employed as privates in the RAMC on other than professional duties, "... in sweeping floors and doing other menial work...". [112] The Chairman felt that if these facts were true, the Army should make use of the qualified men they already had in the Army, "... before making further demands on the very restricted number of dental surgeons and dental mechanics who were left to attend to hospitals and the needs of the civil population...". [113]

The Glasgow Herald's head-line, 'Dentists employed in sweeping floors' was more than a tacit condemnation of the waste of professional skills at a time when there was a shortage of qualified dentists to attend to the civilian population. This dearth of qualified dentists 'at home' must have been fairly serious, because shortly afterwards, Appeal Tribunals were told that "...owing to the danger of further reducing the number of dentists, exemption should be granted, unless it can be shown that the services of a particular man are not required...". [114] This applied to Registered dentists who were in practice. Each case would be taken on its merits.

In 1917 a Dental Services Committee was set up with representatives from the BDA and various Government departments. Its remit was to "...ascertain in what districts there was an urgent need for dentists...and to assist dentists ...in complying with the conditions prevailing." It was understood that there was an urgent need for dentists in some munitions areas and in some hospitals and an editorial in the British Dental Journal of 16 July, urged members to co-operate with the committee. [115] The shortage of qualified dentists to attend to civilian needs and the lack of an organised dental service for the Armed forces, led to the setting-up in 1917, of a Parliamentary Committee on the Relation of Military Dental Service to Man-Power - 'the Pennefather Committee' - D.F. Pennefather MP, being its chairman. The committee reported on 12 December 1917 and its recommendations were published in the British Dental Journal in February 1918.[116]

Briefly, the Committee concluded that efficient man-power of the Army would be increased and sickness and suffering prevented, by greater attention being paid to the dental needs of the soldiers, before they were sent abroad, particularly as regards conservative treatment. This recommended increasing the number of qualified dental surgeons at base camps, casualty clearing stations and the

use of travelling dental 'lorries' or ambulances and co-operation of skilled dental surgeons with Army Medical Officers in the treatment of jaw wounds. Qualified dental surgeons should not be employed in combatant roles and finally, that military dental service be under the control of experienced dental surgeons with special authority over all Army dental officers of all ranks. [117]

Answering question in the House of Commons in May 1918, Mr MacPherson (Under-Secretary for War), said that the War Office had already taken steps to place the dental examination of the teeth of recruits and the dental care of serving soldiers on a satisfactory basis. The total number of dental surgeons now employed was 584 and 233 dental surgeons who were previously employed as combatants had now received dental commissions.[118] This announcement was augmented in July by the announcement that all dental surgeons who were called up would only work in their professional capacity and as commissioned officers. Furthermore, full-time dental students would be exempt from military service during their training. [119]

The final months of the War saw the establishment of the Royal Air Force and vacancies being advertised for dental surgeons as commissioned officers. It was also announced that all dental surgeons employed by the Navy would be given commissions in the RNVR. [120]

A significant publication by the Government in 1920 was concerned with the results of physical examinations of men of military age between November 1917 and October 1918. Nearly 2.5 million men were examined, but only 36% could be regarded as up to the full normal standard of health. More than 10% were judged totally and permanently unfit for any form of military service. To quote the Glasgow Herald, "...in other words, only one man in three was found to be normally healthy, and one man in ten was a physical wreck." [121]

Dealing with Scottish manhood, the report says that in the Edinburgh area, "...the physique of the younger groups was distinctly below what was expected. " This was attributed to (a) lack of early physical training, (b) arduous work in early life and (c) defective teeth. The report continued, "...among the men over 40, a large proportion were exhibiting signs of old age. " Defective teeth were apparent among all groups. Glasgow fared no better.[122] "...The physical characteristics of the male population are on the whole not good, the stature being on the small side and there was an unduly high percentage of physical malformations...". [123]

Following representations from the BDA and prolonged negotiations with various Government departments, the formation of the Royal Army Dental Corps was authorised by Royal Warrant on 4 January 1921 and the Special Army Order signed by (Sir) Winston Churchill, was published on 11 January. In the same month, the Royal Naval Dental Service was established. [124] The fact that dentistry had been recognised as part of an essential health service not only affecting the individual, but of importance to the nation, had now been established. War time demands had changed the Government's perception of the role of dentistry in contributing to the Nation's health and legislative changes were to bring about the long-awaited amendment to the Dentists Act of 1878.

The next section deals with the increasingly important role of women in dentistry and presents a selection of the differing views expressed on this subject by a male-dominated establishment.

7.4 The Role of Women in Dentistry.

Although Lilian Lindsay was the first British woman to be awarded a Diploma by the Royal College of Surgeons of Edinburgh, in 1895, she was not the first Scotswoman to qualify.[125] This honour belongs to Williemina Simmers who in 1901 received the LDS of the Royal College of Physicians and Surgeons of Glasgow.[126] The first and only Scotswoman to appear on the first Dentists Register of 1879, was Elizabeth Laird of High Street, Monifieth, Fife, who was registered as having been in *bona fide* dental practice in conjunction with pharmacy before the introduction of the Act.[127]

An editorial which appeared in the British Journal of Dental Science in 1885, made quite clear the view-point of that organ on the subject of women in dentistry:

> ...to us it would appear likely that in England [sic] lady dentists will prove a development only of the far distant future, if at all. On the other hand, the employment of ladies in less ambitious, certainly not less useful capacity, of office [surgery] assistants might very well become more general and more openly recognised. ... [128]

An editorial in the Journal of the British Dental Association in 1887, on the proposed admission of ladies as students to the National Dental Hospital in London, produced some comment:

> ...Dentistry may seem to offer some of the opportunities which attracted them,[to medicine and surgery] without the disadvantages which made them hesitate. Yet there are conditions appertaining to dental surgery which make it at least doubtful if the calling is one in which women are likely generally to succeed. ...[129]

The writer continues with the assurance that it should not be thought 'for a moment' that woman's ability to acquire the necessary knowledge and skill was being questioned:

> The hindrance to perfect success will lie purely and simply in the very trying physical conditions of dental work. To stand over a chair for many hours continually exercising slight muscular effort, and subject in a proportion of cases, at least, to some unpleasant influences, is a much more serious strain than at first sight appears, under it a proportion of men sooner or later fail ... [130]

The editorial concludes:

> ...It ought, also, in fairness to be admitted that women have some qualities fitting them at least for that exercise of the conservative treatment of dental disease which marks the present time. Delicacy of touch and patience, and a sympathy with children, are among these. ...[131]

When the Scottish Branch of the British Dental Association elected a lady member in 1895, it set off a correspondence in the Journal of that body. A correspondent signing himself 'Fissure Bur', challenged the interpretation of one of the bye-laws on the grounds that the phrase concerned allowed the admission only of males, as it used the pronoun *he*. The legend was worded as follows: " A person who is registered in the Dentists Register shall be eligible for election, provided that he be of good character". [132] 'Fissure Bur', arguing on the basis of linguistics, thought that the Scottish branch were mistaken. He concluded, "...the precipitancy of the Scottish Branch has landed the British Dental Association in a kind of dilemma and placed their protégée in an invidious and illogical position...". He ended by saying that if lady members were desirable the position could be arrived at, "but not by a rush". [133]

In the following issue of the 'Journal', Fissure Bur's letter elicited a response, and it became clear that the lady in question was Miss Lilian Murray, LDS Edinburgh, the first woman to obtain a qualification in Great Britain. The writer pointed out that the lady's membership had been considered over a period of two months and that she was admitted to membership by the perfectly orderly action of the Scottish Branch on 20 August [1895].

There had been no 'rushing'; everything had been done in order. As a parting shot, the writer noted that Mr Fissure Bur's name did not appear on the Dentists Register for 1895 and consequently he was not a member of the BDA. He must have obtained his information second-hand and like most second-hand information it turned out to be incorrect. [134] Whether Rees Price, the writer of the letter was being facetious is not known.

