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DENTAL EDUCATION AND RESEARCH IN AUSTRALIA

Teresa Loh Woon Oi, B.D.S., Singapore

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DENTAL EDUCATION AND RESEARCH

INTRODUCTION

Despite the availability of an abundance of knowledge and data of Dentistry in Australia, there is as yet no single source where information on Dentistry in this island continent is obtainable. Therefore the Australian Dental Association and the Department of Preventive Dentistry of the University of Sydney have decided to embark on a joint project to assemble all the available dental data.

The facts and figures accumulated by the Australian Dental Association and for the Outline of Dentistry in Australia being prepared by the Department of Preventive Dentistry of the University of Sydney will hence be made available in one publication.

For this purpose, this thesis is a collection of all aspects of dental education in Australia.

Generally, dental education in Australia commenced on an apprenticeship scheme where dental students gain practical experience by working with dentists. The Dental Boards were the controlling bodies in Dental Education. As Dentistry became organised, dental schools were established and training of dental students were channelled to the dental schools.

Formal dental education in Australia was introduced in 1897 when the Odontological Society of Victoria first established the Australian College of Dentistry in Melbourne. However, the University of Sydney was the first dental school in Australia to award a degree in Dental Surgery in 1906.

The five dental schools in this island continent are sited in the metropolitan cities of Sydney, Melbourne, Brisbane, Adelaide and Perth. Another school for dental education is the Australian College of Dental Surgeons which conducts only graduate courses.

The undergraduate course in all the five schools extends over a period of five years, leading to a Degree of Bachelor of Dental Surgery or Dental Science. The curriculum in these Dental Schools are similar hence there is reciprocity in the recognition of degrees from each state Dental School and Dental Board.

Graduate education is also provided in all the dental schools.

Education of auxiliaries varies from state to state. The realisation of delegating simple, repetitive operative procedures to auxiliaries has led to the establishment of two schools for the training of school dental nurses or dental therapists. These centres of training are sited in Hobart and Adelaide.

Non-operative auxiliaries include dental technicians who are trained under an apprenticeship scheme,

while the dental assistants may follow a prescribed course of training conducted by state Dental Associations or state Dental Assistants Associations.

Dental research in Australia has been expanding and topics of research carried out in research centres, universities or individuals embrace the following main fields:-

Basic Science
Basic Dental Research
Clinical Dentistry
Dental Materials
Dental Public Health
Social Science.

The results of research are disseminated through local and overseas journals and through meetings such as the International Association for Dental Research, the Australian Dental Association meetings and conventions in each state and a triennial Dental Congress. The amount of research papers which are published does indeed indicate the activity of the dental profession in Australia.

1. DENTAL EDUCATION

The five dental schools in Australia are located within the state universities in the capital cities and were established as distinct Faculties in the following years:-

University of Sydney -- 1921
University of Melbourne -- 1924
University of Queensland -- 1935
University of Adelaide -- 1920
University of Western Australia -- 1946.

Financing of the Dental Schools is mainly from the Commonwealth and State Governments' funds and partly from private funds.

One aspect of the dental teaching in Australia is the close association which each of the five dental schools has with dental hospitals in each state. Such close affiliation is beneficial to the dental schools, for dental hospitals normally supply all the patients for teaching purposes.

1.1. Dental Schools' Brief History

University of Sydney - Dental School[1]

Prior to 1901 there was no restriction on the practice of dentistry in New South Wales. However, the Dentist Act of 1900 which became effective in 1901 required a person to register if he wished to practice dentistry. From then on, dentists were allowed to take on apprentices.

In 1901, the Department of Dental Studies was established by the Senate of the University.

In March 1902, this School of Dentistry was opened and was a Department within the Faculty of Medicine. The first intake was 17 students. The course was one of three years leading to a License in Dentistry (L.D.S.).

In 1905 the Senate of the University of Sydney established the course for the degree of Bachelor of Dental Surgery. Those who had completed the requirements for L.D.S. and who wished to qualify for the degree of Bachelor of Dental Surgery had to continue for another year.

At that time, dental students had their lectures and practical work in basic science with the medical students, but the teaching of the dental subjects was conducted at the University Dental Hospital which was located outside the University grounds, at the corner of

Bathurst and George Street, Sydney, directly opposite St. Andrew's Cathedral.

In 1900 a Dental Hospital was established to provide dental treatment to the poor in the community.

In 1904 by Act of Parliament, the University Dental Hospital and the Dental Hospital of Sydney were united and was called the United Dental Hospital of Sydney.

A new building was erected in Chalmers Street in 1910 for the occupancy of the United Dental Hospital.

In 1921 the Faculty of Dentistry was established and Professor Richard Fairfax Reading became the first Dean.

With the introduction of the Dentist Act of 1934 the apprenticeship system was abolished together with the practice of advertising by some dentists who used to spend thousands of dollars annually on advertisement.

Towards the end of 1939 the new Dental Hospital was completed adjacent to the old building in Chalmers Street.

To accommodate the increase in staff of the hospital and the University, and the increased intake of dental students, a new extension was added. Erection of new extension and the demolition of the old building took place through the period from 1939 to 1956 until finally the existing building was completed.

In 1965 the four-year course was extended to one of five years' duration.

The United Dental Hospital not only offers facilities to the Faculty of Dentistry for training of undergraduates and post-graduates, but also provides dental care to the lower socio-economic group in the community.

University of Melbourne - Dental School[2]

In 1884 dental education was launched in Victoria. The Odontological Society of Victoria, the first organisation of its kind in Australia, introduced the Dental Act for registration of its members and established a college and Hospital for the training of students.

In 1887, the Dental Act was passed in Victoria and this Act permitted any man who could prove he had been engaged in the practice of dentistry prior to the passing of the Act to become a registered dentist. Subsequently, those who wished to register must have pursued a four-year course in Dentistry and passed an examination set by the Dental Board which was constituted in 1888.

In 1890, the Melbourne Dental Hospital was set up at 225 Lonsdale Street to provide dental service to the poor, and for the teaching and training of students.

In 1897, the Australian College of Dentistry which was then responsible for dental education was incorporated within the Dental Hospital.

Examination was still conducted by the Dental Board of Victoria for registration.

The college first issued a diploma of membership to those who had successfully completed two years of study - Member of the Australian College of Dentistry (M.A.C.D.). Shortly afterwards, the Dental Board instituted a diploma - Licentiate of Dental Surgery (L.D.S.), to students who had spent four years at the College. The first diplomas of Licentiate of Dental Surgery were granted in 1902.

By 1904, the Australian College of Dentistry became affiliated with the University of Melbourne but was responsible for its own finance. At that time, successful students gained, in addition to the diploma of Licentiate of Dental Surgery, the distinction of Bachelor of Dental Surgery (later changed to Bachelor of Dental Science in 1911). In the same year, the College ceased to confer its diploma of membership and the B.D.Sc. was accepted by the Dental Board of Victoria as fulfilling the requirements for L.D.S.

In 1907 the College and Hospital moved to Spring Street with the College being the sole proprietor of the building, and the hospital having to pay rent for its occupancy.

The Chair of Dental Science was created in 1924 and Dr. Frank Wilkinson was appointed the first Professor of Dental Science.

To obtain Government assistance, it was necessary for the College to have separate management which hitherto has been administered under the same committee of

management, with the hospital. This took place in 1925.

In 1926 the dental course was lengthened to four years and two terms, and in 1951 to one of five years.

In 1955 the Faculty of Dental Science recommended a change in the title of Chair of Dental Science to Chair of Dental Medicine and Surgery.

In 1963 the University of Melbourne assumed complete responsibility for dental education of the state, and absorbed all the staff of the Australian College of Dentistry which ceased to exist as an educational body.

The building, erected in 1963, opposite the Royal Melbourne Hospital, houses the Dental Hospital and the Dental Faculty of the University of Melbourne. Both the Hospital and the Dental Faculty are joint tenants of the building and are therefore responsible for its maintenance.

The Australian College of Dentistry was de-registered in October 1967.

University of Queensland - Dental School[3]

In Queensland, prior to 1902, there was no registration of dentist and consequently no governmental control over anyone who wished to establish himself in the practice of dentistry.

An Act was passed and put into operation on 1/1/1903

whereby a Dental Board was established to control the examination and registration of dentist. This dental board of seven members was appointed on 10/2/1903. From 1903 to 1926 the Dental Board was the examining and registration body.

In 1908 the Brisbane Dental Hospital was established by the Odontological Society, a body of practising dentists, to provide dental treatment for the poor members in the community.

From 1908 onwards, dental education was centred at this hospital in George Street under the control of an appointed committee. Dentists were trained under an apprentice scheme where they served under a dentist for two years and attend at the University for another two years. Examination was conducted by the Dental Board of Queensland.

Under the 1916 Dental Act, apprenticeship of four years was abolished, and the full course was conducted at a Dental Hospital and School. This course commenced in January 1926.

Owing to the growth of the scheme and the need for finance and facilities, the assistance of the University and the Brisbane and South Coast Hospital Board was sought. However, due to financial difficulties, the University was unable to establish a Faculty of Dentistry. Because of this, a joint Board of Dental Studies, comprising of members of the University, Hospital Board, Dental Board

and practising dentists was formed. A diploma course was instituted by University Statute and the Dental Board agreed to recognise the diploma for registration while the Hospital Board provided accommodation and equipment.

In 1935 the basis was laid for the organisation of a Faculty. This was helped greatly by the annual grant of £1,000 from the State Government, £1,500 from the Hospital Board and the donation by the Free Masons of Queensland of the Old Masonic Temple in Alice Street.

By 3/10/1935 the new Faculty of Dentistry was established with E.J. Goddard as the first Dean.

In 1941 the Dental School and Dental Hospital moved into the present building in Turbot Street with twenty-eight students.

The duration of the dental course was extended from four to five years in 1961.

The increase of students created a demand for an extension of the building.

In August 1964, the Committee on Teaching Costs of Medical Hospital[4] proposed that a new school be built, and in 1970 the Dental School occupied the new building sited adjacent to the Dental Hospital in Turbot Street.

University of Adelaide - Dental School (4)

Dental education in Adelaide dates back to 1906. Dentists were trained under an apprentice scheme. Practical experience was gained by being an apprentice to a dentist and students had to attend lectures conducted at the University which was also responsible for setting the examination.

The dental school was a department within the Faculty of Medicine up to 1919, and the course was of four years' duration leading to the degree of Bachelor of Dental Science. Students were required to register with the General Medical Council in London through the Registrar.

The Faculty of Dentistry was established in 1920 with Sir Joseph Verco (a distinguished South Australian physician) as the first Dean. Registration in London was abolished by this time.

In 1922 apprenticeship for pupils of dentistry was terminated.

With the introduction of full-time University curriculum, facilities for practical and clinical instructions were required. For this purpose the faculty had to make use of part of the old Exhibition Building where the Military Dental Department had been established for some years.

Financial aids of £13,000 from the Australian branch of the British Red Cross and £10,000 from the

South Australian Government made it possible for the establishment of the Dental Hospital in Frome Road.

In 1930, the four-year course was extended to one of five years.

An increased intake of students demonstrated the need to extend the Dental Hospital. On the recommendation of the Standing Committee on Public Works of South Australian Government, extension and modernization of the dental school was carried out in 1958.

In 1965, the Committee on Teaching Costs of Medical Hospital observed that there was a need for further extension to the hospital, and proposed that the central section of the dental hospital be demolished with the construction of a six-floor building on the site.

In the Faculty, two members of the medical profession were Deans. They were Sir Joseph Verco and later Dr. Cudmore. However, the supervision of the clinical work of dental students in the Dental Hospital rested on the Dental Superintendent.

University of Western Australia - Dental School [4]

The first Dental Act in Western Australia in 1894 required a candidate to pursue a four-year apprenticeship with a registered dentist and to pass an examination conducted by the Dental Board before he was eligible for

registration. No restriction was placed on where the apprenticeships were to be served. But in 1920, the Dental Act thereafter required apprenticeship to be served under a dentist in Western Australia.

In 1922, lectures were organised by the Dental Board and conducted at the Perth Technical College. The course was still one of four years, but with an annual examination at the end of each year. This was in accordance with the amendment of the Dental Act of 1922. The four-year course led to the Diploma of Dental Surgery which was only registrable in Western Australia. The first diploma was awarded in 1927 and, at this time, degrees from specified dental schools in America were also recognised.

In 1927, a dental hospital was set up in Murray Street occupying the first floor of a garage. Apprenticeship was transferred to the Superintendent of the Perth Dental Hospital.

By the end of 1933, the Dental College came into being, adopting the name - The Western Australian College of Dental Science and the Perth Dental Hospital. Finance was obtained from the Government, patients' and students' fees and from donations.

An Education Committee of the Council of the College and Perth Dental Hospital took over the organisation of lectures from the Dental Board in 1936, but with the Dental Board still conducting the examinations.

In 1939, a new Dental Act was passed in which dental apprenticeship was prohibited. The Dental Board, having control over the dental studies and curriculum, required that all training from then onwards be undertaken within the College.

In 1942 the College and Hospital were separated and the College was known as the Western Australian College of Dental Science (Inc.) with eight men on the Board of the College.

After the report on Dental Education in Australia by Professor Ames in 1945, the Faculty of Dentistry in the University of Western Australia was established and the Dental Board was relieved of the responsibility of examination.

The degree course was introduced in 1946 and the degree of Bachelor of Dental Science was recognised for registration by the General Dental Council.

The existing Perth Dental Hospital was erected in 1962. The old hospital which faces Wellington Street now functions as a Teaching Hospital and is known as the Dental School of the University of Western Australia.

The Australian College of Dental Surgeons

The Australian College of Dental Surgeons was founded on 14/3/1965. Prior to 1965 an unsuccessful

attempt was made to incorporate a Faculty of Dental Surgery to the Australian College of Surgeons.

In June 1962 the Australian Dental Association set up an ad hoc Committee to study and report on the possibility of establishing a college. The enquiry into the professional support of this project was satisfactory with three hundred and eighty members favouring the proposals.

The Australian Dental Association having accomplished its aim, withdrew and at the first Committee meeting in March 1965 the constitution was accepted and the "first Inaugural Fellows" (381 in number) were elected by November 1965.

In 1966, state and regional Committees were appointed and the first council was elected.

The first convocation of this college was held in Canberra in August 30th to 1st of September 1967.

The first primary examination was held in February 1968. It was in the same year in April that rooms were purchased at Macquarie Street.

The College had its second convocation in Sydney in August 1969.

1.2. Recruitment - Number of Students and Quota

> "The quality and effectiveness of the services dentistry renders to the public are determined largely by educational levels of various dental schools and by the academic capabilities of persons entering them. It is important to dentistry and the public therefore that the caliber of entering dental students be examined regularly and that every effort be made to achieve continuous improvement in the quality of applicants."(5)
>
> Hollinshead

Dentistry, unlike medicine, has always been confronted with difficulty in recruitment. The Dental Advisory Committee to the Honourable Minister of Health, Victoria[6], advocates that such situation in Australia can arise because of the following:-

1) lack of appropriate status
2) lack of government and government subsidized situations
3) concept held by many young people of the work of dentist - one concept which does not appeal to them.

The Committee further adds that to recruit students of good standard and in sufficient number is "vital to the future of the dental profession in carrying out its responsibilities" and for this a continuing recruiting campaign is necessary. The Committee recommended that recruitment could be carried out through the following channels:-

1) Vocational Guidance Section of the Department of Labour and National Service
2) Secondary Schools in metropolitan cities at fourth form level
3) Organisations such as Legacy, Rotary, Jaycees and others
4) Dental Boards and University Appointment Boards which are already taking an active part.

In New South Wales, the Australian Dental Association (state branch), together with the Education Department, participates in career guidance programmes for the school leavers.

Barnard et al[7] in a survey of dental students in the five dental schools in 1964 showed that the greatest influence in the choice of dentistry as a career rests on the dentists. Next comes the influence of the father, then persons connected with dentistry. The vocational counsellor and school teacher rank relatively low in influencing students to choose dentistry.

A study in Melbourne supports the finding of Barnard in that dentists play an important role in influencing applicants for dentistry.

Commonwealth scholarships, Army Cadetships, bursaries and private individual scholarships are some of the means of attracting students to embark on a dental career.

1.2.1. Quota

The lack of facilities in some dental schools in Australia makes it necessary to adopt a quota system for entrants to the first, second or third year of the dental course.

Since 1962[6] the University of Sydney has imposed a quota of 120 new entrants annually. The University of Melbourne limits the new admission to 45, while the University of Western Australia has a quota of 25 for entrants to the second year of the Dental Course. No quota has been applied to Australian residents seeking admission into the University of Queensland. However, overseas students not sponsored by a scheme such as the Colombo Plan are unable to gain a place in the dental course in Queensland. In Western Australia, only up to four South-East Asians are accepted into the dental course annually.

All the five dental schools require students to pass in subjects such as Physics, Mathematics and Chemistry for matriculation plus subsidiary subjects which vary with each school, e.g. subjects like language, biology, geography.

In general, the minimum age for admission is 17 years.

1.3. Undergraduate Education

1.3.1. Course

The prevalence and incidence of dental caries in Australia is high. Surveys have shown that dental caries is even prevalent in a two-year old Australian child. Barnard[9] estimated that, in New South Wales at ages 2, 3, 4 and 5, the numbers of decayed teeth are 1, 4, 5.5 and 6, respectively. Moreover, the numbers of surfaces to be filled are given as 1, 5, 8 and 7.5.