In November of 1895, past and present students of the National Dental Hospital held their annual dinner. In responding to the toast to the visitors, Mr Christopher Heath FRCS, President of the Royal College of Surgeons, England, had this to say:

> ...I presume that some of you may have taken the trouble to read up the contemporary history of the College, and will know that we have had a discussion as to whether ladies should be admitted to the College. The Scotch Board has already, as I understand, admitted one lady to their licence. Now I need hardly say that where one woman has got her foot other women will certainly follow, and therefore I warn you gentlemen in time, that either you must be prepared to fight the ladies or perhaps you had better join company with them. ...[135]

In a reply to the toast to the chair, Sir Dyce Duckworth MD. was less equivocal:

> ...The President of the College of Surgeons spoke as to the desirability of women entering your branch of the profession. Now as I have been in the Navy I am accustomed to fly my flag, and I make bold here to say, whether you like it or not, that I am one of those who think woman is not a fit human being to be taught or learn, or to practise surgery or dentistry. I have thought over this question for many years, and I believe in the unfitness of women, created as she is for the possibilities of a profession like ours, and I have been told that women students of dentistry who have been undergoing studies for a medical or surgical diploma, present a most sorry sight when they practise dentistry. I maintain that the average woman is not endowed with a sufficient amount of muscle to extract some teeth. We are told that they will only practise among women and children, but I hold that women and children ought to be dealt with by people capable in every respect. ...[136]

There is no record of the reaction to this speech by Sir Dyce Duckworth; obviously his point of view did not prevail, as by 1895 the National Dental Hospital was admitting women to the same course of study as the men. [137]

The controversy over the question of women in dentistry seemed to be a feature of the 1890s. In its issue of April 1896, the Dental Record reports on a debate on the subject entitled, *Should Women be Dentists?* F.Miller MB., apparently a male, launched an attack on what he called the 'new woman', an epithet which he reserved for:

> ...those females (generally women of leisure) whom one meets occasionally, and who have several diagnostic or pathognomonic features. One easily recognises the tall, large-boned muscular woman with prominent cheek and massive jaw-bone, who wears *pince-nez*, tailor made dresses (often badly fitting) and hair closely cropped; we hear she lectures on "Womens'Rights" (and are not in the least surprised), and if she has so far descended from her own pedestal as to marry, her husband is more often than not a little puny individual, whose only attempt at originality is to wear different trousers occasionally, and we feel involuntarily that there has been some mistake and that those articles of attire ought to have been allotted to his better half. ...[138]

Miller thought that one did not meet with the ordinary feeling of 'jolly-good-fellowship' so often among women as one did in men. On the other hand it was more common to meet with examples of 'Hero-worship' in women than in men. He conceded that women had to live as well as men, and if they had to earn their own daily bread, why should they not, if they are able to satisfy the boards of examiners enter the learned professions? He was also of the opinion that most women preferred men dentists to women, just as they would rather have a male doctor to treat them. He was once told by a lady patient, " ladies will never succeed as doctors amongst ladies as they can't sympathise with us as men can". [139]

Turning to the question of whether women were physically and mentally able to become dentists, and whether they could make it profitable, Miller was advised to write to Miss Lilian Murray. He received a considered and objective reply which stressed that as there were some men who could never become dentists so it was the case with women. She was not able to generalise on the subject, for the reason that she had only known one woman beside herself who had been in practice. Women could not claim to have the same physical strength as men but, because of their tact and tenderness were probably more fitted to attend to the teeth of children. As far as extractions were concerned, a woman with skill would succeed as well as a man. In conservation of teeth there was no differentiation between the sexes. What might militate against women, she added was that their natural tenderness would cause them to shrink from treatment, which in order to be performed properly, would cause pain to the patient - local anaesthetics were not usually given routinely at this time for fillings as they were later. [140]

Miller thought that Miss Murray had under-rated the points in favour of women and over-rated those that might be used against women as dentists. Neatness and patience, especially the latter were indispensable qualities for a dentist and here he thought that the old adage, 'Patience is a virtue seldom found in women and never in man,' gave women an advantage. Nevertheless, he still felt that women preferred to go to a male dentist, and he could not imagine that an athletic powerful man who had been suffering from toothache would think about going to a lady dentist to have his tooth pulled. [141]

The July issue of the British Dental Journal carried a warning on the question of female labour in dentistry. A pamphlet which it had obtained, advertised The School of Women Artificial Teeth Mechanics, operating at Chancery Lane, London.

According to the editorial, the school offered to train a girl to the standard of a junior mechanic in three months for a fee of five guineas. This claim was rebutted, as it normally took from 2-4 years to reach the standard necessary to attain junior mechanic standard. In addition the demand for juniors was not very large and beside which, the market was already over-crowded. Any girl, even though they had obtained a perfect knowledge of dental mechanics, would have the greatest difficulty in earning a living. The 'Journal' advised any young lady who is infatuated with the desire of learning mechanical dentistry to go to a qualified dentist or better still she should not learn mechanical dentistry at all, "... and above all not at 65 and 66 Chancery Lane." [142]

The first years of the twentieth century saw the gradual acceptance of women in dentistry in Scotland, if not elsewhere in the United Kingdom and in 1906 at the Annual General Meeting of the Odonto-Chirurgical Society held in Edinburgh, it was agreed to amend the constitution to allow women legally qualified to practise dentistry, to be admitted as members. [143]

The War years saw the deployment of women in trades and occupation previously held to be the monopoly of men, so it was no surprise when the Army, in 1920, recruited three women from the London School of Dental Mechanics to take up service in Germany with the Rhine Army. Selected by the War Office they would serve under the Red Cross on a six months' contract at Cologne with a rank equivalent to sergeant. The Glasgow Herald in reporting the news, pointed out that their wage of 47s6d per week, less 14s mess allowance, was in contrast to the £5-£6 a week being paid by civilian dentists. [144]

The British Dental Association protested 'vigorously' on the grounds that a number of men, disabled or discharged from the services, were available for these posts. The Council of the Association was subsequently informed by the War Office that no further women would be employed.[145]

Notwithstanding male prejudices, by the year 1912, 13 women had obtained their LDS qualification in Scotland; 6 in Glasgow and 7 in Edinburgh. [146] The Register for 1921 contained the names of 17 women, and in 1923, the first Register which took into account the newly-registered under the Dentists Act of 1921, the names of 28 women appeared. [147]

Turning to the Census returns for Scotland between 1861 and 1921, these show that a number of women declared dentistry to be their main occupation, but many were not on the Register, apparently unqualified.

The list is as follows:

1861...3	1891...8	1921...52
1871...1	1901...35	
1881...1	1911...72	

Source: Census Returns Scotland, (Occupation Tables) 1861-1921.

The history of Scottish women in dentistry, can only be sketched in this work. As has been discovered in previous chapters, it is another one of many areas which require further historical research. In the next chapter, the focus of attention shifts to Parliament and deals with Government action following the revelations of the Departmental Committee on the Dentists Act 1878.

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[116] Br.Dent.J. 1918;39:138-152.
[117] Ibid. p152.
[118] Glasgow Herald 2 May 1918
[119] J.E.McAuley, op. cit. p158.
[120] Ibid.

121 Glasgow Herald 28 February 1920.
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137 Dental Record 1896;XVI:155-161.
138 Ibid. p156.
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Chapter 8

State Intervention and the Establishment of the Dental Profession 1900-1921.

This chapter deals with the publication of the first ever Government investigation into the state of dentistry in Great Britain and the enforced and belated armistice between the various warring dental protagonists. A combination of politics and a climate conducive to social reform together with the burgeoning concept of National Welfare, led to State intervention and the long awaited amendment to the 1878 Dentists Act.

Finally, there is a reassessment of the criteria generally considered to be necessary in the definition of a profession. Had dentistry acquired these necessary characteristics to enable its members to assert that dentistry once an occupation, had been transformed? Could dentists claim to have achieved the status of a profession?

8.1 The Second Age of Reform - The Evils of Dentistry Revealed and The Dentists Act 1921.

The parliamentary reforms of the nineteenth century precipitated changes in the perceived sources of power in Scotland. Up until then, "...The traditional social and class structure based upon the ownership of land had carried with it the idea that a Scottish lord, Lowland as well as Highland, was a lord of men as well as land. " [1] The landed lord had now to yield place to a new and much more complex configuration in which the men of industry and of commerce, followed by those of labour made their successive challenges for power.[2]

These bids for a greater say in the control of their country were accelerated by the progressive extensions of the franchise. Men and eventually women, lower and lower down the income scale, were granted the vote and gained the right to admission to parliament.

The Reform Acts of 1832, 1868 and 1884, meant that in Scotland the proportion of those entitled to vote had risen from 1 in 8 in 1833 to 3 in 5 in 1885. [3] It was not until 1918, when the franchise for men was lowered to 21, that women were given the vote and then only those over 30 years of age who were ratepayers or married to ratepayers.[4] Emulating the achievements of the middle and professional classes, following their enfranchisement, the working classes now demanded a share in political power. Their bid was assisted by the success of the Liberal party in the 1906 election which paved the way for the beginning of much-needed social reforms. As Winston Churchill said in a speech at Leicester in 1909, "... The social conditions of the British people in the early years of the twentieth century cannot be contemplated without deep anxiety."[5] Churchill was merely echoing the findings of many social reformers at this time, such as Charles Booth and Benjamin Seebohm Rowntree, not to mention the revelations of the reports on Physical Deterioration and ancillary enquiries. Lloyd George, a year earlier, in a speech at Swansea said, "...in so far as poverty is due to circumstances over which the man has no control, then the state should step in to the very utmost limit of its resources." [6]

The Liberal victory of 1906 resulted in the implementation of a series of social reforms including the Education (Scotland) Act 1908, which along with the 1913 Act allowed for the dental treatment of school children in Scotland. The introduction in 1908 of the Old Age Pension Act was followed in 1911 by the National Insurance Act. The whole project was a triumph for Lloyd George; indeed the Conservative publicist J L Garvin described it as "...the greatest scheme of social reconstruction ever attempted". [7]

The medical part of the scheme came into effect in January 1913, and the doctors who at the beginning had been the most vociferous objectors, became some of its chief beneficiaries.[8]

A few years earlier in 1908, with the health of the people now a subject of national debate, the position of dentistry once again came into prominence. The initiative was taken by the outstanding Scottish campaigner, William Guy of Edinburgh. At the Annual Meeting of the BDA held in Belfast in June 1908, he put forward proposals for a new Dentists Act.[9] Guy who was responsible for its drafting, set out the main principles. These were: the setting up of a General Dental Council, a Dental Register with an annual retention fee, a State examination and a prohibition on the practising of dentistry by unregistered persons under heavy penalties. It was envisaged that registered dentists would be obliged to apply to the Inland Revenue for an annual certificate. The idea behind this was that responsibility would have been invested in the Inland Revenue to prosecute anyone without such a certificate.[10]

Whenever the subject of an all-embracing Register was raised the admission of the unregistered had always been the stumbling block among the qualified dentists. A section in the proposed new Act which does not appear to have been given much attention by dental historians concerns the unregistered, although Campbell stated that due recognition was, "to be afforded to their established rights in the 'Scottish Act'. "[11] Clause XLII, (c), of the proposed Bill, stated that persons not less than 21 years of age who, 12 months prior to the Act, had been solely engaged in *bona fide* practice, would, having made a sworn affidavit before a County Court Judge or Sheriff, be admitted to the Register.

There appears to have been some confusion as to whether these persons would be admitted to the general Register or would be on a separate list. [12] It is possible that the original draft as presented to the Scottish Branch of the BDA had been amended for the General Meeting at Belfast. The 'Scotch' Bill as it became known, was discussed at length and given general approval, with an editorial in the British Dental Journal commenting that, "...We think we may justly attempt to paraphrase this discussion [which took place on the Bill] as being 'unanimous for unanimity'...".[13] Nevertheless, in the following year, at the Annual Meeting of the BDA, a resolution to adopt the proposals *en bloc* was defeated.[14]

Following the passing of the National Insurance Act in 1911, there was considerable discussion on the place of dentistry in the new proposals. Robert Lindsay of Edinburgh addressed the BDA Annual Meeting at Glasgow in 1912. He pointed out that although dentistry was not mentioned directly, there was provision for 'additional benefits' for members of approved societies which could be provided in certain contingencies. Designated among the latter was 'the payment of the whole or of any part of the cost of dental treatment'.

Lindsay pointed out that these benefits would only be entertained if the society had a surplus of funds, and that the demand for dental treatment would not at first be large, as there were many other benefits from which to choose. Like some others he foresaw that, if there was to be a demand by the majority of the 13,000,000 members of the Friendly Societies, or even a substantial number, "...it would have been absolutely impossible for the profession to supply it and the recognition of the unregistered would have been inevitable...". [15]

Lindsay argued that, unlike the elaborate system set up for the provision of medical treatment through Clubs, Friendly Societies and Trade Unions, there was no such organisation for dental treatment and whereas the doctors knew that the medical service could not be run without their co-operation, the dentists were aware that the service which was to be offered was being provided at present largely by the unregistered. It was important, he stressed, to have a scheme prepared to place before the Insurance Commissioners who would be in control of the new organisation. It is interesting to note in passing that he dismissed a system of capitation fees and advised instead a scale of fees which would be uniform throughout the Country. Lindsay thought that this was an opportunity to settle the question of the unregistered by making it a condition of service in the proposed scheme that all participants be registered. They had discussed the problem of the unregistered for five years continuously and they were no nearer the solution. Perhaps an outflanking, not a frontal attack (as suggested by William Guy at Belfast), by the use of economic means might be the answer. [16]

At a subsequent meeting of the Representative Board of the BDA, it was decided on the motion of Robert Lindsay:

> ...That the Board appoint a committee to safeguard the interests of the profession, as affected by the National Insurance Act, and to prepare a scheme for the supply of Dental Service by registered dental practitioners. ...[17]

The Insurance Act and Dental Service Committee was duly set up and it soon became clear that any scheme which purported to be National could not work without the assistance of the unregistered. [18] Many schemes were discussed by the committee to set up a Public Dental Service staffed by qualified practitioners who would pay a rent but be provided with premises and equipment.

treatment would be restricted to those who were eligible for medical treatment under the National Insurance Act and the fees charged should be proportional to the income of the patient. [19] A number of these clinics were set up in various towns, but the outbreak of War curtailed the further expansion of these services, described in an official Government Report as, "having performed a valuable work."[20]

Scotland led the way in pioneering a dental service with the aim of providing treatment for patients who could not afford the fees charged by the majority of qualified dentists, and at the same time, to combat the activities of the unqualified, to whom these patients would normally go. The Scottish Dentists' Association Limited was set up in November 1913 by a number of dentists who were connected with the Glasgow Dental Hospital. A clinic was established at 2 Cranston Place, Anderson, Glasgow, and the dentists involved fitted out the premises, guaranteeing wages, rent, taxes and cost of materials. The clinic was open in the evenings and the members took it in turn to work two to three hours on a rota system. A second clinic was opened at 181 Crown Street on the South side of the city.

On 9 April 1914, The Glasgow and West of Scotland Dentists' Association was formed to co-ordinate the work. The Scottish Association was limited by guarantee of its members who were not eligible to participate in the profits, if any. Membership in 1919 amounted to 142. The clinics were open from 5pm to 9pm with a staff of eleven dentists. [21] Commenting on the scheme, the Departmental Report on The Dentists Act noted that almost 4,000 patients had received treatment, but that the outbreak of the War had seriously curtailed its development. Many of the operators were on active service; there was a shortage of dentists in the areas, the hours of the employees had changed with war-time conditions and there were considerable lighting restrictions.

The Association was the only body at present carrying on this public dental service in Scotland, and significantly the fees charged compared very favourably with those charged by the unqualified. Ironically, due to the embargo on advertising, the success of the Glasgow branches was not as great as could be desired.[22] A similar service in Dundee had been inaugurated in association with the Dundee Dental Hospital. The scale of fees operated at the clinics is reproduced below:

1. Extractions:

	Per tooth
(a) Without anaesthetic	6s
(b) With local anaesthetic	1s
(c) With gas 3s 6d and	1s

2. Fillings:

	Per filling
(a) Amalgam &c	3s 6d
(b) Synthetic porcelain	4s 6d
(c) Gold	£1 1s
(d) Crowns	£1 1s each
(e) Inlays	£1 1s "

3.Dentures:

(a)Full upper or lower £2 10s with extractions 5s extra.

(b) Partial upper or lower	3s 11d per tooth
(c) Single tooth	5s
(d) Remodels	£1 3s 6d per tooth.

Source: Departmental Committee on the Dentists Act 1878, [Cmd33] 1919, p35.

The position of the unregistered was once again the topic of discussion at a meeting of the Incorporated Dental Society held in March 1914. The title of the lecture by Dr Wallace was, *The Prospects of Reform.* He reiterated that the problem at the present time was the position of the unregistered. The rational attitude as well as the sentiments of registered dentists and students required radical change:

> ...The registered and the unregistered had been too long at loggerheads and had failed to recognise that their attitude to one another was futile and detrimental not only to themselves but to the evolution of dentistry ... instead of preparing to circumvent each other they should at once adopt a policy of reconciliation and conjoint action. ... the Government would promptly recognise that the interests of the two bodies instead of being antagonistic were identical. ...[23]

At the Annual Dinner of the Glasgow Dental Students' Society held on 18 December 1913, the subject was the prospect of State dental treatment under the National Insurance Act. Medical attention, said Mr Alexander Naismith, was now available to every working person in the Country and in a few years dental aid might also be supplied. The BDA and others were implementing schemes to supply dental aid to people who could not pay the ordinary fees of dental practitioners. It was hoped that the clinics which had been opened in Anderson and Gorbals would be the forerunners of many more throughout Scotland. [24]

Every scheme which was discussed ran into the same problem of how the dental needs of the population could be met by the limited number of qualified men. At the Annual Meeting of the BDA in 1913, a resolution was proposed that a scheme for the supply of a Public Dental Service by registered dental practitioners be adopted by the profession. The patients for whom the scheme was intended would be confined to those with an income of less than £160 per annum.