This indicates a potential need for dental care. To meet this need, supply of dental manpower must be adequate. The annual supply of graduates from the dental schools in Australia has tried to cope with the increase in dental disease and the increase in population. This potential demand for dental manpower has spurred the expansion of dental education in Australia. Walsh[10] stated that "to meet the greatest amount of dental care seen in the population under 10, and to maintain a favourable dentist-population ratio until 1970 it requires 330 new dentists a year." Barnard[11] estimated that the Australian schools need to graduate 242 dentists a year. He considered that approximately 100 dentists would be lost from the register either through migration to United Kingdom, retirement or death and that about 25 Asian graduates would return to their countries each year. This leaved an increase of 117 graduates in Australia per annum, and this would be just sufficient to keep pace

with the population increase and to maintain the dentist-population ratio existing in 1961.

The dental course was one of four years' duration in some dental schools in Australia. Today, all the dental schools conduct a five-year course, for it is realised that "the Science and Art of Dentistry" cannot be adequately taught in four years. Hence Sydney and Queensland dental schools altered the four-year course to one of five years in the 1960's.

The pattern in the undergraduate dental education in Australia has strong influence from the United States of America as well as the United Kingdom. Australian baccalaureate degree is recognised and registrable in the British Commonwealth countries and academically recognised in most countries but not recognised for registration in the U.S.A.

Although the program of dental education is similar in the five dental schools, the contents, course structure, time allocated to subjects and the arrangement in the course vary in Australia.

An outline of the typical course in Australia is as follows[12] :-

"First Year:- Physics, Chemistry, Biology, and one subject chosen from the first year Arts Course

Second Year:- Anatomy, Physiology, Biochemistry, Histology, Dental Anatomy, Oral Histology, Embryology, Dental Materials Science and Dental Prosthetics.

Third Year:- Pathology, Microbiology, Dental Prosthetics, Conservative Dentistry and Oral Pathology.

Fourth Year:- General Medicine, General Surgery, Conservative Dentistry, Perio-dontics, Dental Prosthetics, Orthodontics, Pharmacology and Therapeutics, Preventive Dentistry, Exodontics, Local Anaesthesia, and Oral Pathology.

Fifth Year:- Oral Medicine, Oral Surgery, Dental Prosthetics, Conservative Dentistry, General Anaesthesia, Exodontics, clinical Orthodontics, and Perio-dontics."

Subjects are classified as preclinical and clinical. Pre-clinical subjects include Chemistry, Physics, Biology, Dental Anatomy, Anatomy, Biochemistry, General and Specific Histology, Dental Materials, Pathology and Bacteriology.

Students are often introduced to dental patients during second year in clinical demonstration but only in the third year are students permitted to rehabilitate

patients in the prosthetic and the conservative dentistry department. As the student proceeds to the fourth year, his clinical field embraces minor surgical procedures. In the final year, the student would have practice on all the simple clinical duties which are performed in the dental private practice.

In general, there is a reduction in the total time allocated for prosthetic dentistry, while preventive dentistry is assuming a progressively more important place in the curriculum.

To create an atmosphere of research at the undergraduate level, two Universities, Melbourne[13] and Adelaide, are channelling some of their senior students to be research oriented. Research projects carried out by these students had been presented at meeting of the International Association for Dental Research (IADR Australian and N.Z. Division) in Australia.

All the Australian dental schools are Faculties, schools or departments within their respective state Universities and all the dental schools are physically attached to the dental hospitals. An attempt was made by Professor Davies[14] of the Dental School in Queensland in 1963 to have the Dental College of Queensland sited on the main campus of the University at St. Lucia, separated in location from the Dental Hospital in Turbot Street. Though this recommendation was supported by the Queensland Branch of the Australian Dental Association, the Dental

Hospital, the Faculty Board, the Senate and the State Government, the Australian Universities Commission recommended that the new building for the college be built adjacent to the Dental Hospital. This facilitates teaching, as the hospitals provide an easy source of supply of patients. Though patients are often registered with the Dental Hospitals, the treatment of those patients "once handed over to the dental schools for teaching, are not dictated by the hospitals," but become the sole responsibility of the dental schools.

The dental schools of the Universities of Queensland and Adelaide receive assistance from other universities in their state to cope with the first-year dental undergraduates. In Adelaide, the Flinders University of South Australia and the University of Townsville in Queensland conduct the first-year dental course. Intake of dental students in Flinders and Townsville Universities is not great.

For the five dental schools, the total of first-year enrolment stands at 254 for 1961, 364 for 1966 and 289 for 1969 (Table 1). There is a decrease in the number of new students for year 1969 compared with year 1966. The ratio of female to male students in the first year of 1970 Dental Course is approximately 1:7 in Sydney and Queensland but in Adelaide the ratio of females to males is even lower 1:14 (Table 2).

The annual number of dental graduates in Australia averaged 133 for the 6 years from 1961 to 1966 inclusive

TABLE 1

NUMBER OF FIRST YEAR ENTRANTS AND GRADUATES FOR THE YEARS 1961, 1966, 1969

Year	N.S.W.		Victoria		Queensland		S. Aust.		W. Aust.		Australia	
	1st Y. Ent.	Grad.	1st Y. Ent.	Grad.	1st Y. Ent.	Grad.	1st Y. Ent.	Grad.	1st Y. Ent.	Grad.	1st Y. Ent.	Grad.
1961	80	55	43	32	76	40	24	13	31	5	254	145
1966	120	25	48	24	106	21	96	10	34	12	365	92
1969	112	52	48	23	48	41	54(14)*	33	28	11	289	160

Source - Deans of Dental Schools

* From Flinders University

TABLE 2

NUMBER OF DENTAL STUDENTS BY YEAR AND SEX
PRESENT YEAR
1970

University	Year of Dental Course																	
	First			Second			Third			Fourth			Fifth			Total		
	♂	♀	♂+♀	♂	♀	♂+♀	♂	♀	♂+♀	♂	♀	♂+♀	♂	♀	♂+♀	♂	♀	♂+♀
Sydney (N.S.W.)	142	23	165	75	14	89	42	4	46	51	3	54	48	5	53	358	49	407
Melbourne (Vic.)	40	10	50	40	6	46	39	2	41	31	5	36	42	8	50	192	31	223
Queensland	40	6	46	43	-	43	31	3	34	30	2	32	48	1	49	192	12	204
Adelaide (S.A.)	35	2	37*	43	4	47	34	3	37	25	3	28	24	4	28†	161	16	177
Western Australia	19	4	23	23	2	25	18	-	18	24	-	24	17	2	19	101	8	109
Australia	276	45	321	224	26	250	164	12	176	161	13	174	179	20	199	1,004	116	1,120

Source - Deans of Dental Schools

* Additional 40 ♂ and 4 ♀ have taken course at Flinders University, S.A.

† Additional 2 ♂ are taking honours course.

(Table 1). For 1969 the total of male and female graduates in Australia being 145 and 15, respectively (Table 3). Of the total of 160 previous year's new graduates 7 are assumed to return to their home overseas.

The number of staff, part-time and full-time, in each school is shown in Table 4. Part-time university staff in Sydney, Melbourne and Adelaide can be said to triple the full-time staff.

Graduates from Sydney and Adelaide are awarded the Bachelor of Dental Surgery while the dental course in Melbourne, Queensland and Western Australia leads to a Bachelor of Dental Science. Most dental schools confer a pass degree or a degree with honours.(15,16,17,18,19) However, the Dental Faculty of the University of Adelaide confers the B.D.Sc. degree with honours only for graduates who have completed a special honours year.

Dental educationalists in Australia have voiced their opinion of training dental under-graduates to be community orientated rather than orally orientated. In the report of the Dental Advisory Committee, Victoria(6), it was pointed out that "Dental Science must take its place as a University discipline and conform to the role of modern University viz. the teaching of students, the discovery of new knowledge and the maintenance of intellectual standards." With progressive dental leaders in education in Australia, dental education has changed from an era of mechanical dentistry to a biological one and recently

TABLE 3

NEW GRADUATES - PREVIOUS YEAR - 1969

University	No. of Graduates from final year of previous year			No. of Graduates who it is assumed will return to overseas countries of origin
	Male	Female	Total	
Sydney	48	4	52	1
Melbourne	20	3	23	-
Queensland	37	4	41	1
Adelaide	29	4	33	3
Western Australia	11	-	11	2
Australia	145	15	160	7

Source - Deans of Dental Schools

TABLE 4

DENTAL SCHOOLS - TEACHING STAFF
PRESENT YEAR
1970

Teaching Staff	Sydney	Melbourne	Queensland	Adelaide	Western Australia
Full-time	35	24	28	20	14
Part-time	93	71	8	83*	16*

Source - Deans of Dental Schools

* Approximate figure.

social sciences are considered to be significant in the curriculum.

1.3.2. Cost of Dental Education

Dentistry is one of the most expensive courses to embark on in the university. Barnard et al[7] in a survey in 1964 of Australian Dental Student shows that it cost a student an average of $1,354 for one academic year for tuition, together with living expenses. Expenses incurred by a student for year 1970 should be much higher due to rise in cost of living but data is not available.

Tuition fees vary with each dental school, with the highest fees payable at the University of Sydney (Table 5). Fees may vary with sex.

Some dental schools require students to purchase their own equipment for practical and clinical work as in Sydney, while in Adelaide, equipment for laboratory work and clinical dentistry is provided and a fixed fee is imposed as for hiring. Students have to subscribe to a hospital fee which is to cover the usage of facilities provided by the dental hospitals.

However, such high expenses for dental education are partially overcome in Australia by financial assistance which has become an integral part of tertiary education.

TABLE 5

DENTAL COURSE COST OF EQUIPMENT AND COMPULSORY FEES
PRESENT YEAR
1970

Dollars

	Sydney	Melbourne	Queensland		Adelaide	Western Australia
Under-graduate Year 1	571*	401.50	468	618†	455	403
2	537	491.50	468	618	485	403
3	537	491.50	468	618	435	403
4	537	500.00††	468	618	435	403
5	537	474.50††	468	618	435	403
Degree Fee	-	-	-	-	24	-
Total Fees	2,919	2,359.00	2,340	3,090	2,419	2,015
Total Equipment	655**	Nil	120***		168	820
Total	3,574	2,359	2,460	3,210	2,587	2,835

Source - Deans of Dental Schools

* All compulsory fees include $470 University Fees plus General Service, Library, SRC, Union, Sports Union, Hospital Fee 2nd-5th years.

** 3rd, 4th and 5th years.

*** Hiring Fees: $20 for 2nd and 3rd years, $40 for 4th and 5th years.

† Fees for Non-Queensland Residents.

†† Gold per student $20.

Such financial offers may attract students of good calibor who are interested in a dental career but are unable to cope with the high cost of education.

1.3.3. Scholarships, Loans, etc.

In Australia, financial aid in tertiary education comes from a diversity of sources - government, universities, corporations, foundations, civic groups and individuals, and these are awarded as scholarships on a competitive basis. Some scholarships are awarded by achievement in the entrance examinations, others are available only during the later years of the course.

1) Commonwealth University Scholarships - this came into operation in 1951.[15] At that time awards were made under this scheme for first degree at the University and for certain approved courses in other institutions. It was in 1959 that awards for post-graduates were introduced. This scheme is administered by the Commonwealth Scholarship Board and three types of scholarships are offered.

   a) Entrance scholarships are awarded on results of matriculation examination, the Higher School Certificate or on an equivalent Australian qualifications to students about

to commence their course. Applicants eligible for this award are limited to age 25 but at age 30 for South Australia.

b) Later year scholarships are awarded to undergraduates on results obtained and below age 25 (S. Aust. below 30). This scholarship is available to students whose parents are permanent residents in Australia.

c) Matured Age Scholarships for those over 25 years with good academic record and have lived in Australia for two years. The benefits under this scheme are that all compulsory fees paid, but a full-time student is subjected to a Means Test before a living allowance is granted.

A higher number of students in Melbourne hold such awards. In 1969, out of 211 enrolment, 129 were scholarship holders (61%) compared with 1970 in which 123 out of 244 enrolment are under scholarships (65%).

2) Cadetship - these awards are offered to students in the latter part of the course. Successful applicants are paid fees and a living allowance and some assistance is given with books. Traineeships are available through

a) The Royal Australian Navy

b) Australian Military Force

c) The Royal Australian Air Force.

Holders of such scholarships are bound to serve in the armed forces for a period after graduation.

In N.S.W., the Department of Public Health and also the United Dental Hospital of Sydney offer such traineeship to undergraduates. These offers are made to students who are in the last three years of the dental course.

The Dental Advisory Committee, Victoria,[2] believes that "bursary system is one important means of recruiting young dentists who in turn for their financial assistance they have received become available for country duties." Most dental graduates in Australia tend to assume private practice on graduation and this scheme is a means of diverting dental personnel from private practice to the country.

3) University Student Loan Scheme is set up to assist students in temporary financial difficulties. The granting of loans is dependent on satisfactory performance. The terms of the loan usually involve re-payment commencing in the year following graduation.

4) The Australian Dental Associations in a few states have entrusted certain sums of money to the respective state universities for the purpose of establishing annual prizes for outstanding students.

5) Offers of scholarships and prizes by individuals are numerous in the dental schools. These are awarded for proficiency or outstanding achievements attained during each year of the undergraduate course. The awards may be unrestricted or confined to certain subjects as Conservative Dentistry, Dental Anatomy, Dental Prosthetics, Dental Science, etc. Scholarships offered by individuals often stipulate that candidates be of sufficient merit in any one year of the course before award is offered or else the scholarships for that year are not awarded.

6) The National Health and Medical Research Council offers scholarships to outstanding students who wish to extend their studies into research fields after graduation.

Prize Awards for Undergraduates in the Australian Dental Schools.

Sydney

Year	Prize	Value
First	1) The Dental Board of N.S.W. for general proficiency	$100
	2) The Dental Alumni Society Prize III for Biology	$15
Second	1) The G.S. Caird Scholarship for Prosthetics	$60
	2) The Dental Board of N.S.W. Prize for general proficiency	$100
	3) The Royal College of Surgeons Dental Society of Australia Prize for Basic Sciences	$21
	4) The Dental Alumni Society Prize IV for Histology and Dental Histology	$15
Third	1) The Dental Alumni Society Prize II for Preclinical Operative Dentistry	$15
	2) The W.J.D. Partridge Memorial Scholarship for proficiency in year	$120
	3) The Percy A. Ash Prize for Operative Dentistry	$10
	4) The Dr. John M. Wilson Prize awarded annually for Prosthetic Dentistry	$10.50

Prize Awards for Undergraduates (Cont'd)

Sydney

Year	Prize	Value
Third	5) The Frank Marshall Prize awarded to ex-service student or child of ex-serviceman for proficiency in year	$40
	6) The L.G. Crane Prize in Pathology for proficiency in Pathology	$10
Fourth	1) The Leslie Raymond Carroll Prize for proficiency in Prosthetic Dentistry	Silver medallion
	2) The W.A. Grainger Prize for proficiency in Ceramics	$4.20
	3) The H.J. Cusack Memorial Prize for proficiency in Operative Dentistry	$100
	4) The Roy C. Underwood Prize for essay on Dental Materials	$100
	5) The Dr. C. Charlton Prize for proficiency in Pharmacology and Therapeutics	$20
	6) The Dental Alumni Society Prize V for proficiency in Clinical Prosthetics	$15
	7) The Dr. Everett Magnus Memorial Prize for proficiency in Oral Surgery	$20

Prize Awards for Undergraduates (Cont'd)

Sydney

Year	Prize	Value
Fifth	1) The Professor A.J. Arnott Prize for proficiency in Oral Surgery	$14
	2) The Dental Alumni Society Prize I for proficiency in Pedodontics	$15
	3) The H.R. Kemp Prize for proficiency in Regional Anaesthetics	$8.40
	4) The R. Morse Wilkycombe Prize for proficiency in Clinical Periodontics	$31.50
	5) The Dr. Henry Bruce Maxwell Prize for proficiency in Operative Dentistry	$10
	6) The Gordon Rowell Prize for Preventive Dentistry	$10.50
	7) The Edmond Charles Gates Prize for Orthodontics	$10.50
	8) The K.P. Mackinnon Prize for Clinical Prosthetic Dentistry	$10.50
	9) The Australian Society of Periodontology Prize for Periodontics	$10
	10) The John Stephen Hill Memorial Prize for Clinical Operative Dentistry	$50
	11) The Society of Oral Surgeons of N.S.W. Medallion for Clinical Oral Medicine and Oral Surgery	Medallion

Prize Awards for Undergraduates (Cont'd)

Melbourne

Year	Prize	Value
Entrance unrestricted	1) Aitchison Scholarship	$140 each
Second	1) E.D. Nicholls Prize for Dental Anatomy	$10
Third	1) T.C. Adamson Memorial Prize for Prosthetic Part II	$30
Fifth	1) William J. Tuckerfield Prize for Dental Prosthesis Part IV	Medal, books and/or instruments worth $35
	2) William Leslie Elvins Prize for Oral Medicine and Oral Surgery	Medal + $30
	3) Francis Gray Prize for Conservative Dentistry	Medal + $35
	4) Australian Society of Perio-dontology for Periodontology	$20
	5) Mervyn Townsend Memorial Prize for Orthodontics	$30
	6) Ernest Jouke Memorial Prize for Dental Science	Book:

Prize Awards for Undergraduates (Cont'd)

Queensland

Year	Prize	Value
First	1) The Graydon Andrews Prize	Dental books worth up to $42
Second	1) The Dental Discussion Group Prize	Books worth $40
Third	1) The Dental Study Club Prize	Books
Fourth	1) The Australian Dental Association Prize	Books worth $63
	2) The J. Owen Pearn Memorial Prize	$30
Fifth	1) The Australian Society of Perio-dontology Prize	Books worth $10 or subscription to periodical
	2) The Carlisle C. Bastian Prize	Books
	3) The James Egerton Cary Prize	Books
	4) The Mary Moffatt Prize	Books

Adelaide

First	1) The Dental Board of S. Australia Prize	$40
Second	1) Malcolm Joyner Prize	$21
Third	1) Thomas D. Hannon Prize	$12

Prize Awards for Undergraduates (Cont'd)

Adelaide

Year	Prize	Value
Fourth	1) The Dental Board of S. Australia Prize	$40
Fifth	1) Australian Dental Society (S.A. Branch) Prize	$31.50
	2) Australian Society of Orthodontics (S.A. Branch) Prize for Orthodontics	$40
	3) The Austin Bazely Prize for Oral Surgery and Oral Pathology	$25
	4) General Practice Study Group Prize	$10

Western Australia

First	1) Dr. F. Simpson Prize for Dental Science	$14
Second	1) Convocation Prize for Dental Science	$12.60
Third	1) Australian Dental Association (W.A. Branch) Prize for Dental Science	$21
Fourth	1) Dental Board of Western Australia Prize for Dental Science	$50
Fifth	1) Australian Society of Periodontology Prize for Periodontics	$10

Prize Awards for Undergraduates (Cont'd)

Western Australia

Year	Prize	Value
Fifth	2) Leonard Nathan Prize for Oral Pathology and Oral Medicine	$55
	3) Tom E. Scott Memorial Prize for Prosthodontics	$74
	4) J.A. Wood Memorial Prize unrestricted - Outstanding graduate in Dental Science, Science, Agriculture, Engineering or Medicine	$125 worth of books or equipment
	5) Cruickshank-Rentley Memorial Prize for undergraduate or graduate of Guild of Graduates	$34

1.4. Graduate Education

The recent trend in Australian Universities is the increased emphasis on post-graduate or graduate studies and research. There is the recognised need to keep up with increased growth and knowledge of the dental science. Therefore graduate training is desirable if the dentist is to be competent in his field and to effectively put into practice the most recent concepts which are accruing.

Graduate education in the Dental Schools is often a prescribed course of study and a supervised research project. Candidates may proceed to higher degrees by examination, by presentation of a thesis of original research work or by an examination and a thesis. A research project elected by a candidate for his course has to be approved by the appropriate department.

In the University of Sydney the degree of Doctor of Dental Science first appeared in the By-laws in 1927 and was first awarded in 1928. The degree of Ph.D. (in general) first appeared in the By-laws in 1949. The first degree for Ph.D. in Dentistry was awarded in 1962. The degree of Master of Dental Surgery first appeared in the By-laws in 1937 and the first two degrees were awarded in 1940. The Master of Dental Science degree following two years of formal full-time study was awarded first in 1961 and a one-year Diploma in Public Health Dentistry was instituted in 1961.

In Melbourne the doctorate degree was established in 1910 and conferred first in 1913. When the Degree of Master of Dental Science was established in 1936, alterations of regulation governing the degree of Doctor of Dental Science was made. Candidates were then required to pass the examination prescribed for the degree of Master of Dental Science before submitting a thesis for the doctorate degree.

The Commonwealth Bureau of Dental Standards has assisted the Melbourne University in the training of candidates undertaking Metallurgy and Dental Materials for the degree of Master of Dental Science. This responsibility was handed back to the Dental School recently.

Adelaide, like Melbourne, had the Doctor of Dental Science by thesis and/or examination (instituted in 1922) before the Master of Dental Surgery which was allowed in 1942.

Scholarships available to graduates are offered by the Commonwealth Scholarships' Board, by individuals and by the National Health and Medical Research Council (N.H.M.R.C.).

Of the total of 36 successful post-graduate students in 1969 (Table 6) the University of Sydney had the highest output.

TABLE 6

POST-GRADUATE QUALIFICATIONS
PREVIOUS YEAR
1969

	Number and Type of Qualifications Granted							Total
	D.P.H.(Dent.)	M.D.S.	M.D.Sc.	D.D.Sc.	Ph.D.	F.A.C.D.S.	Other	
Sydney	3	6	10	1	1	-	-	21
Melbourne	-	-	6	1	-	-	-	7
Queensland	-	-	2	-	-	-	-	2
Adelaide	-	1*	-	-	-	-	-	1
West. Aust.	-	-	1	-	-	-	-	1
Australian College of Dental Surgeons	-	-	-	-	-	4	-	4
Australia	3	7	19	2	1	4	-	36

Source - Deans of Dental Schools

* Approximately.

1.5. Post-Graduate Education

Continuing education is necessary for dentists if they are to keep up with advances in dental research and incorporate new techniques in their practice. Dentists should not be hoarders but must adapt their practice to the advances in dentistry.

Continuing education must not only be "directed to the few who are interested but must be planned so as to reach those who are not interested."

Dental post-graduate education in Australia is conducted either as formal courses by the Dental Schools, or through meetings, congresses, seminars or journals by the Federal or State Australian Dental Association.

Short courses conducted by Post-graduate Committees in each state are often held annually. Such courses are often of a few days' duration. Latest concepts in dentistry, new dental materials and techniques are introduced in these courses. Post-graduate dental courses usually offered cover the following topics:-

1. The general practice of dentistry, diagnosis, treatment of lesions and assessment of patients' health
2. Orthodontics
3. Pedodontics
4. Periodontics
5. Clinical Dental Radiology

6. Endodontics
7. Prosthodontics
8. Crown and Bridge Work
9. Oral Surgery
10. Restorative Dental Materials.

In 1970, post-graduate formal courses were held in Sydney in August, Brisbane in May, Melbourne in February and August and also in Adelaide.

The Federal Australian Dental Association (A.D.A.) and the State Australian Dental Associations take a very active part in continuing education. They have been responsible for congresses, inviting guest speakers to their annual or monthly meetings, conducting workshops and in the publication and dissemination of the Australian Dental Journal.

A triennial dental congress organised by a special committee of the Federal Australian Dental Association is held in different states each time. In 1970, the Nineteenth Australian Dental Congress was held in Brisbane in May.

In between the congress years, conventions take place in the states. A convention is often a one-day meeting where a series of lectures is delivered by the state profession.

The Federal A.D.A. and the State A.D.A. have regularly invited eminent visitors from abroad as well as from the Australian states to conduct special courses for dentists and to present papers at their association meetings.

Generally, clinicians with special experiences in the practical fields of dentistry are sought.

Special societies such as the Australian Society for Orthodontists, Australian Society of Periodontology, the Australian College of Dental Surgeons, and other Societies and Study Clubs participate in continuing education by providing a series of lectures and discussions or case presentations which may spread over a day or perhaps a few days.

Continuing education is also conveyed to dentists in the country areas by dentists from the city or by visiting dentists from interstate. This often takes the form of a lecture.

The Australian Dental Journal, a bi-monthly periodical, compiled and issued by the Federal A.D.A., is one form of promulgating research work and the like to the dental profession in Australia.

A workshop has been a meeting venue of the profession from the different states in Australia. In 1970 a workshop on Dental Health Education was held in Sydney in August under the auspices of the Australian Dental Association and the Dental Health Education and Research Foundation.

Research centres such as the Institute of Dental Research and the Commonwealth Bureau of Dental Standards have assisted in post-graduate education by providing lectures and demonstration work.

1.6. Education of Auxiliaries

1.6.1. Operative Auxiliaries

Operative Auxiliaries, i.e. New Zealand Type, are used in Tasmania, South Australia, New South Wales and A.C.T. The education of the Operative Auxiliaries is centred in Hobart and Adelaide. Introduction of this auxiliary group dates back to 1966 in Australia. The Dental Association and many dentists are in favour of the concept of the "dental team" in which the New Zealand type of dental nurse forms an integral part within Government Services. However, there are still a few conservatives in the dental profession who oppose to the training and utilization of this group of dental personnel.

In Hobart, Tasmania, these sub-professional personnel are known as school dental nurses while in Adelaide, South Australia, the term "therapist" is adopted. Reasons for adopting the term "therapist" are

1) the word "nurse" does not seem to describe the duties of the dental auxiliary adequately
2) objection by the Commonwealth nursing authority to the use of the term "nurse" by dental auxiliaries coupled with the legal situation which could possibly result from the use of the term "nurse" in view of existing legislation concerning the nursing profession.

Brief History of the Dental Nurses Training Schools[20]

Hobart School of Dental Nursing, established in February 1966, is the first school in Australia for training of dental auxiliaries. The decision to establish the school followed a visit to New Zealand by Dr. J. R. MacIntyre, the Director General of Health Services of Tasmania, where he had observed the Dental Nurse Service in operation. The school commenced with a staff of three officers - a dentist from Tasmanian Dental Service, and the other two seconded from the New Zealand service - a School Dental Nurse Inspector and a Senior Administrative Officer.

Ten Tasmanian student dental nurses made up the first batch of trainees.

The original intention was to train ten dental nurses annually. In January 1968 the Australian Commonwealth Territory sent four Commonwealth students for training in the Hobart School of Dental Nursing, and this pattern of sending four to five student nurses to Hobart by the Commonwealth has been maintained to the present year.

The Hobart school has a dental staff of four.

Adelaide School for Dental Therapists[21] was opened a year later than the Hobart School of Dental Nursing, i.e. in February 1967. The initial intake of students into this school was sixteen.

Only one dental officer coped with the first junior draft until the principal, Mr. Kennare, returned to Adelaide from New Zealand. Since then, the dental staff has expanded to its present size of ten.

The school has now been recognised by the Commonwealth Government as a "College of Advanced Education" and as such receives Federal subsidies.

Recruitment

Entrance qualifications in both schools for the auxiliary stipulate that the applicants should be between the ages of 17 and 25. Further, for Adelaide, applicants should have completed five years of secondary education and with a liking for children, while in Hobart Matriculation is preferred but the school also accepts Schools Board "A".

Outline of Programme

The course in both schools consists of two years' full-time training in the School of Dental Nursing or for Dental Therapists, plus one year of field work still under supervision of the Dental Officer, before a nurse is fully qualified.

In both schools pre-clinical and clinical phases

in the curriculum are observed.

Pre-clinical refers mainly to the first-year work in which students receive didactic lectures on subjects like hygiene, general and dental histology, physiology and so on. Practical classes as tooth drawing and carving and operative work with plastic, stone and natural teeth set on "dummy jaws" are also conducted.

Clinical work is carried out on child patients during the second year of the course.

In Hobart, the curriculum is parallel to that used in New Zealand. Even the style of equipment used is similar with pump-up chairs of the conventional type and standard airotors.

The pre-clinical course is supervised largely by a Matron. Clinical dentistry which extends over the second year of the course covers only 700 hours. While in Adelaide the clinical work consumes 950 hours.

Adelaide School for Dental Therapists is more fortunate in that the latest equipment is in use in the training school and the teaching condition approaches the ideal. The standard of operative work and treatment are extremely high.

The curriculum of this school differs slightly from that of Hobart in that Student Dental Therapists are given full instruction in examination and diagnosis of patients including taking, processing and interpreting bite-wing

X-rays for carious lesions but not periapical conditions.

South Australian dental auxiliaries give "mandibular block" injections for local anaesthesia and perform pulpotomies.

They are provided with dental assistance (one assistant to two therapists) and use self-threading pin retention for silver amalgam restorations. Therapists are also taught to take alginate impressions for study models.

Human relation is the main non-clinical subject taught in the 1970 course and is given great emphasis.

Pre-clinical course is supervised entirely by Dental Officers.

An innovation is planned for next year 1971. Clinical work will commence in the third term of the first year while the chairs are occupied by the first-year students, the seniors will do advance operative technique classes, such as learning the self-threading pin retention technique. Also the stages of the junior year will overlap.

Dental Anatomy

Operative Technique

Clinical

In both schools, a written and a practical examinations are held at the end of each course, i.e. a student nurse is not promoted to the next year of course except by passing the examinations.

The School for Dental Therapists in Adelaide has a favourable staff-student ratio and conforms to the recommendations made by the Committee on Teaching Costs of Medical Hospital,[4] i.e. staff-student ratio is 1:4 in surgery. This favourable situation in the therapist school in Adelaide permits tutorials with small groups and a great deal of individual instruction.

The number of student dental nurses and therapists in training in both schools are approximately equal. When in training, the nurses and therapists are considered to be under government employment and therefore receive a remuneration (Table 7).

If Australia is to have the equivalent number of children under the care of one dental nurse or therapist as in New Zealand (i.e. one dental nurse to about 430 children), it will be necessary to train 5,331 of these operative auxiliaries by 1979 to cope with the children between the ages of 4 and 13. That is 434 girls per annum are required in the service.[4]

TABLE 7

NUMBER OF STUDENT DENTAL NURSES/THERAPISTS IN HOBART AND ADELAIDE AND THE SALARY RANGES FOR FIRST TWO YEARS IN TRAINING FOR 1970

	Hobart		Adelaide	
Year	No. of Nurses	Salary $ per annum	No. of Therapists	Salary $ per annum
First	10 Tasmanian S.D.N. 5 Commonwealth S.D.N.	1,634	16	900*
Second	10 Tasmanian S.D.N. 6 Commonwealth S.D.N.	1,350	16	950

Source: Principals - School of Dental Nursing,
School for Dental Therapists

S.D.N. = School Dental Nurse

* Plus $280 per annum if trainee is obliged to live away from home during training.

up.

Outline of Curriculum

Schools of Dental Nursing and Dental Therapists

Subjects	Hobart		Adelaide	
First Year	Lecture hrs.	Prac-tical	Lecture hrs.	Prac-tical
1. Outline of duties and general instructions	13	-	-	-
2. Poster/Art work	-	65	-	77
3. Hygiene	5	-	6	-
4. Dental Anatomy	23	23	12	-
5. Anatomy	30	30	22	7
6. Histology/Dental Histology	25	25	8	-
7. Physiology	20	-	-	-
8. Use and care of equipment	-	40	6	6
9. General Pathology	30	-	5	-
10. Materia Medica	25	-	-	-
11. Dental Surgery & Dental Pathology	25	-	25	-
12. Local Anaesthetics & Extraction	15	-	-	-
13. Clinical records	15	-	-	-
14. History and Ethics of Nursing	3	-	-	-

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Outline of Curriculum (Cont'd)

Schools of Dental Nursing and Dental Therapists

Subjects	Hobart		Adelaide	
First Year	Lecture hrs.	Practical	Lecture hrs.	Practical
15. Operative Dentistry/ technique	45	250	20	250
16. Child welfare	12	-	6	-
17. Orthodontics	11	-	-	-
18. Tooth Carving	-	33	-	150
19. Preventive Dentistry (including Dental Health Education)	-	-	25	100
20. Radiography	-	-	3	-
21. First Aid	-	-	20	-
22. Oral Medicine (Physiology, Pharmacology + Most of General Pathology)	-	-	11	-
Total Number of Hours	297	516	169	590
Total Number of Hours for Lectures and Practical	813		759	

Outline of Curriculum (Cont'd)

Schools of Dental Nursing and Dental Therapists

Subjects	Hobart		Adelaide	
Second Year	Lecture hrs.	Practical	Lecture hrs.	Practical
1. Operative Dentistry/ Clinical Dentistry	-	700	-	950
2. Dental Health Education	25	-	-	-
3. Organisation and Administration	42	-	-	-
4. Teaching Methods	6	-	-	-
5. Human Relations (methodology of teaching Psychology, communication, English language (written and spoken))	-	-	31	30
6. Tutorial Classes	11	-	10	-
Total Number of Hours	84	700	41	998
Total Number of Hours for Lectures and Practical	784		1,029	

1.6.2. Non-Operative

Dental education for this group of non-operative auxiliaries, i.e. the technicians and the dental assistants, varies with each state. Technicians are trained under an apprenticeship scheme but dental assistants may follow a prescribed course put up by the states.

Dental Technicians[22]

Training of dental technicians under the apprenticeship scheme was established in 1949 by the Apprenticeship Commission of Victoria. Apprenticeship training is available in New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania. The period of training is usually four years but five in Victoria and South Australia. The period of training in Tasmania is also five years where registered dental mechanics have chairside status and are permitted to fit dentures directly. The conditions of apprenticeship are laid down by the appropriate Government Commission in each state and apprentices may be indentured to a dentist or a technician except in New South Wales where they may be indentured only to a technician.

The educational standard required for commencing apprenticeship is a minimum of nine to ten years' schooling. Some states may require the Lower School Certificate.

Mathematics and Science are emphasised. Those with higher qualifications receive reduction in period of apprenticeship in some states except New South Wales and South Australia. Western Australia reduces apprenticeship by half a year (3½) if the eleventh year of schooling is completed. Training is carried out in all states in a college of technical education except in N.S.W. where it is given at the United Dental Hospital, Sydney. Perth Dental Hospital trains its own apprentices only. In Queensland additional centres function by correspondence from the Central Technical College, Brisbane.

Responsibility for the curriculum is vested in Advisory Committees in all states except in N.S.W., where the course director at the United Dental Hospital holds the responsibility.

Most states give approximately the same amount of time in formal training -- 280 to 320 hours per year (i.e. 35 weeks). Tasmania is the exception, which gives less than half the others (140 hours per year) even including the fifth year of clinical training recently introduced.

Attendance at the course is compulsory but is not always enforced. Examinations are held regularly but in some states a pass is not essential for registration. Sitting the examination is not compulsory in all states.

A certificate is issued on the completion of apprenticeship. Some states also give one for passing the examination. After completion of apprenticeship, the

individual is registered with the appropriate governmental industrial agency.

Dental Chairside Assistants

Dental assistants are essential to any dental service, public or private, for the effective use of these auxiliaries enables maximum productivity.

Training of dental assistants in Australia does not conform to a fixed scheme. The Dental Assistants' Association, the Dental Association of some states, the Dental Hospitals as well as private dentists, have participated in the training of this group of auxiliary.

In N.S.W., Victoria and Queensland, the State Dental Assistants' Association organises the course. This may also take place in conjunction with the State Dental Association. In Adelaide and Perth, the Dental Hospitals are responsible for the assistants training programme.

Some states, e.g. N.S.W. and Tasmania, conduct a one-year course of lectures. In Victoria and Perth, the training period is stretched over a period of three years.

Perth Dental Hospital has the most comprehensive training for dental assistants. The curriculum is designed to provide basic training in chairside assistance in all specialties of Dental Science. A preliminary course of six weeks is carried out in the training school followed

by considerable in-service training. Post-graduate courses in Dental Radiology, Dental Health Education and specialised assistance in Orthodontia are also available.

In Victoria, two schemes exist for the training of dental assistants. The Dental Hospital of Melbourne conducts a full-time course and the Australian Dental Assistants' Association (Victoria Branch) provides a course of lectures as part of a three-year programme.

In general, trainees are required to attend weekly evening lectures which usually takes 1½ to 2 hours each week.

Besides the formal lectures, correspondence courses are also allowed in some states, e.g. in the country areas in Tasmania.

The number of course hours also varies, being 240 hours in Adelaide to 487½ hours in Perth and Victoria.

During their training, the Dental Assistants receive a salary. Remuneration is almost equivalent in each state. In Adelaide, the dental assistant's age is also considered in the salary payment.

1.7. Co-ordination of Dentists and Auxiliaries Training

At present, no definite move is made in the dental schools to co-ordinate the training of dentists and auxiliaries.

The Dental Advisory Committee[6] in Australia considers it desirable to have senior dental students and the dental nurses working alongside each other in the Dental Hospitals. In so doing, the future dentist learns to work efficiently with a dental nurse. Mehta[23] stated that this aspect in dental education will create a better understanding between the dentist and the auxiliary about the capabilities of each other.

South Australia offers in-service training in the School of Dental Therapists to a dentist prior to his eventual appointment as a regional dental officer.

Dental students in the University of Queensland work in conjunction with technicians who tend to carry out most of the laboratory work of the students.

The dental profession in Perth[24] is contemplating the training of therapists who will perform duties between those of the New Zealand School Dental Nurses and the Canadian Therapists. A proposal is made to co-ordinate the junior residency of the therapists with final-year dental students in the hospital.

1.8. Research

Dentistry cannot acquire "genuine professional and educational status" until its research activity increases markedly. Storey[25] has stressed the importance of research and its benefit to the dental profession. He states that:-

> "Research . . . . . is the key not only to the development of strong teaching departments but to the status of dentistry in Australia. Dentistry will be judged by the quality and activity of research done by its members. Effective prevention of dental diseases depends largely on the results of further research."

The dental profession in Australia has been very active for many years in the field of research. Until 1961 there was no official research body in Australia. Generally, dental research in this country stems from three main sources:-

1) The Institute of Dental Research in Sydney (I.D.R.)
2) The Commonwealth Bureau of Dental Standards in Melbourne
3) The Dental Schools and, to a lesser extent, other University Departments.

The Dental Health Education and Research Foundation of Sydney (D.H.E. & R.F.), the University of Melbourne Dental Alumni Research Foundation, individual dentists and government health departments have also made useful contributions to this field of Dentistry.

1.9. History

1.9.1. Institute of Dental Research[26]

The origin of this institute was when Roy McMurrin Kirkpatrick was appointed in 1931 as the Sydney University Dental Research Scholar to work in the dental school. At that time, the demand for pathological services in the Dental Hospital was increasing and Kirkpatrick was assigned some of these duties. At the return of Kirkpatrick to private practice in 1936, Stuart Denston was appointed but died during his term.

The demand for pathological services of the Dental Hospital continue to increase and after World War II the Board of Control of the United Dental Hospital decided to extend the Department of Pathology. Dr. N. E. Goldsworthy, a medical graduate and senior lecturer in Bacteriology, University of Sydney, was appointed Head of the Pathology Department. Through Goldsworthy's effort and enthusiasm, the importance and need for dental research were realised by the Hospital Commission who then authorized the establishment of an Institute of Dental Research within the Dental Hospital in 1946.

1.9.2. The Commonwealth Bureau of Dental Standards

The Materials Research Laboratory which was a section of the Australian College of Dentistry in Melbourne was established in 1936. During and immediately after the war 1939-1945, advances in the field of properties of dental materials were spectacular and the importance of establishing this research laboratory on a Commonwealth basis was realised.

In 1947 the Commonwealth Department of Health took over the activities of the research laboratory under the name of Commonwealth Bureau of Dental Standards. Since then, the Bureau has been devoted to research. In recent years, however, the pressure of testing and standardizing numerous dental materials has limited the time available for research.

1.9.3. Dental Health Education and Research Foundation (Sydney) (1)

For many years progress of the Dental Health Foundation Committee of the Australian Dental Association (N.S.W. Branch) in educating the community to adopt some measures of prevention of oral diseases was hampered by the extremely insufficient funds and assistance.

This Committee realised that the main problem which they had to overcome was finance if any substantial

programme of dental health education was to be implemented. Thus the Committee, in conjunction with the Dental Alumni Society who was also intending to raise money to offer scholarships to graduates for higher science training, launched a fund-raising campaign.

Over $180,000, spread over a five-year period, was promised by a thousand dentists in N.S.W. to finance the formation of the Dental Health Education and Research Foundation.

In 1962, the name of the first council was presented to the University Senate who accepted the Foundation as a University Foundation in March 1962.

1.10. Research Centres

1. The Institute of Dental Research in Sydney, occupies the seventh floor of the United Dental Hospital in Chalmers Street.

2. The Commonwealth Bureau of Dental Standards in Melbourne, situated in Lonsdale Street.

3. The Dental Schools in Sydney, Melbourne, Brisbane, Adelaide and Perth.

4. The Dental Health Education and Research Foundation (Sydney).

1.11. Authorities Supporting Research

The success of research programmes and the expansion of knowledge in which future improvements are based lie not only with trained and competent research workers but also on financial support.

Dental research in Australia has been sponsored by various government sources, both federal and state, by commercial enterprises, by dental bodies such as Dental Boards and by individuals.

1. The government sources which support dental research in Australia include:-

    1. Commonwealth Department of Health, under which the Commonwealth Bureau of Dental Standards operates.

    2. The National Health and Medical Research Council which offers grants for research work carried out by I.D.R. as well as by graduates who may be pursuing post-graduate studies or research.

    3. In Australian Universities research may be supported by University Research Grants or grants from industry, commerce or other sources as well as the N.H.M.R.C.

II. Support of research by Dental Bodies include:-

1. The Dental Board of N.S.W. which provides financial assistance to I.D.R.

2. The generous contribution of $100,000 in 1962 plus annual donation made by the dental profession in N.S.W. have enabled the D.H.E. & R.F. to carry out research projects in the field of social science in relation to dentistry.

III. Support of research by private enterprises

Industrial organisations have, from time to time, supported individuals doing research and research centres (such as I.D.R.) financially. Such companies are Coca Cola Company, Bristol Myers Co. Pty. Ltd., Qantas, Arnotts, Colgate Lever Brothers and Wrigley's Company and Colonial Sugar Refinery Co.

1.12. Areas of Research

The dental profession in Australia has embarked on many areas of research. The main areas of research taken on by research centres, dental schools or individual dentists embrace the areas of Basic Science, Basic Dental Research, Clinical Dentistry, Dental Materials and Public Health. Dental schools such as School of Dental Science in Melbourne and the Faculty of Dentistry in Adelaide have tried to instil research into their under-graduates by stipulating that a research project is required as partial fulfilment for the degree of B.D.Sc. or B.D.S. The number of projects conducted in Australia are:

1) Basic Science/Basic Dental Research
   - By the Institute of Dental Research - 11
   - By Universities and individuals - 22*
2) Clinical/Materials
   - By Institute of Dental Research - 7
   - By Commonwealth Bureau of Dental Standards - 16*
   - By Universities and individuals - 16*
3) Social Sciences
   - By D.H.E. & R.F./Universities - 2*
4) Dental Public Health
   - By Universities and individuals - 12*

Note * - approximate figures for years 1969/1970.

1.13. Dissemination of Results

Research reports from Dental Research Centres, Universities, and individuals are disseminated through local or overseas journals, meetings and through private communication.

The main sources of dissemination of research information are:-

1) Annual reports of the department or centre,

2) Journals/periodicals:- reprints of papers are published in

Advances in Oral Biology
Archives of Oral Biology
Australian Dental Journal
Biochemical Journal
Carbohydrate Research
Journal of General Microbiology
Medical Journal of Australia
W.H.O. Bulletin.

3) Meetings:-

The Second Convocation of the Australian College of Dental Surgeons in Sydney in August 1969

The meeting of the Australia and New Zealand Division of the International Association for Dental Research (in 1969)

The meetings of the Australian Biochemical Society and the Australian Society for Microbiology in Melbourne in May 1970

Meetings of the State or Federal Australian Dental Association and Study Clubs

Dental Congresses and the meetings of the International Association of Dental Research.

The steady increase in the number of research papers published by dentists, research workers and University staff can be used as an index of the activity of the dental profession in Australia.

1.14. International Association for Dental Research (I.A.D.R.) (Australian Division)

1.14.1. History

The formation of the Australian Section of the International Association for Dental Research was made possible by 20 enthusiastic dentists who were interested in this field of dentistry. The inauguration came in August 1961 and at its first I.A.D.R. meeting six scientific papers were presented. With the increase of its members in later years, the Australian Section was able to become the Australian Division of the I.A.D.R. This move enabled its members to have a voice in the affairs of the international body.

In 1969, the New Zealand section was granted permission by the parent body to amalgamate with the Australian Division.

Over the years, the number of scientific papers presented at the annual meetings of the I.A.D.R. gradually increased and now about 40 papers have been presented by the research workers in the South Pacific region.

The I.A.D.R., with its present membership of 125 from Australia and 30 from New Zealand, has five sections in Brisbane, Sydney, Melbourne, Adelaide, Perth and New Zealand, which attend to the local activities.

1.14.2. Areas of Research

Although some of the research papers presented at the annual meetings of the Australian New Zealand (A.N.Z.) Division are on projects conducted by non-members, the total number of papers presented will reflect the activity of research in Australia. A breakdown of papers presented during the period of 1961 to 1969 is as follows:-

Basic Science	65	papers
Basic Dental Research	93	"
Clinical	52	"
Materials	35	"
Dental Public Health	9	"

1.14.3. Dissemination of Results

Abstracts of the papers presented at the annual meetings are forwarded to all members of the A.N.Z. Division. These abstracts are also published in the Journal for Dental Research. In a few cases, individual workers have published results presented at I.A.D.R. meetings as papers and articles in the Journal of Dental Research and the Australian Dental Journal.

1.15. Summary

1. Dental education in Australia is the responsibility of the five dental schools which are faculties within the Universities of Sydney, Melbourne, Queensland, Adelaide and Western Australia.

2. The inception of formal dental education in Australia dates back to 1897 when the Australian College of Dentistry was established in Melbourne.
In some states, apprenticeship was first introduced into the dental course.
Since 1920 all the dental schools gradually became faculties within the state universities.

3. Recruitment of students to the under-graduate course has been carried out mainly through the Australian Dental Association and through the Education Department.

4. The limited facilities in some dental schools made it necessary to impose a quota system.

5. The program for under-graduate training is basically similar in the five dental schools, though the contents, structure and time allocated tend to vary a little.
This is to prepare the graduates to meet the needs of the local conditions of the state.

6. The under-graduate course in Sydney and Adelaide leads to a Bachelor of Dental Surgery, while Melbourne, Queensland and Western Australia grant the Degree of Bachelor of Dental Science.

7. Cost of dental education is high. This may hamper those who may wish to pursue a dental course but are financially unable. To overcome this, scholarships, awards, student loans are available, and these have become an integral part of tertiary education in Australia.

8. Graduate education is available in all the dental schools. Courses leading to Master of Dental Science, Master of Dental Surgery, Doctor of Dental Science and Doctor of Philosophy are conducted by the dental faculties. Only the University of Sydney offers a diploma course in Dental Public Health.

9. Dental Post-graduate Committees in Universities often conduct formal courses in post-graduate education. The Federal and State Dental Associations participate in this field of continuing education by organising triennial congresses, conventions and monthly meetings where eminent speakers are invited to present some topics of interest.

10. Education of Operative Auxiliaries, the New Zealand type, is centred in Hobart and Adelaide. The course

of training for Operative Auxiliaries in Hobart is parallel to that conducted in New Zealand. In Adelaide, the course differs in a number of ways from the New Zealand pattern.

11. A prescribed course of training for Dental Assistants has been initiated in some states. However, the course at Perth Dental Hospital is the most comprehensive, for this includes a preliminary course together with considerable in-service training for a period of three years.

12. Dental Technicians are all trained under an apprenticeship scheme in New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania. The period of training is usually four years.

13. There is no specific move in co-ordinating the training of dentists and auxiliaries.

14. The fields of research in Australia are expanding and the results are widely circulated. The Institute of Dental Research in Sydney, the Commonwealth Bureau of Dental Standards and the dental schools are the main bodies of research projects. Support of research projects comes from grants made by N.H. & M.R.C., Government, Dental Boards or industrial organisations.

15. Finally, the International Association for Dental Research (A.N.Z. Division) has presented numerous scientific papers at its annual meetings since 1961. All this can be used as "an index of activity of a science or profession".

1.16. Conclusion

Dental Education in Australia has tried to keep up with advances in dentistry. In general, under-graduate dental education is similar in all the five dental schools. A slight deviation in under-graduate education is observed in Melbourne School of Dental Science, which imposes research in the final year curriculum. The research projects consume a large part of the academic year and as such clinical dentistry has to be reduced. Such steps have been criticized by some in the profession. The Department of Dental Science in Adelaide is contemplating following School of Dental Science in Melbourne in research projects.

Introduction of Operative Auxiliaries as the school dental nurses has received objections from the conservatives in the profession. These objections could be a partial hindrance to the establishment of schools for the training of this group of auxiliaries in all the states. Besides Tasmania and South Australia, New South Wales will probably be the next state to operate a school for operative dental nurses.

Dental research has been active in Australia and this is an indication of the enthusiasm of the dental profession to keep up with advances in dentistry.

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Dental and Oral Disease in Australia
A survey of prevalence and attitudes

A thesis submitted to the Faculty of Dentistry, University of Sydney, in partial fulfilment of the requirements for the Diploma in Public Health Dentistry.

Department of Preventive Dentistry,
Faculty of Dentistry,
University of Sydney.

December, 1970

E. P. Fernando.
E.P. FERNANDO, B.D.S. (Ceylon)

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3. [illegible]

The Company undertakes to deliver the goods ordered in accordance with the terms of the contract. The Company shall not be liable for any delay in delivery caused by circumstances beyond its reasonable control, including but not limited to acts of God, war, strikes, or governmental restrictions.

In the event of any dispute arising out of or in connection with this contract, the parties shall first attempt to resolve the matter amicably through negotiation. If the dispute cannot be resolved within thirty days, it shall be referred to arbitration in accordance with the rules of the American Arbitration Association.

This contract constitutes the entire agreement between the parties and supersedes all prior negotiations, representations, and understandings. No modification of this contract shall be effective unless in writing and signed by both parties.

palate. Although this subject does not lie strictly within the dental or oral pathology domain it has been [illegible] and is concerned with problems [illegible] to the eruption and development of the [illegible], it is so often present as a complicating factor in dental and oral disease that it must be studied and considered when considering dental and oral problems. Thus a section on "Occlusion" is included in this study ([illegible] in [illegible]).

The extent of the problem of dental and oral disease as it exists in [illegible] is dealt with in the section on "Prevalence." For purposes of convenient classification the various segments comprising dental and oral disease are considered separately.

2. [illegible]

2.1 [illegible]

In this section the results of various surveys and studies carried out in [illegible] are presented. These relate mainly to dental caries, periodontal disease, malocclusion, congenital abnormalities like cleft lip and palate, hypoplasia and agenesis of teeth, traumatic injuries and oral cancer. Reference is also made to conditions about which prevalence studies are very few or unavailable. [illegible] the [illegible] and [illegible] of the oral tissues, benign tumours and cysts.

cerebral vessels to the brain and cranial nerves.