One of the speakers in the debate said that the remarks of Mr Lindsay on the improbability of 13,000,000 people being treated by some 5,000 qualified dentists, was an echo of what John Tomes had said many years ago, namely, that the power of the dental profession was by no means equal to the wants of the public. He could not see how the enormous work involved was to be carried out by the number of qualified dental surgeons now existing. [25]

commenting on the remarks made at the Annual Dinner of the Odontological Society, the Glasgow Herald in 1914 praised "the professional enterprise in Glasgow" in opening clinics at Partick and Gorbals. Speakers once again drew attention to the methods used by syndicates employing canvassers, all unqualified, to go from house to house seeking contracts on a commission basis of 10 per cent. The contracts were binding on the patient to pay £10 by instalments. One concern had thirty such men, canvassing on this basis:

> ...Not one of whom could pretend to any knowledge of dentistry. Most of their victims were female domestic servants ... the instances of female credulity in that connection were amazing and the results deplorable. [26]

The subject of the shortage of qualified dentists had been on the agenda of the General Medical Council for some time. The matter had been referred to the Dental Education and Examination Committee who in turn had prepared a questionnaire to be sent to all teaching and examining bodies throughout Britain. Three questions dealt with the dental curriculum, entrance qualifications and the length of the dental course.[27] The fourth question asked: to what extent is the deficient supply [of qualified dentists] attributable to the failure of the existing law, as judicially interpreted, to check unqualified practice? The answers were practically unanimous that it was the main cause; some bodies said it was the sole cause.[28]

By now the Government had started their own investigations into the state of dentistry and on 16 July 1917, it was announced that a Departmental Committee had been set up by the Lord President of the Council to, " Investigate the extent and gravity of the evils connected with the practice of dentistry and dental surgery by persons not qualified under the Dentists Act." [29]

The conclusion of hostilities in 1918 brought a plethora of plans, meetings, discussions and articles on the subject of a State Dental Service. One such contributor was F.W. Broderick, a dental surgeon who was serving as a Major in the Royal Army Medical Corps. Broderick observed that "...One of the minor results of the War has undoubtedly been the opening of the eyes of the authorities to the appalling condition of the teeth of the people of these islands...".[30] Dealing with the outbreak of war in 1914, he said:

> ...During the rush to volunteer in the early days of hostilities, when the pick of the nation placed their services at the call of the State, thousands were turned down by the recruiting authorities because of the condition of their mouths, and this became such a menace to the rapid raising of a large Army that the War Office was obliged to alter their standard with regard to useful opposing teeth, and later gave permission for more public money to be spent in dental treatment for the men after enlistment. ...[31]

Broderick's ideas on a State Dental Service were based on the Army dental organisation with equipped and furnished units, distributed throughout the Country. They would be staffed by 'Dental Officers' and 'Inspectors' who would administer and supervise the service. All would be salaried and would be entitled to a pension on retirement. Promising candidates would be advanced capital to allow them to qualify on condition that they join the 'Service'. The Service would offer "... a regular, not too strenuous life, with an assured income, together with a useful bonus, or pension ... the emoluments being considerably larger than any other service can offer...".[32] The scheme which Broderick had outlined, followed very closely that which was eventually introduced in Scotland, as the successor to the School Dental Service in the 1970s, under the name of the Community Dental Service.

The Report of the Departmental Committee on the Dentists Act of 1878 [Cmd 33] 1919, 'to enquire into the extent and gravity of the evils of dental practice by persons not qualified under the Act,' was published on 9 February 1919. The Rt. Hon. F.D.Acland MP, had been appointed chairman and thereafter the Report was referred to as the "Acland Report." It ran to 54 closely-typed pages and encapsulated within its covers an abbreviated history of dentistry since the Dentists Act of 1878. The Committee examined every aspect of dentistry and all issues that were considered relevant.[33] Written evidence, memoranda and other documents were received from representative bodies, societies and by interested persons. Among the 27 witnesses who appeared personally before the Committee were executive members of the BDA and significantly, F.Butterfield and Hall P.J. Robinson, Secretary and Solicitor respectively, of the Incorporated Dental Society. Scottish interests were represented by Sir Donald MacAlister, Principal of Glasgow University, J.Towart of The Medical and Dental Defence Union of Scotland and G.Hills Watson, School Dentist for Leith.

It is not practical nor desirable to attempt to describe the findings of the Acland Report investigation; much of its contents summarise and crystallize most succinctly, the subject matter of this work. Such an important, and in the opinion of this writer, historic document deserves to be read in the original form. The recommendations contained in the "Summary of the Principal Recommendations", when implemented, literally transformed the whole course of dentistry. These recommendations, were without doubt a watershed in the development of the dental profession and are reproduced in full as appendix B.

The conclusion reached by the committee is worth quoting:

> ...in our opinion, the State cannot afford to allow the health of the workers of the nation to be continuously undermined by dental neglect. Steps should be taken without delay to recognise dentistry as one of the chief, if not the chief means for preventing ill-health, and every possible means should be employed for

> enlightening the public as to the need for conservative treatment of diseased teeth. 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 rendered available for all needing it. The present anomalous position in which an uneducated, untrained person can practise as a dentist, performing surgical operations on the teeth and jaws, doing untold damage and casting undeserved odium and dishonour on a scientific profession is intolerable, and should be dealt with immediately. [34]

Naturally the report was greeted with acclaim by the unregistered and marked hostility by many of the registered dentists, although there was clearly a division of opinion among the latter.[35] The BDA organised a series of extraordinary general meetings throughout the Country and counter-proposals were prepared. The BDA's solution to the problem of the unregistered was to admit them to a separate list, if they had been in practice for 5 years before the passing of the Act.[36] It was also decided to hold a referendum on their proposals. The result of this was that of the 1,763 dentists who took part, 963 were for and 800 against the plan. With a membership close to 3,000, this represented a poll of some 60%.[37]

Meanwhile, away from the dento-political scene, the public health of the people of Scotland was organised on a national basis by the establishment on 3 June 1919, of the Scottish Board of Health, the Secretary of State for Scotland being President.[38] Under Section 4 (1) (i) of the Act, the Board took over all the duties and powers of the Scottish Education Department with respect to the medical and dental inspection of school children. School Boards would no longer have this function, which would now be organised as a single service. In its Report, the Board points out that there were 240 Approved Societies in Scotland with a total membership of 1,533,923.[39] These Societies were the medium through which medical treatment was obtained under the National Insurance Act of 1911.

The Board's 2nd Annual Report for 1920, paints a sombre picture of the economic situation:

> Overshadowing all present endeavours after social betterment is the grave financial situation of the country, which renders imperative the most stringent economy in all public expenditure. ... the economic situation must be the dominant factor in shaping the health policy of the nation. ...at the same time it cannot be ignored that a policy of restriction is one which calls for exceptional caution when applied to such a service as the public health, the efficiency of which cannot be impaired without grave risk to the well-being of the community.[40]

On a brighter note, the report commends the new Model Centre at Motherwell, built and equipped with funds presented by the Carnegie Trustees for the public provision of welfare to mothers and children. There would be a Social and Educational Centre and a Medical Centre the latter would provide dental treatment for nursing mothers and children.[41]

The Scottish Board of Health had also been considering the shape of future public health services and had set up a Consultative Council on Medical and Allied Services. The Council issued an interim report in 1920, entitled - *A Scheme for Medical Services for Scotland.*[42] Among the 20 members of the committee was John A.Young LDS, who was apparently responsible for the contribution on dentistry in the report:

> The problem of a Dental Service is one which calls for prompt solution. The importance in relation to general health of a sound condition of the mouth is being more and more recognised by the medical profession. Yet the facilities for preventive and conservative dentistry accessible to the class with which the Council is at present dealing are woefully deficient. In many densely populated districts, there are hardly any qualified dentists, and all the dental aid many of the inhabitants seek is the extraction of painful teeth. A beginning has been made in some areas in connection with the school service; but the problem will require for its solution all the personnel which the contemplated new Dental Act is designed to provide. ...[43]

The recommendations of this Consultative Council with regard to the future shape of a public health service, foreshadowed with remarkable accuracy the National Health Service introduced in 1948.[44]

A Public Dental Service was again the subject of an editorial in the British Dental Journal in October 1920. Commenting on the attention being given to the issue of a Dental Health Service by the public and the press, it states:

> ...it has required, however, the national calamity of a great war, with its demands upon the manhood of the country, to bring home to those in authority the serious nature of the case, and to induce them to contemplate the steps necessary to check the evil and to attempt to prevent it in the future. [45]

The first indications of the contents of the forthcoming Dentists Act were circulating early in 1920. The Glasgow Herald reported on the Annual Meeting of the National Dental Society which had been set up within the past few years to represent the interests of the unregistered dentists. The President, Mr Victor Lawson, commenting on the proposed legislation said:

> ...There is strong opposition to the proposed legislation for unregistered dentists, but I have the highest authority for saying that the association and the Incorporated Dental Society will be taken upon the new Register en bloc. ... [46]