Blood supply to the brain is by the internal carotid and vertebral arteries. The internal carotid arises from the common carotid artery on each side of the neck. The vertebral arteries arise from the subclavian arteries in the root of the neck. They ascend through the transverse foramina of the cervical vertebrae and enter the cranial cavity through the foramen magnum at the base of the skull. Here they unite to form the basilar artery which supplies the brain stem and cerebellum.

The circle of Willis is formed by the anastomosis of the internal carotid and basilar arteries. It lies in the subarachnoid space at the base of the brain and is formed by the following vessels:

a) Cerebral and cerebral arteries. These are the main terminal branches of the internal carotid.

b) Posterior communicating arteries. These connect the internal carotid and basilar arteries on each side.

c) Anterior cerebral arteries. These arteries are connected by the anterior communicating artery which lies in the longitudinal fissure between the cerebral hemispheres.

The following is also used to classify:

D = Caries free (with fillings) present, but not necessary filled and known carious cavities to be;

F = Fillings;

C = Visual (presence of other carious lesion);

A = Abscessed;

E = Extracted (as carious);

U = Unerupted.

Results

Page 49 : Use the method of subtracting the reciprocals from 100. The use of tables has facilitated such a step. The use of tables has facilitated the process in the case of the 2 per cent. of the children in the country who had more than one permanent tooth.

Permanent Teeth Only.

Age (Years).	Location.		Sex.		Total (Percentages).
	Country.	Sydney Metropolitan.	Boys.	Girls.	
6	65.1	47.7	65.5	51.5	58.7
7	29.0	13.4	23.8	23.2	23.5
8 .. .	14.3	3.7	14.0	6.8	10.5
9	5.2	2.2	5.8	2.4	4.1
10	6.6	1.5	[illegible]	4.7	[illegible]
11	3.5	0.8	4.0	[illegible]	2.5
12	1.2	0.8	1.5	0.6	1.0
13	0.7	0.0	0.6	0.3	0.4
14 . ..	0.5	0.8	0.9	0.3	0 6
15	0.0	0.0	0.0	0.0	0.0
6 to 15	13.7±0.53	7.2 ±0.51	12.8±0.56	9.6±0.51	11.3±0.38

PERCENTAGE OF CHILDREN CARIES-FREE IN EACH AGE-GROUP.

Permanent and Deciduous Teeth.

Age (Years).	Boys.	Girls.	Total (Percentages).
6	5.43	6.14	5.77
7	1.55	3.63	2.55
8	0.79	0.55	0.67
9	1.38	0.54	0.96
10	2.29	0.88	1.60
11	1.86	0.29	1.12
12	0.87	0.62	0.75
13	0.55	0.30	0.43
14	0.87	0.32	0.61
15	0.00	0.00	0.00
6 to 15	1.63	1.39	1.52

[illegible]

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Ratio of children free of dental caries at ages 6 to 15 years, as found in examination of 6,787 school children in New South Wales.[31]

Prevalence of Dental Caries in the Permanent Teeth of 6,787 School Children in New South Wales.

	Age Group.									
	6 Years	7 Years.	8 Years.	9 Years.	10 Years	11 Years.	12 Years.	13 Years.	14 Years	15 Years
Number of Children	710	724	745	731	689	717	667	696	660	4..
A. Mean number of teeth attacked	0.99	2.31	3.22	4.44	5.28	6.98	9.32	10.70	12.78	13.9..
Standard deviation	1.38	1.[illegible]	1.[illegible]	2.32	3.08	4.10	5.33	5.15	5.59	5.4..
Standard error	±0.0[illegible]	0.062	0.070	±0.086	±0.115	±0.154	±0.207	±0.195	±0.217	±0.2..
B. Mortality Index (Mean number (M + X) attacked)	0.8	1.4	19.3	48.7	69.8	90.4	131.3	162.6	202.7	249.1
Standard deviation	9.0	38.[illegible]	65.8	94.2	115.0	130.1	181.4	223.9	219.4	257.9
Standard Error	±0.34	±1.42	±2.41	±3.48	±4.38	±4.88	±7.03	±8.49	±8.54	±12.46
C. Percentage children caries-free	58.7	23.5	10.5	4.1	4.6	2.5	1.0	0.4	0.6	0.0
Standard error	±1.85	±1.58	±1.12	±0.73	±0.80	±0.58	±0.39	±0.24	±0.30	0.0
D. Number of D.M.F. teeth/100 teeth ..	18.9	25.0	27.3	30.3	28.9	31.7	36.8	40.0	46.2	50.6
Standard error	±1.47	±1.5[illegible]	±1.63	±1.70	±1.73	±1.74	±1.87	±1.86	±1.94	±2.42

The number of dental caries per child at different ages. The mean number of teeth attacked per child, the mean number of teeth found to be affected by dental caries, the number of teeth lost through dental caries, and the number of teeth remaining in the mouth of each registered child.[32]

DISSECTION OF D.M.F. VALUES ACCORDING TO AGE.

Age (Years).	Mean Values per Child.						Percentage Distribution of Ratios of D., M. and F. to Total D.M.F. Value.		
	D.M.F.	M + X.	X.	M.	D.	F.	M.	D.	F.
6 ..	0.99	0.008	0.006	0.002	0.88	0.09	0.2	90.3	9.5
7 ..	2.31	0.074	0.017	0.057	1.82	0.42	2.6	79.1	18.3
8 ..	3.22	0.197	0.056	0.141	2.15	0.93	4.4	66.8	28.8
9 ..	4.44	0.487	0.169	0.318	2.68	1.44	7.2	60.4	32.4
10 ..	5.28	0.698	0.193	0.505	2.84	1.93	9.5	53.9	36.6
11 ..	6.98	0.904	0.220	0.684	3.86	2.39	9.9	55.7	34.4
12 ..	9.32	1.313	0.217	1.096	4.83	3.39	11.8	51.8	36.4
13 ..	10.70	1.626	0.213	1.413	5.20	4.09	13.2	48.6	38.2
14 ..	12.78	2.027	0.250	1.777	5.25	5.75	13.9	41.1	45.0
15 ..	13.91	2.491	0.180	2.311	4.36	7.25	16.6	31.3	52.1
6 to 15 ..	6.59	0.899	0.143	0.756	3.30	2.53	11.5	50.2	38.4

DISSECTION OF D.M.F. VALUES ACCORDING TO LOCATION AND SEX.

	Mean Values per Child.						Percentage Distribution of Ratios of D., M. and F. to total D.M.F. Value.		
	D.M.F.	M + X.	X.	M.	D.	F.	M.	D.	F.
Total children ..	6.59	0.90	0.14	0.76	3.30	2.53	11.5	50.2	38.4
Boys (Sydney Metropolitan and Country)	6.19	0.78	0.13	0.65	3.23	2.31	10.5	52.2	37.3
Girls (Sydney Metropolitan and Country)	7.02	1.02	0.15	0.87	3.39	2.76	12.3	48.3	39.4
Country (Boys and Girls)	6.24	0.89	0.16	0.73	3.22	2.29	11.7	51.6	36.7
Sydney Metropolitan (Boys and Girls) ..	7.18	0.92	0.12	0.80	3.46	2.92	11.1	48.2	40.7

in girls, whose teeth have [illegible] a greater past caries age at any given chronological age.

Effect of environment as determined by location:

Prevalence of caries is higher in the Sydney metropolitan area than in country (Table 1).

Effect of special environments:

Three groups of children lived in environments which were considered to have materially influenced the caries experience in each group. These environmental differences were:

(i) restriction of refined carbohydrate intake in a group of institutionalised children at Hopewood House, Bowral;

(ii) standardised regime of meals with little consumption of food between meals in a group of English children at St. [illegible] Home, Victoria;

(iii) ingestion of fluoride from a communal water supply by a group of children at Yass.

Children in these groups had a lower caries experience than those of the same age groups in the general population. It is interesting to note that the children at Yass used a domestic water supply containing fluoride at 0.9 p.p.m. This level is generally considered to be an optimal concentration for the temperate zone in which the town is situated, for the partial control of dental caries.

<u>Dental treatment received and required:</u>

City children had received more treatment than Country. The increase in the number of untreated carious lesions is not observed until the child is fourteen or fifteen years of age.

(ii) <u>Investigation in Canberra Part 1. Fluoridation Trial. Dental caries and related aspects.</u>[20]

This investigation was divided into three main sections dealing with dental caries, gingivitis and hypoplasia of enamel, and various aspects of malocclusion and dimensions of the dentition. Only the data on dental caries will be considered in this discussion.

The children investigated were from five to twelve years inclusive. A special problem arose in the planning of this project. This was the rapid and continuing growth of Canberra's population, which increases at approximately 10 per cent each year. Most of this increase is due to transfer from other parts of Australia. This created a problem of experimental sampling and required a considerable effort to classify each child according to each child history and use of fluoridated water. The children were divided into five groups as follows: initial, non fluoride, partial fluoride, fluoride and [illegible].

Initial: Children who were living in the area when fluoridation was commenced.

The average DMF rates for children aged five to eleven years, during the period 1958 to 1964 ... based on 66,210 examinations which were carried out during this period

Age	Sex	Average DMF rate per child									
		1956	1957	1958	1959	1960	1961	1962	1963	1964	1964
		55									
5	M	0·06					0·09	0·04	0·01	0·01	0·0
	F	0·11					0·07	0·06	0·07	0·03	0·0
	M + F	0·08	0·09	0·07	0·09	0·04	0·08	0·05	0·05	0·02	0·0
6	M	0·50					0·29	0·41	0·48	0·47	0·28
	F	0·80					0·50	0·62	0·81	0·69	0·5
	M + F	0·64	0·58	0·55	0·58	0·73	0·39	0·52	0·64	0·58	0·39
7	M	1·43					1·34	1·61	1·34	1·56	1·43
	F	1·90					1·57	1·90	1·93	1·80	1·70
	M + F	1·66	1·68	1·62	1·64	1·65	1·44	1·70	1·64	1·68	1·56
8	M	2·19					2·23	2·58	2·56	2·47	2·1
	F	2·71					2·76	2·76	2·78	2·90	2·78
	M + F	2·45	2·51	2·52	2·44	2·51	2·52	2·67	2·67	2·69	2·6
9	M	3·13					3·10	3·28	3·51	3·28	3·25
	F	3·63					3·47	3·88	3·89	3·96	3·94
	M + F	3·37	3·38	3·36	3·34	3·52	3·23	3·58	3·70	3·61	3·59
10	M	3·97					4·11	4·14	4·26	4·14	4·13
	F	4·21					4·55	4·59	4·67	4·74	4·76
	M + F	4·08	4·07	4·37	4·36	4·54	4·34	4·34	4·46	4·43	4·43
11	M	5·18					4·81	5·38	5·23	5·26	5·29
	F	6·05					5·82	6·31	6·01	6·22	6·02
	M + F	5·58	5·44	5·60	5·49	5·60	5·25	5·81	5·61	5·68	5·63
12	M	6·43					6·03	6·67	6·92	6·46	6·45
	F	8·01					7·69	7·67	7·58	7·76	7·71
	M + F	7·17	6·93	6·96	6·46	6·64	6·29	7·05	7·20	6·97	6·98

Table 6(a) Mean DMF rates for children aged five to eleven years, and six to eleven years, for the period 1958 to 1964

The average def rates for children in Canberra aged five to eleven years, for the period 1962–64

Age	Sex	1962		1963		Sept., 1964		1964	
		No. of child	d.e.f.	No. of child	d.e.f.	No. of child	d.e.f.	No. of child	d.e.f.
5	M	347	4·21	193	3·75	115	4·87	345	3·96
	F	306	4·20	159	3·96	86	5·23	315	4·48
	M+F	653	4·20	342	3·84	201	5·02	660	4·21
6	M	421	4·80	315	4·72	184	5·00	540	4·73
	F	406	5·00	289	4·51	178	4·54	528	4·57
	M+F	827	4·90	604	4·62	362	4·78	1668	4·67
7	M	515	4·67	508	4·53	356	4·26	701	4·81
	F	486	4·69	494	4·87	380	4·32	657	4·59
	M+F	1001	4·68	1002	4·70	736	4·29	1358	4·69
8	M	586	4·51	564	4·77	511	4·56	669	4·57
	F	543	4·38	548	4·36	547	4·15	702	4·27
	M+F	1029	4·44	1112	4·57	1058	4·34	1371	4·42
9	M	584	3·60	562	3·88	604	3·98	664	3·97
	F	557	3·51	564	3·69	601	3·36	664	3·45
	M+F	1141	3·55	1126	3·79	1205	3·67	1328	3·70
10	M	572	2·75	638	2·79	651	2·73	677	2·74
	F	523	2·60	611	2·23	594	2·20	608	2·21
	M+F	1095	2·25	1249	2·52	1245	2·47	1285	2·48
11	M	523	1·29	570	1·69	601	1·68	608	1·68
	F	452	1·21	543	0·95	475	1·14	490	1·12
	M+F	975	1·35	1113	1·33	1076	1·44	1098	1·44

[illegible]

Table of caries experience in four groups of permanent teeth: (a) first molars, (b) upper incisors, (c) lower incisors, and (d) other permanent teeth which are not included in the previous three categories. These figures are based on a random selection of examinations which were carried out in 1961–62

Age (years)	Sex	Number of children	Average DMF rate per child				
			First permanent molars	Upper incisors	Lower incisors	Other permanent teeth	Total
6	M	109	0·40	—	—	—	0·40
	F	114	0·71	—	—	—	0·71
	M+F	223	0·56	—	—	—	0·56
7	M	126	1·40	—	—	—	1·40
	F	113	1·82	0·02	—	—	1·84
	M+F	239	1·61	0·01	—	—	1·62
8	M	130	2·37	0·07	—	0·02	2·46
	F	132	2·58	0·08	—	0·04	2·70
	M+F	262	2·47	0·08	—	0·03	2·58
9	M	139	3·03	0·25	0·06	0·08	3·42
	F	134	3·48	0·26	0·02	0·13	3·89
	M+F	273	3·25	0·25	0·04	0·10	3·64
10	M	146	3·31	0·70	0·08	0·17	4·27
	F	135	3·55	0·70	0·11	0·38	4·74
	M+F	281	3·42	0·70	0·09	0·26	4·47
11	M	141	3·51	0·93	0·19	0·63	5·26
	F	144	3·61	1·19	0·15	1·38	6·27
	M+F	285	3·57	1·02	0·17	1·01	5·77
12	M	68	3·69	1·07	0·29	1·41	6·36
	F	63	3·71	1·27	0·36	2·42	7·76
	M+F	131	3·61	1·16	0·32	1·89	7·01

[illegible]

Average annual increment of DMF teeth, [illegible]

Incremental period (age in years)	Male				Female				Male and Female			
	D	M	F	DMF	D	M	F	DMF	D	M	F	DMF
5 to 6 ..	0·35	0·01	0·02	0·36	[illegible]	0·02	0 05	0·57	0·46	0·01	0·03	0·46
6 to 7 ..	1·17	0·00	0·23	1·05	2 01	0·01	0·31	1·07	1·25	0·00	0·27	1·06
7 to 8 .	1·63	0·05	0·50	1 01	1 65	0 03	0·71	1 08	1·64	0·05	0·62	1·06
8 to 9 ..	1·52	0·05	0·87	0·81	1 71	0·12	0·97	1·16	1·61	0·08	0·92	0·97
9 to 10 ..	1·55	0·05	0·80	0·88	1 83	0 05	0·66	0·82	1·68	0·05	0·72	0·84
10 to 11 ..	1·83	0·17	0·71	1 16	2 31	0 16	[illegible]	1·16	2·04	0·16	0·77	1·29
11 to 12 .	2·53	[illegible]	0 21	1·16	3 04	0 28	0·41	[illegible]	[illegible]	0·39	0·30	1·29

(4.[illegible]) Dental survey of children in country districts in [illegible].[80]

The aim of the survey [illegible] was to determine prevalence of dental caries, need for treatment and the extent to which existing services were coping with the need for dental treatment.

Materials and Methods

Twenty towns were selected so as to [illegible] as widely as possible of the [illegible] districts of the State.

In each town approximately equal numbers of [illegible] and age in each age group were examined.

Examinations were standardised at a preliminary training course and all examinations were conducted under similar conditions. Explorers ([illegible]) were used for not more than ten examinations, after which they were returned to [illegible] for resharpening and replacement.

Results

Examinations of [illegible] children in [illegible] towns were made. These were [illegible] children aged [illegible] years, [illegible] aged [illegible], [illegible] aged [illegible], [illegible] aged 10, and [illegible] aged [illegible]. The sample represented

ed ni sesoohc ot tuo gnitrats neewteb ,ytinutroppo
ot tsuj ,ecnerefid

In 1920 there was no city plan and no zoning ordinance. Most of the houses were built of wood and were set close to the street. Many of the houses had no bathrooms. Only 20 per cent of the houses were connected with the city water supply. Only 15 per cent were connected with the sewer system. Most of the houses were heated by stoves burning soft coal. Only 10 per cent of the houses had electric lights. Most of the streets were unpaved. Many of the streets were not even graded.

In 1930 there was a zoning ordinance. Most of the houses were built of brick or stone. Many of the houses had bathrooms. Most of the houses were connected with the city water supply. Most of the houses were connected with the city sewer system. Most of the houses were heated by furnaces burning coal. Most of the streets were paved. Many of the streets were not even graded.