At a further session of the Association, Mr Blizard who was one of the members of the Acland Committee, said that the committee had heard evidence to the effect that registered dentists numbered only 5,000 and confined their treatment to the upper and middle classes, leaving the class which most needed attention to the non-registered members of the profession. These numbered about 15,000, and the Committee had arrived at the unanimous conclusion that some scheme or other should be formed whereby unregistered men should be admitted to the Register.[47]

Dr J.D.Brownlie, President, spoke at a meeting of the West of Scotland Branch of the BDA in October 1920. His address also carried a warning of the changes to come:

> Within the past few years the importance of our speciality in relation to Public Health has received greater prominence than ever before. The deplorable condition of the mouths of the men drafted into the Army drew the attention of the authorities to the subject, and the Report of the Dentists Act committee [the Acland Report] made public and definite the great shortage of qualified dentists in relation to the needs of the community, a fact of which we as a profession have long been aware. A profession numbering only 5,000 members is hopelessly inadequate to care for the teeth of a population of nearly 50,000,000. ... [48]

Dr Brownlie went on to stress that the terms of the new Act would not meet with the unqualified approval of the profession or the Association. He thought that the Association's representations would carry more weight than that of individuals, but the necessity for an increase in their numbers was urgent and the Government had to consider how to meet the needs of the community with the resources at its disposal. [49]

In the 30 October 1920 issue of the British Medical Journal and reprinted by the British Dental Journal, an editorial commented on the expected new Dental Bill: "...the outstanding feature of the Bill will be the complete prohibition of unregistered practice, and this will be an inestimable boon...". [50] Inseparable from this prohibition was the admission to the Register of unqualified practitioners, to which it was understood, the BDA had reluctantly agreed. The editorial gave a word of advice; the Dental Association should try to get the Minister to agree to insert amendments, but:

> ...to be very chary of endeavouring to force anything upon him in Parliament lest the essential boon of prohibition - a very real and great step in advance of previous medical legislation - be lost. [51]

Another warning came from Captain Walter Elliot MP, in an after-dinner speech delivered to the West of Scotland Branch of the BDA in February of 1921. (Elliot later became Minister of Health in the Chamberlain Government and Secretary of State for Scotland).[51a] He advised the profession on the need for compromise on the details of the Dental Bill, in order that a measure which recognised the principles of prohibiting unregistered practice and the control of registered practitioners should be placed upon the Statute Book. He emphasised the importance of a solidly organised profession in the existing circumstances. He pointed out that "...in the coming session Parliament was to be called upon to deal with three of the most contentious matters in British politics...".[52] These included a Railway Bill involving the question of Nationalisation, legislation on key industries, anti-dumping and the liquor trade. Compared to these the Dental Bill was insignificant:

> ...If the dentists spoke with one voice nothing could stop them getting their bill, but if the Member of Parliament found the dentists of the country writing to him with all sorts of conflicting advice, he would say probably - ' A plague upon you, settle your disputes among yourselves and then come to me and I will consider your case, and whether it is for the good of the country or not... '[53]

Captain Elliot went on to describe how Army experience had shown them the national advantage of qualified dentistry. There had been nothing more striking in the American Army than the fact that every man had 32 teeth sound teeth. The Americans were not better fighters than our men, " ... but they were a thousand times better at their grub...". The British Army on the other hand, had lost the strength of a couple of strong Army corps of infantry through the fact that we had not taken care of the men's teeth. He firmly believed that the new legislation sought by the dental profession would be for the benefit of the nation as a whole.

The dental profession had to import into their professional dealings some of the discipline, comradeship and fellowship displayed by the coalminers and boilermakers in order to make an impression on the counsels of the nation. Replying to Captain Elliot's toast, Mr Robert Lindsay said that if they were to go through the present crisis with credit to themselves and with benefit to the public, they must sink their individual differences and unite upon a policy which contained in it the promise of a very great improvement. "...Prohibition and control would produce eventually a condition of affairs better than was dreamed of by the present generation of the profession...".[54]

A prominent opponent of the new Dentists Act was the dental historian, J.Menzies Campbell who was at that time practising in the West end of Glasgow. Writing to the editor of the British Medical Journal in March 1921 he said, that the Dentists Bill was, "... full of loopholes and treated the symptoms only...". [55] He continued:

> ...It is interesting to note that there are amongst the unregistered dental practitioners in our cities, those who previously earned their livelihood as scene-shifters in theatres, drapers' and grocers' assistants, butchers and miners. The Bill proposes placing on the *Dentists Register* the names of all individuals who have been in practice for five years and conferring on them the title of 'dentist' or 'dental practitioner.' If this should be done, an opportunity will not thereafter be afforded the public of discriminating between those who have undergone a four year course of training and passed examinations and those who have been presented with a title by an Act of Parliament ... A very glaring omission is a clause constituting a tribunal to consider and investigate all claims for admission to the *Register.* ...[56]

Campbell's letter elicited a response in the 2nd April issue of the Journal:

> ...Mr Campbell's letter...is so entirely inaccurate and misleading that it must not be allowed to pass unchallenged ... Mr Campbell states that the Dentists Act of 1878 prohibited unqualified dental practice and that the Dentists Bill of 1920 does not. Exactly the opposite is the case. ... [57]

Referring to Menzies Campbell's phrase of 'a glaring omission,' in not setting up a tribunal etc., the correspondent points out that this is precisely the object of clause 2 in the Bill, establishing the Dental Board. He concludes, " ... surely he cannot have read the Bill he is criticising so severely. "[58]

Menzies Campbell was also opposed to the legalization of Dental Companies, a view which was shared by the BDA and the BMA. He belonged to the faction within the BDA which campaigned for a separate list for the unregistered. He thought that they should be described as 'Operating Dental Mechanics' and suggested that it might be desirable to modify the professional studies for them.

According to Richards, Menzies Campbell also wrote letters to several Scottish newspapers on a similar theme. [59] But in spite of the obvious divisions within the profession, on 20 December 1920, the Government introduced a Bill ' to amend the Dentists Act 1878 and the provisions of the Medical Act 1886, amending that Act'. [60] On the following day the Bill was withdrawn without any official reason being given.[61] But the new Minister was reported as having said that he would not pass the Bill through that session of Parliament because "...there were differences of opinion with regard to it." [62]

That there were serious divisions within the BDA, can be gauged from the fact that a 'Minority Committee' had been set up by a dissentient member of the Representative Board of the BDA. A letter to the editor of the British Dental Journal dated 9 February 1921, makes clear his views. Referring to the referendum, he states that he knows that a number of those who voted for the Bill had now changed their minds, he continues:

> ...Minority opinion within the Association is too big to be overridden, and in the profession outside the Association it is supreme. ... Members holding minority views need not fear that these are being forgotten or ignored. When the time comes they will be put forth

> where they will be most effective and with no uncertain sound. To this end steps are being taken in the Press and elsewhere and I shall be grateful if anyone in agreement will communicate to me any suggestions he may have to offer. ... [63]

The letter was signed, 'George J.Goldie, Member of the Rep. Board'. In addition to the above, a circular had been distributed to BDA members purporting to come from 'The Dentists Committee representing a Majority of the Profession'. The letter asked if the recipient was in favour of unregistered persons being "...put on to our Register." [64] Regarded as essential, too, was a separate list for the unregistered dentists. Like the writer of the above letter, the three subscribers to the circular gave London West End addresses.

Due to Ministerial changes, it fell to a new Minister of Health, Sir Alfred Mond, to present the Bill, amending the Dentists Act, to the House of Commons on 5 May 1921.[65] After the second reading on 12th May it was passed to the House of Lords for the first and second readings on the 14th and 16th June respectively. At the second reading, because of " ... considerable differences of opinion amongst the dental profession, " the debate was postponed until the Committee Stage which took place in the House of Lords on 22nd June. [66]

Lord Greville, putting forward the views of the BDA establishment and the dissentient minority, mentioned the fact that the BDA had been told by the Minister that if they pressed for a separate Register, he would withdraw the Bill. The BDA had accepted the Minister's Bill, but, added the Noble Lord, that did not mean that the majority of qualified dentists agreed. Nevertheless he moved an amendment that the unregistered be placed on a separate list. This was defeated after the Parliamentary Secretary to the Minister of Health (The Earl of Onslow) read out a telegram which he had just received from the BDA annual meeting at Bath:

> British Dental Association in annual meeting assembled at Bath this day unanimously support Dentists Bill as submitted by Minister of Health.- (signed) Stuart Carter, President. [67]

Having had the ground removed from beneath his feet the Noble Lord Greville took no further part in the debate. But there is no doubt that there were active and influential groups opposed to the new Act. The Medical and Dental Defence Union of Scotland sent a telegram supporting Lord Greville's amendment as did a 'Committee on Behalf of Irish Dentists'. [68]

A salient factor in the debate was the fact that the Departmental Committee on The Dentists Act 1878 - the Acland Report - had, as was pointed out in the debate, "...contained members representing every shade of opinion" and had been " ...absolutely and entirely unanimous in their recommendations."[69,70]

The Bill thus passed the Committee Stage and was given a third reading receiving the Royal Assent on 28 July 1921.[71] Dentistry had become a closed profession, and the practice of dentistry by the unregistered was now illegal. The next section deals with the consequences of the new situation facing the dentists and the outlook for improved dental services to the public.

8.2 The Dentists Act 1921: The Aftermath.

The principal provisions of the Act were to make the practice of dentistry by unregistered persons illegal; to allow those unregistered dentists who had been in practice for five of the seven years before the Act to join the Register as 'Dentist 1921' and to admit members of the Incorporated Dental Society, on the same terms, who had been members of that organisation for not less than one year. Persons who could show that dentistry had been their principal means of livelihood and passed the prescribed examinations within two years would also be admitted.

Chemists and pharmacists who could show that they had a substantial practice in dentistry, would also be eligible for entry to the Register. Additionally, candidates had to be over twenty-three years of age and be of good character. Those who had served in the Armed Forces were to be given special consideration, if their Service commitment had interrupted their careers.

Dental companies would be legalized only if all the operators and a majority of the directors were registered, provision being made for companies already in existence. The directors of such companies would require to satisfy the new Board that they were in *bona fide* dental practice prior to the Act, as did individuals. The creation of the Board to be known as The Dental Board of the United Kingdom meant that although it was still under the aegis of the General Medical Council, it had considerable authority with regard to the new Register. Complete independence was still some years away (1956).[72]

The 1921 Act differed from the 1878 Act in one significant fact; no one could practise dentistry legally unless they were on the Register. The protection of titles had been shown to be of little value against the unscrupulous, although there was still a distinction in their use. Only those who were qualified by virtue of having completed the necessary course of study at a recognised dental school, were allowed to use the title 'Dental Surgeon'. The newly registered, non-qualified were to be known as 'Dentists' or 'Dental Practitioners' and were described in the new Register as 'Dentists 1921'. It was not until 1931 that the mis-use of these titles was challenged by recourse to the Courts which confirmed the 1921 legislation. [73]

The effect of the new Act was not manifest until the Dental Board had been set up on 1 December 1921. It had thirteen members chaired by The Rt.Hon. Francis Dyke Acland MP, who had chaired the Departmental Committee on the Dentists Act 1878.

Scotland had three representatives on the new Board: Dugald McCoig Cowan MP, (appointed as a lay person) and William Guy FRCSE LDS of Edinburgh, both chosen by the Scottish Board of Health and Sir James Hodsdon KBE FRCSE, who took his place as a member of the Scottish Branch of the General Medical Council. The Board functioned as a sub-committee of the General Medical Council (GMC). [74]

Three members were appointed to sit on the GMC for the consideration of purely dental business, such as grants to training schools, hospitals, bursaries and loans, all their recommendations being subject to approval by the GMC. Dental education, examinations and disciplinary measures were still under the control of the parent body.

During 1922, those claiming entry to the new Register were scrutinised and vetted, so that the first complete compilation appeared in the Register for the year 1923. A comparison of the 1921 and 1923 Registers is given below.

Table 8.2.1: Comparison of 1921 and 1923 Dentists Registers.

Year	No. of Scottish Dentists	Dentists Great Britain
1921	595	5,610
1923	794	12,762

Source: Dentists Registers 1921,1923.

The Scottish addition of 199 names represents a percentage increase of 33%, whilst the 7,152 added to the Register for Great Britain as a whole, represents a percentage increase of 127%.

The following table shows the numbers of Scottish dentists on the Registers from 1879 to 1923, with the ratio of dentists to population as compared with Great Britain (GB) as a whole.

Table 8.2.2: Registered Dentists Scotland and Great Britain 1879-1923. Ratios of Dentists to Population: A Comparison.

Year	No. of Dentists on Register Scotland.	Ratio of Dentists to Population.	Ratio of Dentists to Population G.B.
1879	354	1:10,345	1:6,239
1881	322	1:11,601	1:6,457
1891	290	1:13,882	1:7,681
1901	322	1:13,889	1:9,903
1911	431	1:11,046	1:9,216
1921	595	1:8,206	1:8,378
1923	794	1:6,124	1:3,761

Sources: Dentists Registers and Census Returns Scotland and Great Britain 1879-1923.

Although there had been a considerable improvement in the numbers of dentists in Scotland, the ratio of dentists to population still lagged behind Great Britain as a whole, even after the Register had been opened to the unqualified. If the Scottish figures for 1879 are compared with 1923, the increase of 440 registered dentists represents 124%, whilst the corresponding figure for Great Britain was 7,487 dentists or a 141% increase; in all these calculations Great Britain includes the whole of Ireland.

Reactions to the new situation were generally favourable, and in the issue of 15 July 1921, just before the Bill became law, a leading editorial in the British Dental Journal commented on the new Act:

> ...For better or for worse, the fate of dentistry in this country is settled for a generation, and a new dental world is destined to arise, through the agency of this Act, out of the chaos and error of the present. ... [75]

The editorial went on to discuss the consideration shown to the unregistered, which had been "...too liberal in the first instance and had been extended during the passage of the Bill through Parliament...". It continued:

> ...Our opposition to these concessions was pressed to the furthest limit in the Committee stage, and was only withdrawn when it became evident that further persistence would wreck the Bill. That was a responsibility which the representatives of the Association refused to take, and the Bill passes to the Statute Book. ...[76]

Asking the rhetorical question, what of the future? the answer was, that the ultimate future was assured:

> ...a few short years and the only portal to the dental profession will be through that course of study and that test by examination to which the qualified dentist has hitherto submitted himself voluntarily. [77]

The reaction by the medical profession was well summed up by a leading editorial in The Lancet of December 1921 which gave fulsome praise to the new chairman of the Dental Board, the Rt. Hon. Francis Dyke Acland:

> ...the new Board initiates its work as the medical profession will agree, in favourable circumstances. It is assured the goodwill and co-operation of the General Medical Council ... the Board's chairman has defined the task or the aim to which energies will be directed under his guidance as twofold - 'to guard the public from being practised upon by incompetent persons, and to see to it that there are a sufficient number of persons who will bring the most efficient dental treatment and advice within the reach of all who need it'. ... [78]

The new situation in which dentistry found itself was epitomised by Mr J.A.Young, President of the Odontological Society of Scotland. Replying to the toast of 'Kindred Societies', he said:

> ...In the course of the next year the condition of things would be somewhat different from that which they had been used to. The profession would be increased enormously in numbers, and he wondered what was going to happen to the new entrants who had not been qualified in the ordinary way. He hoped that their

> societies would welcome the new members, and try to put something of the professional spirit into them. With regard to the future, however, he thought they had now got the door closed, barred and locked against improper entrants and he looked forward to the time when the profession would be one in spirit as well as one on the Dental Register. [79]

History reveals however, that the unity which Young so ardently desired was a long way off. In 1922, The Public Dental Service Association (PDSA), was set up to represent those dentists treating insured persons.[80] Meanwhile, the BDA doors were firmly closed against the members of the Incorporated Dental Society, and all three bodies continued to operate in isolation, with a certain amount of rancour arising from competition between them for members. It was not until 1949, that amalgamation of all three finally took place. [81]

8.3 An Evaluation of the Professional Status of Dentistry After the 1921 Act.

A discussion on whether dentistry had become a recognised profession depends on one's definition of professionalism. In Richards' work (1978), nine characteristics are listed which have generally been accepted as a reasonable guide in the identification of a profession. [82] The list is as follows:

1. Full-time practice, in which a jurisdiction for an occupational specialism is staked out, and the occupation is separated from its milieu.
2. A high degree of skill, based on knowledge, and a proficiency built upon an esoteric base and expertise.
3. A structured system of education and training in which schools are established, a curriculum of study is evolved and competent standards set.
4. Recognised standards of qualification and entry.
5. The existence of an association to provide cohesion, regularise contacts and create a group consciousness.
6. A high degree of self-control and behaviour, and the development of an integrity and form of conduct which is regulated by an internalised code of ethics.

7. An ideal of altruistic service or detachment, that is a primary orientation and commitment to the community rather than to the individual self-interest and economic gain.
8. An authority recognised by the public and community sanction in the form of legal protection of title by licensure or registration.
9. An exclusive jurisdiction or self-policing, in which there is autonomy of control and regulation.