The mean required (Fig. 19 [illegible]) [illegible] teeth and contrasts with fluoride levels. Comparison between the high fluoride areas (Fig. 20) and the low fluoride (Fig. 21) shows that for all ages the average number of DMF teeth for the former is about half that of the latter. Similar trends are apparent for the primary teeth. Marked differences are also seen for the proportions of children with no DMF teeth at ages 6, 8, 10, 12 and 14. The respective percentages are:

High Fluoride (Fig. 20): 60.6, 31.7, 13.8, 10.[illegible], 10.[illegible]
Low Fluoride (Fig. 21): 40.5, 11.6, 2.[illegible], [illegible], [illegible].

Maintenance requirements

These estimates indicate the order of the expenditure required to catch up on the backlog of Indian child to be treated. From this data it is possible to show that in 2 years time children who are two years old now will have the same number of affected teeth as the present six year olds, that is 6.0 df teeth and [illegible] DMF teeth per child.

The present 6 year olds will have developed an additional 1.7 DMF teeth per child; the present 8 year olds an additional 1.7, the present 10 year olds an additional 0.[illegible] and the present 12 year olds an additional [illegible] DMF teeth per child.

By interpolation the author would state that over a two year period, 0-16 year old children would acquire [illegible] [illegible] additional carious permanent teeth to be treated, since lesions are accumulating at a rate which corresponds to about half the present backlog per

PTO.

Age	No. of children	Mean age per child	Decayed	Missing	Filled	DMF
6M	49·9	6·1	0·83	0·00	0·05	0·88
6F	192	6·1	0·94	0·03	0·06	1·01
Total	961	Mean 6·5	0·89	0·09	0·05	0·94
7M	269	8·3	1·75	0·01	0·24	2·00
7F	271	9·1	1·78	0·04	0·27	2·06
Total	540	Mean 8·7	1·76	0·03	0·25	2·03
8M	230	11·0	2·11	0·04	0·71	2·79
8F	267	11·8	2·16	0·08	0·80	2·94
Total	506	Mean 11·4	2·14	0·06	0·76	2·87
9M	242	13·6	2·38	0·05	1·10	3·33
9F	259	14·7	2·45	0·16	1·30	3·71
Total	501	Mean 14·2	2·42	0·11	1·20	3·52
10M	262	15·8	2·93	0·30	1·50	4·48
10F	261	18·0	3·15	0·23	2·06	5·18
Total	523	Mean 16·9	3·04	0·27	1·78	4·83
11M	243	19·6	3·44	0·33	2·20	5·64
11F	243	22·1	4·01	0·38	2·48	6·37
Total	506	Mean 20·9	3·73	0·35	2·34	6·11
12M	242	23·3	4·16	0·42	2·65	7·23
12F	242	25·7	4·59	0·50	3·51	8·10
Total	484	Mean 24·6	4·29	0·49	3·28	7·68
13M	270	25·1	4·52	0·39	3·95	8·58
13F	218	25·6	4·73	0·55	4·83	9·82
Total	488	Mean 25·5	4·62	0·57	4·34	9·05
14M	307	26·2	4·98	0·88	4·69	10·08
14F	266	25·8	4·75	1·16	6·12	11·42
Total	573	Mean 26·0	4·87	1·01	5·35	10·71

*Contd.

Age	Number examined	Number caries free	Percentage
6	961	178	18·3
7	840	31	3·7
8	706	21	3·9
9	501	16	3·1
10	623	4	0·7
11	506	12	2·0
12	480	7	1·0
13	488	12	2·0
14	573	6	1·0
Total	6078	285	5·6 (Mean)

Distribution of 285 children with all teeth present and caries free in the age groups 6–14 years

Age	Number examined	Number with caries free			Percentage caries free	
		Girls	Boys	Total		
6	961	192	123	243	25·49	
7	840	50	36	86	16·92	
8	706	31	21	52	11·46	
9	501	17	28	45	8·98	
10	623	24	18	42	8·03	
11	506	25	26	51	10·07	
12	480	31	33	64	11·25	
13	488	23	33	56	11·17	
14	573	32	27	59	10·29	
Total	6078	343	318	696	13·05 (Mean)	

Permanent teeth requiring conservative treatment approximated 510,000; deciduous teeth 80,000; permanent teeth to be extracted 17,000. The mean increment is 0.9 carious permanent teeth per child per year or 33,500 restorations.

(v) <u>Statement on Dental Health by the Council of the Dental Association of Victoria - July 1964.</u>[62]

The Key Report of Health, Dental Division, estimates that the average Victorian child aged 12 years has a DMF of approximately 5 (in permanent teeth). Even students attending Universities in Victoria have a DMF rate similar to that of other sections of the Australian community and approximately 10 per cent have 10 or more decayed teeth requiring attention. It has been estimated that there are of the order of 11 million untreated decayed teeth in Victoria. The figures are shown in Table 14.[63]

Table 14. Appendix 13 Dental Health in the Victorian Community.

Children (Pre-School)*	93,120 children attending the Dental Hospital of Victoria per annum had 19,000 extractions i.e. 0.2 per child.
Children in Western District	5 yrs. old - 21 caries free; 6 - 10 yrs. old - 0.2 caries free permanent teeth.
Age 18 Years University Students	Average number of decayed teeth - 5 - 10 or more decayed teeth - 10%.

* Dept. of Health - Dental Div. 1963. Individual basis survey.

(v) Cells connected by chemical synapses in the central nervous system.(3,7)

Cells 1 and 2 in cross-section of a fish eye; cell 3 makes chemical synapses with cells 1 and 2.

Chemical synapses are usually unidirectional, i.e. they transmit signals in only one direction. The presynaptic cell releases a chemical transmitter which diffuses across the synaptic cleft and binds to receptors on the postsynaptic cell. The effect on the postsynaptic cell may be excitatory or inhibitory, depending on the receptors present on the postsynaptic cell.

Table 2.[20] Time delay in ms at 20 degrees Celsius for the transmission of impulses in the squid giant axon.

Distance (cm)	0	7	0	9	13	21	25	33	36	39
Time (ms)	3.5	3.0	5.5	6.0	7.6	9.6	11.0	13.7	15.5	16.6

The time delay in a chemical synapse is 0.35 milliseconds.

In a chemical synapse, the presynaptic cell releases a neurotransmitter.

In a chemical synapse, the presynaptic cell releases neurotransmitter.

Table 3.[20] The time taken for 20 per cent and 80 per cent of the postsynaptic potential to develop.

[illegible] teeth.

Table 16. Prevalence of Caries in the Anterior and Posterior Permanent Teeth, Expressed as a percentage of erupted teeth.

(... per 100 erupted teeth)			
Anterior			Posterior
No. 1	No. 2	No. 3	No. 2
4.0	10.2	22.9	70.[illegible]

Table 17(3) shows that of 100 erupted first permanent molars approximately 70 are decayed by 8 years of age, [illegible] by 10 years and all 100 by 13 years. 10 out of 100 teeth were due for extraction by the age of 8 years, 30 per 100 by 13 years and 50 per 100 by 16 years.

Caries attacks 61 out of 100 erupted second permanent molars by the time the child is 13 years old, and 92 out of 100 erupted second permanent molars by the child's nineteenth year.

Table 17. Caries First and Second Permanent Molars in Children aged 8 to Sixteen Years.

First Permanent Molars									Second Permanent Molars	
[illegible]/100 erupted			[illegible]/100 erupted			[illegible]/100 erupted			[illegible]/100 erupted	
No.			No.			No.			No.	
1	2	3	1	2	3	1	2	3	2	3
[illegible]	67.9	[illegible]	[illegible]	10.9	[illegible]	9.9	[illegible]	[illegible]	[illegible]	92.2

(1924) _____ "Certain Tendencies in Modern Philosophy."[57]

Mr. Carr's article and Professor Alexander's Presidential Address to the Aristotelian Society were criticised by a number of writers.

Professor Broad, in the Proceedings of the Aristotelian Society, 1924, criticised Mr. Carr's article on the following grounds:

(1) That Mr. Carr's definition of "Science" was inadequate, for it failed to distinguish between Science, Art, and Philosophy.

(2) That Mr. Carr's definition of "Philosophy" was inadequate, for it failed to distinguish between Philosophy and Science.

(3) That Mr. Carr's definition of "Philosophy" was inadequate, for it failed to distinguish between Philosophy and Art.

(4) That Mr. Carr's definition of "Philosophy" was inadequate, for it failed to distinguish between Philosophy and Religion.

(5) That Mr. Carr's definition of "Philosophy" was inadequate, for it failed to distinguish between Philosophy and Common Sense.

(6) That Mr. Carr's definition of "Philosophy" was inadequate, for it failed to distinguish between Philosophy and Psychology.

(1924) _____ "Certain Tendencies in Modern Philosophy."[58]

Professor Broad's criticisms of Mr. Carr's article on the Tendencies in Modern Philosophy, published in the Proceedings of the Aristotelian Society, 1924, are

Bloomfield in 1962 and were the first of these to have a reduction in tooth decay in the primary teeth of about equal magnitude as up to 70 per cent, and up to 60 per cent for the permanent teeth. Table 30 and 30[a] show these reductions.

...ORTH DENTAL SURVEY

...YEARS 1963, 1969

CONTINUOUS RESIDENTS USING TOWN WATER

(Years of fluoridation: October, 1963)

...s.)	DMFT 1963	DMFT 1969	...duction* per cent)	DMFS 1963	DMFS 1969	Reduct... (per c...
	1.5	...	54	2.1	0.7	64
7	...	1.1	46	3.3	1.8	45
8	...	...	26	5.2	3.3	46
9	3.8	...	27	6.7	4.0	40
10	5.1	...	29	9.9	6.3	36
11	5.9	...	27	9.3	7.9	15
12	8.3	...	29	15.3	10.6	31
13	9.6	...	29	19.0	13.6	28
14	...	...	15	21.4	17.1	20
15	12.3	...	19	25.7	19.0	26

	1963	1969	Reduction (per cent)	1963	1969	Reduction (per cent)
4	5.6	1.5	73	8.9	2.1	76
5	5.7	3.0	48	8.6	4.5	48
6	7.4	4.6	48	11.0	6.7	40
7	7.3	5.2	30	11.3	7.6	33
8	6.9	5.7	[illegible]	9.6	9.2	–
9	5.5	5.1	–	8.1	8.0	–
10	3.6	3.4	–	5.0	5.2	–
11	[illegible]	1.7	–	3.0	2.6	–
[illegible]	[illegible]	[illegible]	–	1.1	1.2	–

DMFT - Decayed, Missing or Filled Permanent Teeth
DMFS - Decayed, " " " Tooth Surfaces
dmft - Decayed, Missing or Filled Primary Teeth
dfs - Decayed or Filled Primary Tooth Surfaces.

All reductions shown are statistically significant (P<0.01).

The eight studies reviewed above represent some of the main studies carried out in each of the States; New South Wales, A.C.T., Queensland, Western Australia, Victoria, Tasmania and South Australia. They are all studies that have been carried out in relation to children. [illegible] they are reviewed here [illegible] to [illegible].

As has been stated earlier these are studies of selected samples and are not representative of the total [illegible] Australian population. However, they are included to [illegible] a fairly valid picture to some of the problems of dental [illegible] as they may affect the total population.

(2e) [illegible].[illegible]

The study was carried out partly to enable senior dental students to gain a better appreciation of dental [illegible] in country [illegible].

A basic candidate is left and right ventricular systolic and diastolic pressure.

Two cuffs and cuff pressure sensors are needed for measurement of blood pressure in order to maintain the cuff pressure above systolic pressure during the measurement of diastolic pressure. Cuff pressure is usually measured by measuring the voltage change of the pressure sensor. The cuff pressure is then converted to digital signal. The noise of the measurement is about ±1.0 mV. The accuracy is about ±2.0. Ratio of the total of selected included candidates to the total number of candidates is 1/3 or 33 percent of clients had one or more objects of lesion (blood vessel). There is none of the injured vessels.

The clients have been taken out since the blood vessel is damaged by the cuff pressure (> 200 mmHg) during the measurement of blood pressure.

(c) Incidence of dental caries and periodontal disease in military personnel.[20]

659 Regular Army troops and 117 National Service conscripts were examined in 1955 and 1956 for dental caries and periodontal disease. These recruits were between the ages of 17 and 25 years. The National Servicemen, all aged 18 years, had never undergone Army dental treatment previously.

Method:

A probe, mirror and chip syringe, and standard lighting were used. Bitewing X-rays were taken. Examinations were carried out by one examiner (the author). Patients were not selected but were examined as they attended.

Results:

The mean DMF tooth for the whole Regular Army group was 10.09 while the mean DMFS count was 60.20. The National Service group (18 year olds) had a mean DMFT of 10.07.

Table II[20] shows the age distribution and caries prevalence in the 759 Army personnel.

[illegible] distribution and caries prevalence in 750 Army personnel aged 17–[illegible] years of age

No.	D	DS	Percentage zero D DS	DMFT	DMFS
160	4·68	6·25	14·0	[illegible]·56	53·00
106	5·17	6·79	11·3	18·[illegible]	55·08
106	4·19	5·61	15·1	18·77	59·48
117	7·20	11·95	7·8	19·37	49·83
60	4·40	5·38	10·0	[illegible]·03	54·82
52	3·77	4·75	21·2	17·65	52·88
53	4·06	5·26	24·5	21·66	74·06
50	2·64	3·44	36·0	20·70	69·20
51	2·55	3·51	33·3	21·69	74·92
266	3·32	4·51	24·4	19·91	64·83
35	1·89	2·20	22·9	[illegible]·80	78·25

[illegible]cayed. T = tooth.
[illegible]missing. S = surface.
[illegible]filled.
[illegible]tional Service group.
[illegible]tal 20 to 24 years Regular Army group.

(c) Total weight of pre-dug ovine fetuses

Table 1 lists the weight of 20 fetuses of the Canadian Hilltop breed in order of increasing crown-rump length. Fetuses with abnormalities were excluded, so n = 20.

Table 1 — Crown-rump length and weight of ovine fetuses

Fetus	CRL (cm)	Weight (g)
1	6.2	14.8
2	7.1	22.5
3	7.4	25.1
4	8.0	31.7
5	8.3	36.2
6	8.8	41.0
7	9.1	47.6
8	9.5	55.3
9	9.9	62.8
10	10.2	70.4
11	10.6	79.1
12	11.0	88.6
13	11.4	99.3
14	11.9	112.0
15	12.3	126.5
16	12.8	143.2
17	13.4	162.0
18	14.1	184.3
19	14.9	211.0
20	15.8	244.6

Mean CRL = 10.7 cm; mean weight = 113.2 g.

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	60	5.3	0.13	2 (.36)
20	250	0.70	0.03	3 (.25)
21	272	3.6	0.02	2 (.40)
32	328	7.1	7.25	2 (.30)
33	33	7.36	0.02	2 (.60)
33-37	53	2.16	0.01	2 (.67)
38-60	19	22.5	7.20	2 (.83)
2040	60	0.0	7.30	2 (.36)

[illegible]

Pavilions of Canal Court Expired on the [illegible] of Canal Mortgage Bonds as Year in 1929 [illegible] Expired on Last Year. Plus [illegible] previously Called Bonds and Purchased Through [illegible]

[illegible] Bonds of a Current [illegible] Coupon. Including Total [illegible] Expiration Date [illegible] Including an Update. The Full Name of Each [illegible] Initiative to Be Held a Year of [illegible].

Table [illegible]. [illegible] per individual.

Age in Years	No. in Group	No. of D Teeth	No. of M Teeth	Total D + M Teeth
20	65	5.0	1.30	4.66
19	210	3.2	0.60	4.72
2[illegible]	372	3.7	0.52	4.25
21	193	3.7	0.60	4.33
22	50	4.1	0.207	3.5
23-25	90	4.05	0.257	3.0
25-27	60	3.0	0.60	3.53
18-27	933	[illegible].1	0.62	4.23

(If the single group contained only one individual (i.e. [illegible] in the 2[illegible] year old group had a [illegible] score of zero.

(xiii) A study of the Dental Status of Male and Female personnel enlisted in the Royal Australian Air Force during 1957-58.(8)

The study was based on the records of dental examinations of military personnel who enlisted in the Royal Australian Air Force during the [illegible]. The personnel were taken to be representative of the three quarters of a million members of the Defence Forces, who in turn, the author states, are representative of the Australian population in the age range of approximately 18-40 years.

Results:

A 1 per cent sample of the male enlistees showed that the average man had on enlistment:

Na penúltima estância de Cachoeira Seca do Arari, na fazenda Boa Vista, pertencente ao Coronel Antônio Lemos, existia uma escola mantida pelo fazendeiro, onde estudavam os filhos dos moradores e alguns meninos vizinhos. Essa escola era dirigida pela professora Dona Maria Rosa, que, além de ensinar as primeiras letras, ainda dava lições de costura e bordado às meninas.

Dona Maria Rosa era uma senhora de seus cinquenta anos, muito estimada por todos, pois além de ser muito caridosa, era também muito inteligente. Tinha sido casada com um português, que morrera havia muitos anos, deixando-lhe uma pequena fortuna, que lhe permitia viver sem precisar trabalhar. Mas, como não tivesse filhos, nem parentes próximos, e sentisse necessidade de ocupar o seu tempo em alguma coisa útil, resolveu abrir uma escola particular, onde ensinava as meninas a ler, escrever, contar, bordar e costurar.