Contemporary ideas on what constitutes a profession tend to emphasise the importance of the trust relationship between the professional and the patient (or client), rather than the earlier definitions based on a list of attributes. [83]

Professionals are responsible for their own conduct and actions and, whilst their main allegiance is to their professional discipline, their activities are controlled by a code of conduct which stresses that the interests of the patient are to be put before self-interest. This version of the professional traits attempts to measure these elements on a scale or continuum where distinctions are blurring; for example where professional specialists take on managerial or administrative functions. [84]

The leading article in the British Dental Journal in the issue of March 1994, commented on 'Law and Ethics' :

> ...Ethical behaviour implies an agreed code between members of a profession for the good of both patient and the profession. This is said to be one of the distinguishing features of a profession, that it behaves for the good of the people it serves above its own good. ... [85]

Common to all definitions is the principle, that there is a direct personal relationship based on confidence, faith and trust; but growing in importance is the concept of accountability. This does not mean the end of trust, but rather the evolution of a different kind of trust, based on openness.

The authors of the work cited, consider that this new approach has gone a long way to replacing trust based on professional mystique. [86] A fundamental tenet in any definition of a profession is self-regulation. This privilege was not attained by the establishment of the Dental Board and the passing of the 1921 Act - the General Medical Council were still in overall control until 1956, when the General Dental Council was established. What was required now was, a conscientious resolve by all members of the infant profession to earn the respect and confidence of the public; only then could dentists consider themselves to be worthy of the title of a profession.

What dentistry received in 1921 was official government recognition and legitimization accompanied by a passport stamped, 'Profession - dentistry'; there was still a lot of hard work to be done.

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Conclusion

The development of dentistry in Scotland, was influenced by a complex of interactive causes, which stemmed from economic, social, cultural and political conditions. The uncontrolled and chaotic state of dentistry which ensued, could be compared to a state of Social Darwinism, where the appearance of the unskilled, unqualified was an adaptive response to the demands of the population. Those that were able to compete survived in their occupation, whilst the qualified and registered, who were restricted from advertising, suffered as a result. This situation caused further changes and effects which, when it affected the nation's health and the integrity of the Armed Forces, became the focus of national attention and compelled the intervention of the State.

The occupation of dentistry,often a secondary one, changed from a service for the relief of pain, mostly by extractions, using primitive instruments and without any anaesthetic, to a scientific branch of medicine by qualified, skilled practitioners offering a comprehensive range of treatments.

In addition to the causes already mentioned, this transformation was only achieved slowly and over a long period, by the acquisition and application of scientific and medical knowledge to the developing medical specialism. It is arguable whether it could have been achieved in the given time span without the ceaseless efforts of a handful of dedicated men, many of them Scots, whose tireless campaigning eventually convinced the Government of the necessity for State intervention.

Although attention has been focused on the activities of a small number of individuals, their motivation was not based on altruism alone. The deplorable dental conditions of the poor and working class throughout Great Britain and in particular Scotland, with its over-crowded centres of population, must have acted as a powerful stimulus to act to change the prevailing situation. Nevertheless, it is to their credit that in pursuing their object to improve the dental treatment available to the people, they also endeavoured to restore the tarnished image of dentistry.

Two important points emerged during the research with regard to causative factors. The first was that it was due to the great difficulty experienced by the deprived sections of the Scottish people; (the poor, the working class, school children and the elderly), in obtaining skilled dental attention, that led to the setting up of dispensaries and later dental hospitals, supplying in most cases free treatment, or at affordable prices. Secondly, the rise of the artisan and the upper and middle classes provided the financial incentive for the increase in the skilled and qualified dentists. These groups had money to spend - hence the ready response from the dentists. Thus, paradoxically, the existence of two classes at either end of the income range acted as a stimulus to the expansion of dental care, but for different reasons. Concomitantly, this demand for treatment also produced the unqualified, unskilled opportunistic practitioner whose activities finally forced a Government inquiry into the state of dentistry.

The shortcomings of the first Dental Act of 1878 soon became obvious to the more responsible members of the profession, but the divisions which had arisen formed a powerful barrier between the rival factions, each determined to safeguard its interests without compromise. Eventually, after a period of some forty years, the protagonists conceded, somewhat reluctantly, that in order to make progress and establish a profession, it would be necessary to recognise and respect each other's organisation.

A necessary pre-requisite for radical reform, was a united profession, and the armistice which was eventually agreed between the various rival associations, was sufficient to enable the introduction of Government legislation which amended the flawed Dentists Act of 1878. The Dentists Act of 1921 gave to dentistry the stamp of official recognition and the status of a profession.

Finally, it is doubtful whether dentistry in Scotland would have evolved to the rapid status it attained in the context of a United Kingdom profession, if both the Royal Faculty of Physicians and Surgeons in Glasgow and the Royal College of Surgeons in Edinburgh had not been established at an early period. The existence of these bodies renowned for their outstanding achievements in medical education, laid the foundations for an evolving and progressive profession. Albeit that Scotland, in many spheres pursued a different and arguably slower route to twentieth century standards from England; by the end of the period under review, it was considered, as far as dentistry was concerned, that Scotland was at least on an equal footing with the rest of the United Kingdom.

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Appendix A. Rymer's Letter to The Lancet *

Necessity for a College of Dental Surgery.

To the Editor of the "Lancet"

Sir,- There are few medical practitioners who have not had come under their notice cases exhibiting the serious consequences resulting from recourse to the inducements so pertinaciously pressed into public notice by the host of ignorant charlatans practising the *specialities* of surgery and medicine.

In these free trade days it is not for any particular class of men to claim protection for *themselves* in the exercise of their vocation, even though they be fitted through great sacrifice of time, trouble and expense, to alleviate the sufferings and conduce to the comfort of humanity; yet when they witness, as the general medical practitioner in common with the properly qualified *special* practitioner commonly *do* witness, such calamities as an eye rendered sightless through the maltreatment of a so-called oculist; the frightful and sometimes irremediable condition of the victim of the quack cancer-doctor; the total deafness occasioned through the pokings and dressings of the puffing aurist; the suffering and loss (both to teeth and pocket) from the ignorance and extortion of the supposed dentists; and other distressing evils too numerous to mention, having their sole origin in the ignorance of impudent pretenders,- when, I say such calamities are witnessed by duly informed and qualified persons, it becomes at once their duty and interest to admonish the *public at large* on the danger of placing themselves in the power of unprincipiled and ignorant men.

* The Lancet 1855;2:181 - (25 August 1855).

But experience has proved the difficulty of arousing the public mind on so important a subject; too often the warnings of professional men, be they never so wisely given, are disregarded, perhaps from a suspicion that they are prompted by interested motives, whilst the victimised suffering members of society are not willing to expose those by whom they have been duped, for this would involve the necessity of an *exposé* of their folly in being taken in by the promises of impossibilities held out by charlatanism, as well as discovering to their friends and to the world the fact of their being troubled with corns, or of wearing false teeth. 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 of the 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, I believe death. Now, the question arises, how are the public to be saved from the effects of disreputable practices?

It has been said that professional remonstrances does not, as a general rule, avail, and that *mauvaise honte* seldom permits the victim of the charlatan to expose him. In the United States of America, Colleges of Dental Surgery are established, wherein the students receive a thoroughly professional education; and in that country, unless a practitioner has been through the prescribed course of study in one of these Colleges, he cannot be looked upon as an orthodox dentist.

Some few years ago an attempt was made in this country to follow the example of our brethren in America, and to establish a seminary wherein the pupils would have the opportunity of acquiring such knowledge as would

entitle them to certificates of qualification; but, owing to some unfortunate misunderstanding amongst the projectors, this excellent scheme was abandoned. If the College of Surgeons were to appoint a properly-constituted board of examiners, whose duty should be to hold periodical examinations of such candidates as were desirous of obtaining such a distinction, for instance, as might well be termed 'Licentiate in Dentistry,' I believe that, on the one hand,the public would be spared a vast amount of injury, and that, on the other, dental surgery would take its just position by the side of other liberal professions.

The adoption of such a course would in no way interfere with the establishment of a Dental College; on the contrary, such an institution would become almost necessary; for although the certificate of apprenticeship to a recognised practitioner for at least three years might, perhaps, be deemed sufficient to enable a pupil to present himself for examination, yet in all cases it would be desirable that a few months should be spent at college. I cannot but think that the question now sought to be brought under the notice of the constituted medical authorities will receive the attentive consideration it so eminently deserves.

I am,sir, yours,&c., Samuel Lee Rymer.

Appendix B. The Report of the Departmental Committee on the Dentists Act of 1878. [Cmd33] 1919.

Summary of the Principal Recommendations.

1. We are agreed that very grave evils are associated with the practice of dentistry and dental surgery by persons not qualified under the Dentists Act. These evils are largely responsible for:-

(a) Lowering the social status and public esteem of the dental profession.

(b) A great shortage of registered dentists owing to the unattractiveness of the profession.

(c) Inability by the general public to distinguish between a registered and unregistered practitioner.

(d) The dental treatment of the public being largely in the hands of uneducated, untrained and unskilled persons.

(e) Grave personal injury owing to lack of skill and of technical knowledge.

(f) Extractions of sound and only slightly decayed teeth.

(g) Application of artificial teeth over decayed stumps and into septic mouths.

(h) The existence in the public mind of the belief that there is no advantage in preserving the natural teeth, and that the correct thing is to let these decay and when trouble arises have all the teeth out and substitute a plate of false ones.

2. We are agreed that there was a great shortage of registered dentists before the war which has been intensified since. This shortage is mainly responsible for the following results:-

(i) Registered practitioners are very unevenly distributed in the different countries of the United Kingdom, and also in the different parts of each country.

(ii) The Registered Practitioner mainly attends to the dental needs of the upper and middle classes, the

artisan and working classes in the bulk receiving very little treatment from the registered dentist.

(iii) The dental needs of the population do not determine where the registered dentist practises.

(iv) The registered dentist tend to gravitate to the centres of populous towns and to smaller towns where high fees are obtainable or lucrative practice probable.

3. The causes of the shortage of Registered dentists are mainly three:-

(i) The present unsatisfactory state of the law in allowing the practice of dentistry by unregistered persons who have not qualified for the profession by a prescribed course of instruction, training and examination.

(ii) The present length of the minimum course of instruction and training for dental students.

(iii) The present expense of training at a dental school.

4. With a view to providing a sufficient supply of dentists and meeting the needs of the public arising from the shortage of dentists we recommend as means which are essential for meeting present evils:-

(i) An alteration of the law so as to secure the prohibition of the practice of dentistry by persons not registered.

(ii) The registration under certain conditions of unregistered practitioners practising dentistry at the date of our report.

(iii) A reduction in the minimum time required to be spent by dental students to acquire a qualification in dental surgery.

(iv) The provision of dental treatment for expectant mothers and children under the age of 5 years.

(v) The completion as rapidly as practicable of an adequate system of school dental treatment.

(vi) The establishment of a public dental service.

(vii) The employment of dental dressers or assistants acting under the supervision of registered dentists in school and public dental service.

(viii) The establishment of a system of scholarships for dental students with adequate maintenance grants.

(ix) The registration after a short course of study and examination of dental mechanics employed as such during 5 years before the date of our report.

(x) Scholarships for dental mechanics.

(xi) Increased grants to dental schools.

5. We recommend that a special committee shall be appointed to admit unregistered practitioners in practice at the date of our report, to registration as dentists subject to certain conditions being fulfilled.

6. A thorough research investigation into the causes and effect of dental caries is needed.

7. A Statutory Dental Board under the General Medical Council should be set up for the government of the dental profession. The Board shall consist of persons, including laymen, appointed by His Majesty in Council, Dentists elected by the Dental Profession, and representatives of the General Medical Council.

8. We recommend that an annual licence fee of £5 shall be paid by registered dental practitioners, to be administered by a Statutory Dental Board and to be devoted to:-

i. The expenses of the Statutory Dental Board.

ii. The provision of scholarships for dental students and during the next ten years for dental mechanics.

iii. Aid to dental schools.

iv. Dental research.

9. We recommend that the practice of dentistry by public companies shall be subject to special control, provision being made to meet the needs of existing companies.

10. We recommend that an additional column shall be added to the Dentists Register for recording the qualification for registration of unregistered practitioners admitted to the Dentists Register.

11. We recommend that unregistered dentists admitted to the Dentists Register shall use the title "dentist" or "dental practitioner," but no other title. Unregistered practitioners on admission to the Dentists Register shall acquire the same legal rights, privileges and status as are conferred by the Dentists Act,1878, upon dentists.

12. We recommend that action be taken to safeguard the interest of any member of His Majesty's forces who was before joining the forces, an unregistered dental practitioner or assistant practitioner or dental mechanic.

TABLE 1: NUMBER OF DENTISTS AND PERSONS RELATED TO DENTISTRY BY AGE AND SEX IN SCOTLAND: RATIO TO POPULATION 1851-1921.

DATE	MALES - AGE GROUPS 5-	15-	20-	25-	45-	65-	TOTAL MALES	FEMALES - AGE GROUPS 5-	15-	20-	25-	45-	65-	TOTAL FEMALES	TOTAL MALE + FEMALE	POPULATION	RATIO TO POPULATION	REMARKS
1851	18	132	163	623	199	32	1167*	-	-	-	-	-	-	-	1167	21,185,000(Gt. Britain) 2,825,327 Scotland	1:18,153 1:18,227 **	No separate census for Scotland
1861	8	48	30	61	39	3	189	-	-	3	-	-	-	3	192	3,062,294	1:15,949	1st Official Scottish Census
1871	7	61	47	85	42	1	243	-	-	-	-	1	-	1	244	3,360,018	1:13,770	
1881	7	68	48	144	42	10	319	-	-	-	1	-	-	1	320	3,735,573	1:11,673	Dentists Act 1878
1891	12	121	103	239	63	11	549	-	2	2	2	2	-	8	557	4,025,647	1: 7,227	
1901	23	190	142	236	224	11	826	1	7	13	12	2	-	35	861	4,472,000	1: 5,193	Successful House of Lords Appeal
1911	12	295	200	645	150	21	1323	1	21	12	31	7	-	72	1395	4,760,904	1: 3,412	Bellerby & Heyworth and Bowen 1910
1921	8	25	32	627	236	26	954 ß	3	2	13	20	13	-	52	1006	4,882,497	1: 4,853	Census day was 19/6

Dentist Act 1921 became law on 28 July 1921

SOURCE: Census Returns - Occupation Tables 1851-1921 Gt. Britain and Scotland

* Total Given for Gt. Britain

** The ratio of the Scottish population to Gt. Britain was 1: 7.5
This would give a theoretical 155 Dentists in Scotland for 1851.

ß The decrease in numbers from 1911 may have been due to the fact that as from 28 July, it would be unlawful to claim to be a dentist unless on the new register.

TABLE 2: NUMBER OF DENTISTS IN PRINCIPAL TOWNS, CITIES and BURGHS 1861-1921.

City, Town or Burgh	Number of Dentists 1861	1871φ	1881	1891	1901	1911	1921
Aberdeen	10	-	15	27	43	63	43
Dundee	3	-	20	30	55	67	44
Edinburgh	67	-	83	146	188	279	167
Glasgow	53	-	83	175	247	325	261
Govan	-	-	4	3	4	16	*
Greenock	1	-	9	5	15	3	8
Hamilton	1	-	-	2	2	7	9
Motherwell	-	-	-	-	2	14	12
Kilmarnock	-	-	1	4	7	19	26
Kirkcaldy	-	-	2	1	4	14	9
Leith	6	-	4	9	18	26	**
Paisley	7	-	9	10	28	34	21
Partick	-	-	2	1	13	22	*
Perth	7	-	9	8	17	17	23

Sources: Census Returns Scotland - Occupation Tables 1861-1921.

* Now included in Glasgow.

** Now included in Edinburgh.

φ Number of Dentists in the Principal Towns not recorded for this year.

TABLE 3: NUMBER OF DENTISTS IN SELECT LIST OF SCOTTISH TOWNS AND BURGHS: 1861,1881,1891,1911,1921.

Town or Burgh	Year				
	1861	1881	1891	1911	1921
Arbroath	1	1	4	1	4
Ayr	2	4	6	23	45
Alloa	-	-	2	3	4
Dumfries	3	11	13	20	8
Dunfermline	-	2	2	16	9
Galashiels	-	2	2	N.G.	9
Falkirk	-	-	1	11	34
Hawick	-	11	1	N.G.	5
Forfar	-	-	4	N.G.	-
Inverness	3	3	6	19	26
Montrose	-	2	3	N.G.	3
Kilmarnock	-	1	4	19	26
Peterhead	-	-	2	N.G.	3
Hamilton	1	-	1	7	11
Stirling	2	2	6	11	24

Source: Census Returns (Occupation Tables) 1861,1881,1891,1911,1921.
N.G. = Not Given.
N.B. Due to variations in the presentation of the census data, some census years included the number of dentists in the smaller towns and burghs and some did not. There were no returns for the above towns for 1871 and 1901, except Kilmarnock and Hamilton which had attained populations in excess of 25,000 - Principal town status.

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University of Glasgow

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Greater Glasgow Health Board

University Archives and Ruchhill Hospital, (Depository).

Glasgow Dental Hospital and School

Board Room.

Royal College of Physicians and Surgeons Glasgow

Library.

Mitchell Library

General Reference.

History and Topography Department.

Glasgow Collection.

Strathclyde Regional Archives.

Paisley Museum and Central Library Complex Paisley

National Library of Scotland Edinburgh

Royal College of Surgeons Edinburgh

Library.

Scottish Record Office Edinburgh

University of Dundee

Archives.

Lothian Health Board

Medical Archive Centre, University of Edinburgh Library.

Grampian Health Board

Archives, Aberdeen Royal Infirmary.

British Dental Association

Library, London.

Royal Society of Medicine

Library, London

Wellcome Institute for the History of Medicine

Library, London.

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