[illegible] it is not clear from the data mentioned a definite correlation has been established between it and these factors regarding presence of [illegible].(4)

(4) Prevalence of Periodontal ([illegible]) Disease in Australia.(27)

The author states that most published work relating to Australia is of limited value because they record subjective impressions or opinions based only on a visual examination of the gingivae and usually [illegible] to an examination for carious cavities. Such observations are adequate for assessing the prevalence of gingival disease in children but they are not accurate for assessing periodontal disease in adults.

Table 25(27) gives the prevalence of periodontal disease as reported by various authors. In these tables "prevalence" means the percentage of the group who have any type of periodontal disease, including gingivitis, gingival hyperplasia, periodontitis and periodontosis. [illegible] subjects were [illegible]. The author [illegible] figures do not represent the prevalence of periodontal disease in the adult population.

Table 25. Prevalence of periodontal [illegible] ([illegible])

[illegible]	Place	Year	Sample Size	[illegible]	Sample	Prevalence (%)
[illegible]	[illegible]	[illegible]	5.7	[illegible]	[illegible] children	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] and [illegible] children	[illegible]
[illegible]	[illegible]	[illegible]	93	[illegible]	[illegible] in the Air Force	[illegible]

Observation	Score
Gingivitis	
(one score is assigned for each tooth studied and a mean is computed for the whole mouth)	
Negative	0
Mild gingivitis involving the free gingiva (margin, papilla or both	1
Moderate gingivitis (involving both free and attached gingiva)	2
Severe gingivitis with hypertrophy and easy haemorrhage	3
Maximum score	3
Bone Loss	
(one score assigned for each tooth studied visually or by x-ray and a mean is computed for this whole mouth)	
Negative	0
Incipient (not greater than 2 min.) bone loss or notching of alveolar crest	1
Bone loss approximating $\frac{1}{4}$ of root length or pocket formation one side not over $\frac{1}{2}$ root length.	2
Bone loss approximating $\frac{1}{2}$ root length or pocket formation, one side not over $\frac{3}{4}$ root length, Mobility slight	3
Bone loss approximating $\frac{3}{4}$ root length or pocket formation, one side to apex. Mobility moderate	4
Bone loss complete. Mobility marked	5
Maximum score	5
Maximum G.B. Count per person	8

6 to 13	17.4	70.5	12.1
13	21.3	70.1	8.6
14	18.6	69.9	15.5
15	13.9	72.5	13.6
12	13.0	71.1	15.9
11	17.0	69.1	17.9
10	17.1	90.3	12.6
9	14.0	73.6	14.4
8	15.4	72.9	11.7
7	15.7	73.5	10.8
6	05.0		5.5

	Good.	Fair.	Poor.

[illegible] in the Country.

PERCENTAGE DISTRIBUTION OF CHILDREN IN GROUPS BY LOCATION AND SEX ACCORDING TO THE STATE OF ORAL HYGIENE.

	Good.	Fair.	Poor.
Total Children	17.4±0.46	70.5±0.55	12.1±0.40
Location—			
Country	14.1±0.59	72.0±0.69	13.9±0.53
Sydney Metropolitan	22.8±0.83	67.9±0.92	9.3±0.57
Sex—			
Boys	13.6±0.58	71.0±0.77	15.4±0.64
Girls	21.[illegible]±0.7[illegible]	69.8±0.80	8.8±0.49

The percentage distribution of the children according to the condition of their [illegible] is shown for each age group in Table 20(b) and in groups by location and sex in Table 20(c). [illegible] of the children [illegible] a degree of gingival inflammation.

[illegible]

i) The children in the [illegible] (6-7 years) and [illegible] (12 years) age groups have less gingival inflammation than those in other age groups.

ii) Girls appear to have a better gingival condition than boys.

iii) The percentage of country children with gingival inflammation was much higher than that for Sydney Metropolitan children.

PERCENTAGE DISTRIBUTION OF CHILDREN IN EACH AGE-GROUP ACCORDING TO THE CONDITION OF THE GINGIVAE.

Age (Years).	Normal.	Hyperaemic.	Hyperaemic and Oedematous.
6	49.7	49.2	1.1
7	30.5	61.6	7.9
8	21.1	64.2	14.7
9	18.9	64.6	16.5
10	19.7	63.2	17.1
11	23.5	58.1	18.4
12	18.5	57.1	24.4
13	17.4	62.2	20.4
14	21.2	57.9	17.9
15	32.0	54.9	13.1
6 to 15	25.3	59.6	15.1

PERCENTAGE DISTRIBUTION OF CHILDREN ... ACCORDING TO THE CONDITION OF THE GINGIVAE.

	Normal.	[illegible]	Hyperaemic and Oedematous.
Total Children	25.3 ±0.33	59.6 ±0.49	15.1 ±0.43
Location—			
Country	18.7±0.40	65.9±0.73	15.4±0.56
Sydney Metropolitan ..	30.3±0.37	49.0±0.70	13.7±0.70
Sex—			
Boys	21.5±0.70	63.3±0.93	13.0±0.65
Girls	29.4±0.79	55.6±0.93	12.0±0.57

[illegible]

[illegible]

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Table ... ... d status (Ringelb), oral hygiene (Oral Deb. ... and Calculus) and ... of calendar boys in 730 Army personnel aged 17–29 years

Age	Ringelb. I.	Deb. I.	Calc. I.	O.H.I.	Percentage boys ...
17	0·85	1·65	0·28	1·93	10·20
18	0·73	1·87	0·32	2·20	10·50
19	0·79	1·83	0·26	2·08	10·30
19*	0·87	2·07	0·62	2·72	11·50
20	0·81	1·58	0·39	2·02	10·00
21	0·91	1·81	0·37	2·20	20·00
22	1·03	1·82	0·50	2·35	24·30
23	0·95	1·60	0·59	2·20	25·30
24	1·06	1·76	0·73	2·49	38·80
20–24†	0·94	1·71	0·51	2·21	26·20
25–29	1·16	1·72	0·67	2·42	34·30

* National Service group.
† Total 20 to 24 years Regular Army group.

... TO THE STATE

(vi) <u>Dental Survey of Children in Country Districts in Queensland.</u>[20]

3,552 children in 20 towns were examined. The aim of this survey, among other objectives was to determine the prevalence of periodontal disease and calculus. Gingivitis was present in 2,600 (or 80 per cent) of all children. There was a slight increase with age in the proportion of children affected, the range being from 70 per cent in 6 year olds to 84 per cent in the 10 year old. The prevalence of pocket formation was comparatively low. Only 40 children had one or more periodontal pockets more than 3 mm. in depth.

There was a steady increase in the presence of supragingival calculus with age.

3 per cent of 6 year olds

9 per cent of 8 year olds

15 per cent of 10 year olds

30 per cent of 12 year olds

[illegible] per cent of 14 year olds.

Altogether 550 children (15 per cent of the total) required treatment for the removal of supragingival calculus.

Subgingival calculus alone was only found in 7 children, while both supra and subgingival were found in 51 (2 per cent of the total).

3.4.3. Literature:

3.5.0. Congenital abnormalities

In this section, calculations and congenital abnormalities, which lead to cleft lip and/or palate and anomalies of teeth are reviewed together. This is justified on the ground that these conditions are often reported together.

Also, when the epidemiology of calculation and cleft lip and palate is considered on the basis of treatment possibilities, a common index, such as [illegible] Handicapping [illegible] Index, may be used, which classifies such conditions in this same way.

(1) Incidence of cleft lip and/or cleft palate in the State of New South Wales 1960 to 1970 (inclusive)[42]

[illegible] states that the purpose of his study was to explore the incidence of cleft lip and palate births in the years 1964 to 1970 inclusive, in the State of New South Wales and to investigate the relationship between cleft anomalies and some of the environmental factors that have been studied in other studies in this area.

Method:

Data was collected from hospitals' records of 57 hospitals, both within and outside the Sydney Metropolitan Area.

The figures for the births in New South Wales, by sex, maternal age, month of birth and year of birth

and [illegible] and the mean of New South Wales was not significantly different from that of the total Sydney [illegible] in New South Wales.

(11) Dental Survey of Young School Children in New South Wales - January 1956 - June 1957[9]

Objectives of the survey have been referred to earlier.

Methods:

Technique was employed and recorded as follows:

Normal: Correct approximal contacts and axial positions of all teeth, together with normal relationship of the inclined planes of the occlusal surfaces of the teeth when the jaws are closed: normal growth, development, location and correlation of the various associated tissues and parts.

Class I (pre-malocclusion but including) -

1. Absence of teeth - Anodontia
   - Oligodontia
   - Others
2. Lip [illegible]
3. Interference [illegible] a [illegible] of teeth [illegible]
4. Malposition of teeth - Protrusion of upper incisors
   - Rotated or crowded incisors
   - one or more upper incisors locked behind lower
   - Spacing of incisors
   - Malposition of one or more teeth, usually of [illegible].

Class 2 ([illegible]) -

1. Distal position of the mandible with protrusion of the upper incisors.

2. Distal position of the mandible with retrusion of the upper incisors.

Class 3 ([illegible]) -

1. Mandible protruded.

2. Over eruption of mandibular teeth.

Findings

Table 33[9] shows the percentage distribution of children in each age group according to the class of occlusion.

[PE]RCENTAGE DISTRIBUTION OF CHILDREN IN EACH AGE-GROUP ACCORDING TO [THE CLASS] OF OCCLUSION.

Age (Years).	Normal.	Class I.	Class II.	Class III.
6	28.6	69.7	0.6	1.1
7	21.0	76.6	1.5	0.9
8	16.9	81.5	0.8	0.8
9	13.5	83.9	1.2	1.4
10	16.0	80.5	2.9	0.6
11	20.5	76.2	2.5	0.8
12	17.8	77.7	1.9	0.6
13	18.8	77.7	1.6	1.9
14	17.0	80.1	1.4	1.5
15	15.7	80.8	1.2	2.3
6 to 15	18.9	78.4	1.6	1.1

Barnard reports that most of the malocclusion observed was characterised by protrusion of the upper anterior teeth, crowding of the anterior teeth, malpositioning of individual teeth and premature loss of deciduous teeth.

Table 10[9] shows the percentage distribution of the children in groups by location and sex according to the state of occlusion. Barnard states that a definite attempt was made to determine by observation [illegible] which showed normal mesio-distal base relationship, although [illegible] was abnormal. This greatly diminished the number of children classified as having so called Class II (Angle) malocclusion. Normal occlusion was found to be more common in Country than in Sydney Metropolitan children.

PERCENTAGE DISTRIBUTION OF CHILDREN IN GROUPS BY LOCATION AND SEX ACCORDING TO THE STATE OF OCCLUSION.

	Normal.	Class I.	Class II.	Class III.
Total Children ..	18.9±0.48	78.4±0.50	1.6±0.15	1.1±0.13
Location –				
Country . ..	20.8±0.62	77.8±0.64	0.6±0.12	0.8±0.14
Sydney Metropolitan	15.7±0.72	79.4±0.77	3.2±0.35	1.7±0.20
Sex –				
Boys	18.3±0.65	79.4±0.68	1.4±0.20	0.9±0.15
Girls	19.6±0.69	77.3±0.73	1.7±0.23	1.4±0.20

(iii) Dental Survey of [illegible] in Country Districts of Queensland[10]

Among other objectives (stated earlier) this survey assessed the prevalence of developmental anomalies. The conditions assessed were

a) Cleft lip and palate

b) Malocclusion (prognathism and retrognathism)

c) [illegible]

d) Crowding and spacing

Results:

2,702 children in 20 towns were examined. The [illegible] approximately 8 per cent of the total number of children in Queensland within the age groups studied.

Results:

Cleft lip and palate		2 children
Malocclusion:		
Maxillary protrusion	(7 per cent)	190 children
Mandibular protrusion	(3.2 per cent)	86 children
Bimaxillary protrusion	(24.1 per cent)	650 children
Open bite	(3.0 per cent)	81 children
Crowding	(15.0 per cent)	400 children
Spacing	(8.6 per cent)	232 children

The results show that 1,700 (approximately 63 per cent) of the children had some sort of malocclusion though not all conditions were serious enough to require treatment.

(10) [illegible] (9)

Among other objectives, the [illegible] study made an assessment of malocclusion in 4 age groups of children studied.

Results:

The author states that a [illegible] similar to that employed by [illegible](9) was used. [illegible] Cleft palate and cleft lips were also recorded.

Results:

Of 311 children examined, 128 were classified as showing normal occlusion (41.2%) 165 as Class 1 (53.1 per cent), 6 Class 2 (1.9 per cent) and 12 Class 3 (3.86 per cent). Thus, about 59 per cent of the children examined showed some form of malocclusion. Table [illegible][illegible] shows the distribution according to the schools.

Table [illegible]. [illegible]

School	No. of children	Occlusion* N	1	2	3
A	60	30	25	3	2
B	20	3	16	-	1
C	33	10	23	-	-
D	71	27	40	2	2
E	55	32	20	-	3
F	15	6	7	-	2
G	10	4	5	-	1
H	6	3	3	-	-
I	28	5	21	1	1
J	6	3	3	-	-
K	7	5	2	-	-

*Occlusion: N = normal

1, 2, 3 = Angle's classification Class 1, 2, 3.

(b) [illegible][illegible]

[illegible]

Frequencies of agenesis and of peg-shaping of various teeth in males, females and total sample

Tooth affected	Males		Females		Total number examined	Total number affected*	Swedes Group A Grahnen (2)	Swedes Group B Grahnen (2)	Swiss Dolder**
	Number examined	Number affected*	Number examined	Number affected*					
Mand. M3	374	44 (11·8)	297	47 (15·8)	671	91 (13·6)	—	13·1	—
Max. M3	374	38 (10·2)	297	36 (12·1)	671	74 (11·0)	—	17·2	—
Mand. Tm2	1,220	33 (2·7)	950	32 (3·4)	2,170	65 (3·0)	2·8	2·3	2·3
Max. I2 (agenesis)	1,220	19 (1·55)	950	20 (2·1)	2,170	39 (1·8)	1·6	1·7	0·5
Max. I2 (peg-shaped)	1,220	12 (1·0)	950	12 (1·3)	2,170	24 (1·1)	1·7	1·3	—
Max. Pm2	1,220	8 (0·65)	950	15 (1·6)	2,170	23 (1·1)	1·4	1·6	1·2
Mand. I1 (agenesis)	1,220	1 (0·3)	950	1 (0·3)	2,170	7 (0·3)	0·9	0·3	0·1
Mand. I1 (peg-shaped)	1,220	0 (0)	950	4 (0·4)	2,170	4 (0·2)	0·1	0	—
Mand. I2	1,220	0 (0)	950	1 (0·1)	2,170	1 (0·05)	0·2	0·1	0·05
Mand. Pm1	1,220	1 (0·01)†	950	0 (0)	2,170	1 (0·05)†	0·1	0	0·15

* Percentage shown in brackets.

** Cited by Gudmen.[2]

† On the single occasion a mandibular first premolar was absent the neighbouring second premolar was also absent.

4. [illegible] were more frequently affected than males in every birth order considered. The overall frequency for males being 2.3 per cent and that for females 24 per cent.

5. The Red River region and the southern Ontario regions were affected significantly at greater frequencies than either of the two prairies regions.

6. A tendency to clefting was observed only in one out of the maritime provinces, the risk there being almost twice as great as in the others.

(c) Cleft lip and palate in Tasmania.[40]

The author states that there are no reliable statistical data in the Australian community concerning these anomalies. (2000) One of the author's [illegible], had the unique opportunity for a comprehensive survey of cleft lip and cleft palates in the State of Tasmania, since a large majority of these babies [illegible] for advice and treatment at his clinic. This fact, together with the 2 per cent [illegible] of a high, total rate of occurrence stimulating the [illegible] to undertake this study.

Method:

During the year 19[illegible], the family history of all individuals with cleft lip and/or palate born in Tasmania during 1945 to 1957 inclusive, was investigated. These numbered 180.

In conclusion, their findings by the author were:

1) One of every 670 children born alive in Tasmania, suffers from cleft lip and/or palate, the highest recorded

SURVEY OF MALOCCLUSION AMONG TAMWORTH SCHOOL CHILDREN

DAY 1963.

AGE AND SEX DISTRIBUTION

Group	QUALITATIVE ASSESSMENT*			ANGLE CLASSIFICATION					Total
	-	+	++	N	I	II Div.1	II Div.2	III	
♂									
4 and 5 yrs.	11	20	5	12	29	6	--	1	48
6 years	6	27	3	3	31	5			39
7 "	5	28	4	3	33	4			40
8 "	5	41	9	4	48	2	4	1	59
9 "	4	29	9	2	36	2	1	3	43
10 "	11	14	14	4	27	8	3	1	43
11 "	6	19	4	2	27	1	1		38
12 "	12	33	22	1	44	16	6	1	68
13 "	15	33	21	6	49	8	9	3	75
14 "	13	24	14	1	38	8	3	2	52
15 "	5	23	5	1	27	4	2		34
16 & 17yrs.	6	7	4	2	13	2	2		19
Totals:	99	298	114	48	402	66	31	12	559
% of Totals:	17.71	53.31	20.39	8.59	71.90	11.81	5.55	2.15	100
♀									
4 and 5 yrs.	6	11	1	4	16	2			22
6 years	2	24	2	5	23	2	2	1	33
7 "	1	22	4	3	24	3			30
8 "		30	2	9	30	2			41
9 "	6	36	6	2	41	5	1	1	50
10 "	14	20	13		35	6	1	1	47
11 "	11	18	5	1	27	4	2	1	35
12 "	19	29	12	3	47	5	5	3	63
13 "	15	45	16	5	57	12	5	2	81
14 "	16	30	4	2	41	4	4	1	52
15 "	1	13	6	1	13	6	1		21
16 & 17yrs.	3	6		2	9				11
Totals:	94	284	71	37	367	51	21	10	486
% of Totals:	19.34	58.44	14.61	7.61	75.52	10.49	4.32	2.06	100

* Qualitative Assessment:

- \- Minor malocclusion; no orthodontic treatment indicated
- \+ Slight to moderate malocclusion; simple, straightforward treatment by general practitioner
- ++ Relatively complex malocclusion and/or cases indicated treatment by orthodontist
- N "Normals"

Sec. 5. Limitation on liability of agent.

No such agent shall be in any event liable for more than the amount of money actually received by him on account of the principal.

(2) Liability of agent for misrepresentation.

Each agent shall be personally liable for

any misrepresentation made by him to the principal in connection with the affairs of the principal.

Sec. 6. Duties of agent.

It shall be the duty of every agent:

1. To obey all lawful instructions of the principal;

2. To use reasonable care and diligence in the exercise of all powers and in the performance of all duties;

3. To inform the principal of all matters which come to his knowledge in the course of his agency, except matters which he is bound to keep secret;

4. To account for all moneys and property received by him on account of the principal;

5. To perform any lawful contract made by him with the principal, not inconsistent with the foregoing rules.

جدول ٣٠ ـ نسبة تكرار الأسنان المصابة بالتنقر أو التبقع البني

العمر	عدد الأطفال الذين فحصوا	الأطفال الذين لديهم تنقر أو تبقع بني									
		الأسنان الأمامية العليا				الأسنان الخلفية العليا					
		الأسنان الأمامية		الأسنان الخلفية		الأسنان الأمامية		الأسنان الخلفية			
		الكل	الذكور	الكل	الذكور	الكل	الذكور	الكل	الذكور		
٦	١٢٩	٤٦·٦	٧٨·١	٢٧·٩	٣٥·٣	٢٠·٣	١٤·٦	١·٥	٣·٦		
٧	١٠٣	٤٦·٦	٧٨·١	٢٧·٩	٣٥·٣	٢٠·٣	١٤·٦	٣·١	٥·٦		
٨	٩٢٧	٤٧·٤	٦٥·٩	٣٣·٥	٣٤·٥	٢١·٤	١٠·٩	٣·١	٦·٤		
٩	٣٧٥	٤٩·٧	٦٩·٣	٣٣·٥	٣٤·٥	٢٥·٧	٧·٦	١·٥	٤·١		
١٠	٣٤٤	٥٣·٨	٦٩·٧	٣١·٥	٣٤·٤	٢٥·٤	٦·٧	٢·٥	٦·١		
١١	٣١٤	٥٣·٢	٦٩·٢	٣١·٥	٣٤·٤	١٧·٧	٩·٨	١·٨	٦·٣		
١٢	٢٩٣	٥٧·٨	٧٥·٦	٢٧·١	٣٤·١	٧·٧	٢·٤	٠·٤	١·٨		
٦ ـ ١٢	١٧١	٤٧·٧	٨٢·٦	٢٧·٢	٣٤·١	٧·٧	٢·٤	٠·٤	١·٨		
		الأسنان الأمامية العليا				الأسنان الخلفية العليا					
		الكل	الذكور	الكل	الذكور	الكل	الذكور	الكل	الذكور		
العمر	عدد الأطفال الذين فحصوا	الأطفال الذين لديهم تنقر أو تبقع بني									
		Upper anterior teeth				Upper posterior teeth					
		All teeth				All teeth					
		All		Male		All		Male			
Age	Number examined	Children Normal or Questionable									
		Prevalence of Brown mottling									

The prevalence of stained opacities and hypoplasia in permanent teeth of children. This log provides a detailed breakdown prior to the commencement of [illegible] study. Shows percentages of children with stained teeth and/or hypoplasia of permanent teeth.

Prevalence of children with brown mottling or hypoplasia of permanent teeth

Brown mottling | Hypoplasia

Upper anterior teeth | Upper posterior teeth | Upper anterior teeth | Upper posterior teeth

All teeth | Male | All teeth | Male | All teeth | Male | All teeth | Male

Age | Number examined | Children Normal or Questionable | | | | | | | |

6	171	67·7	82·6	27·1	31·0	17·7	9·8	1·8	3·9
7	293	67·8	75·6	27·1	31·0	17·7	9·8	1·8	3·9
8	314	53·2	69·2	31·0	36·4	26·4	6·7	2·0	1·6
9	370	53·8	69·7	34·5	36·7	26·7	7·6	1·5	4·1
10	335	49·7	69·3	33·0	34·4	21·4	10·9	2·1	6·4
11	927	47·4	65·9	35·3	36·8	26·8	11·7	3·1	5·6
12	103	46·6	78·1	27·2	29·3	20·3	14·6	1·0	9·6

Hypoplasia and hypocalcification (mottling) were classified as follows:

Hypoplasia:

Mild: A roughening of the enamel surface detected by the probe.

Moderate: Furrows and faults such as the presence of small pits, depressions and grooves of the enamel.

Severe: Considerable faults such as the absence of enamel or gross change in the tooth morphology, including most of the incisal edge.

Hypocalcification:

Mottling is a term usually associated with chronic endemic fluorosis, but for the purpose of this survey, "mottling" means whitish or brownish opacity of the enamel. Teeth affected and the position of the affected area were recorded. Such areas caused no change in the contour or surface texture of the enamel (examined by probe) and were either a) opaque, white or b) opaque, brown. Table no. 3) shows percentage distribution of children in each age group having these defects. The lower age groups had fewer erupted permanent teeth so that the percentage was affected by this.

PERCENTAGE OF CHILDREN IN EACH AGE-GROUP HAVING HYPOPLASTIC AND/OR MOTTLED ENAMEL.

Age (Years).	Hypoplastic, Mild.	Hypoplastic, Moderate.	Hypoplastic, Severe.	Mottled, White.	Mottled, Brown.	Children free from these Defects.
6	2.7	1.3	0.0	12.3	1.8	82.9
7	3.5	2.4	0.7	11.8	3.9	77.6
8	4.8	3.6	0.5	18.9	3.2	71.3
9	6.0	6.4	0.4	23.8	3.8	65.2
10	4.6	6.1	1.0	23.7	6.0	64.0
11	5.6	4.0	0.8	21.5	4.2	66.8
12	4.6	6.0	0.7	19.9	4.6	69.4
13	4.3	5.9	1.3	20.5	4.3	67.0
14	3.0	4.7	1.4	17.4	5.9	69.7
15	5.1	4.7	1.9	22.2	3.5	67.5
6 to 15	4.5	4.5	0.8	19.0	4.1	70.5

PERCENTAGE OF CHILDREN IN GROUPS BY LOCATION AND SEX HAVING HYPOPLASIA AND/OR MOTTLED ENAMEL.

	Hypoplastic.			Mottled.		Children free from the Defect.
	Mild.	Moderate.	Severe.	White.	Brown.	
All children ..	4.5	4.5	0.8	19.0	4.1	70.5 ± 0
Location—						
Country	2.7	4.9	0.7	20.6	4.5	69.7 ± 0
Capital, Metropolitan	7.4	3.6	1.0	16.3	3.5	72.0 ± 0
Sex—						
Boys	4.3	4.3	0.6	17.5	3.9	72.1 ± 0
Girls	4.7	4.6	1.0	20.5	4.3	68.9 ± 0

Low Prevalence group:

[illegible] – 3 per cent (high fluoride town)

[illegible] – 7 per cent (high fluoride town)

[illegible] – 11 per cent (high fluoride town)

[illegible] – 13 per cent (high fluoride town)

[illegible] – 11 per cent (low fluoride town)

Overall Picture:

400 children ([illegible] per cent of the total) [illegible] of [illegible] dental fluorosis.

30 children [illegible] evidence of [illegible] dental fluorosis. Geographical distribution [illegible] considerable variation.

High Prevalence Group:

[illegible] – 60 per cent

[illegible] – [illegible] per cent (high fluoride town)

[illegible] – [illegible] per cent (high fluoride town)

[illegible] – [illegible] per cent (high fluoride town)

([illegible] of [illegible] and [illegible] not published in report. [illegible])

(iv) [illegible] Study[33]

In this study, the prevalence of [illegible] and [illegible] was studied [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of the [illegible]

of the teeth. The study was carried out in 1967 during one of the annual dental examinations of children in [illegible].

Materials and Methods

[illegible] children in the age group 4 to 17 years were examined. Examinations were carried out in a darkened room and the teeth illuminated with a [illegible] ultra-violet light. The presence of golden yellow fluorescence in the teeth was recorded. The ultra-violet examination was carried out after the routine clinical examination.

The criteria used for the recognition of tetracycline staining and/or fluorescence were that teeth were creamy yellow, yellow brown and that this discolouration of pigmentation always extended over the full width of the tooth at the affected level. The stain may extend incisally in a [illegible] distribution across a number of teeth and the condition should be bilaterally symmetrical.

The presence of developmental hypoplasia and/or opacity in the presence of tetracycline staining was also recorded.

An index developed by the authors was used. It [illegible] three categories: normal, acceptable and unacceptable. The distinction between acceptable and unacceptable was based on whether the condition was or would be a disfigurement or noticeable in [illegible] to the patient.

Table 1

Distribution of Children Examined According to Age, Tetracycline Fluorescence and Visible Stain

Child's Age (Years)	Number Examined (Males and Females)	Children with Fluorescence[1]	Children with Discoloration and Visible Stain
5	2	0	0
6	9	0	0
7	11	0	0
8	19	0	0
9	31	0	0
10	240	8 (3·3)	4 (1·4)
11	314	4 (1·3)	6 (1·9)
12	201	6 (3·1)	7 (3·4)
13	124	5 (4·0)	3 (2·4)
14	26	1 (3·8)	1 (3·8)
Total	1,020	181 (3·4)	103 (2·0)

[1] Figures in parentheses are percentages.

61

No cases aged five to eight years or fifteen years or over showed fluorescence and the cases showing only one stain were excluded as "unassessable" as a key to cause.

(b) Comparison between Fluorescence and Discoloration

Both fluorescence and discoloration were studied. The results are given in Table 2. Fluorescence was found in 181 children (3·4 per cent.) and discoloration in 103 children (2·0 per cent.). Of the latter, 43 showed fluorescence also, leaving 60 (1·2 per cent.) with discoloration only. Fluorescence was found in 138 children (2·6 per cent.) with no discoloration.

Both pairs of values were significantly different ($P < 0.01$). Fluorescence was found in 181 children (3·4 per cent.) and discoloration in 103 children (2·0 per cent.). Of the latter, 43 showed fluorescence also, leaving 60 (1·2 per cent.) with discoloration only. Fluorescence was found in 138 children (2·6 per cent.) with no discoloration.

Hypoplasia.

The teeth of all the children were examined under daylight, supplemented by artificial light as necessary. Examination for tetracycline fluorescence was then carried out in a darkened room under ultraviolet light.

Findings:

Clinical discolouration was observed in 200 children. A further 67 children exhibited hypoplasia of enamel associated with discolouration. The total proportion of affected children amounted to 20.5 per cent.

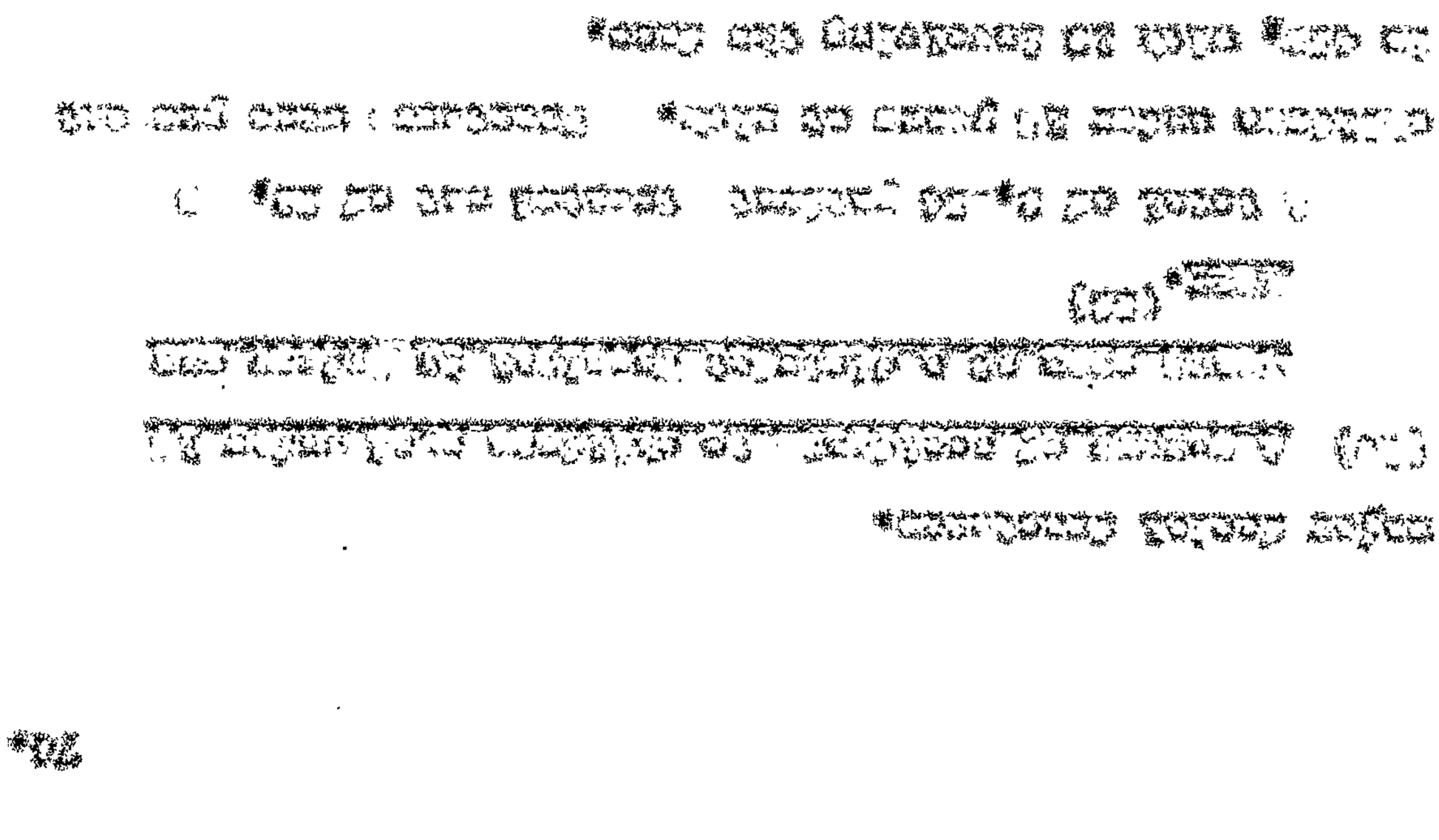
Table 6[9] shows the distribution of children, according to prevalence of tooth discolouration, hypoplasia and fluorescence in the three groups.

[illegible]

Group	Number Examined	Discoloured: Number	Discoloured: Percentage	Discoloured and Hypoplastic: Number	Discoloured and Hypoplastic: Percentage	Fluorescent: Number	Fluorescent: Percentage	Total: Number	Total: Percentage
1	737	97	13·7	[illegible]	3·1	120	17·6	[illegible]	[illegible]
2	261	53	[illegible]	14	5·3	110	42·1	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	2·0	47	[illegible]	47	[illegible]
Total	1,168	236	20·2	47	[illegible]	[illegible]	[illegible]	210	[illegible]

Plate 18 of this study[illegible] contained extracted deciduous teeth.

Plate XIX of this study contained extracted 1st permanent molars.



Cross bite, thumb sucker	5
upernumerary	?

3.1.2. [illegible]

[illegible] to come in contact with [illegible] lesions. [illegible] early stages or even at a [illegible] stage, [illegible] treatment is usually possible.

[illegible] suggested that all patients over forty years of age attending for dental treatment should be routinely examined for possible malignant lesions in the oral cavity. [illegible] in the [illegible] practice [illegible] early diagnosis could [illegible] the patient [illegible].

Following are outlined the available reports on the prevalence of oral cancer in Australia.

(a) Oral Cancer in Australia[63]

In this study, the term "oral cancer" refers to malignancy of the lip, tongue, salivary gland, floor of the mouth, buccal mucosa of the cheek, gingiva and palate.

Materials and Methods

The study was based on the examination of medical case histories of patients who were registered in major hospitals in Australia for the years 1955 to 1960 inclusive. The hospitals were from all the States and Territories viz., New South Wales, Australian Capital Territory, Victoria, Queensland, South Australia, Western Australia, Tasmania and the Northern Territory.

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[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

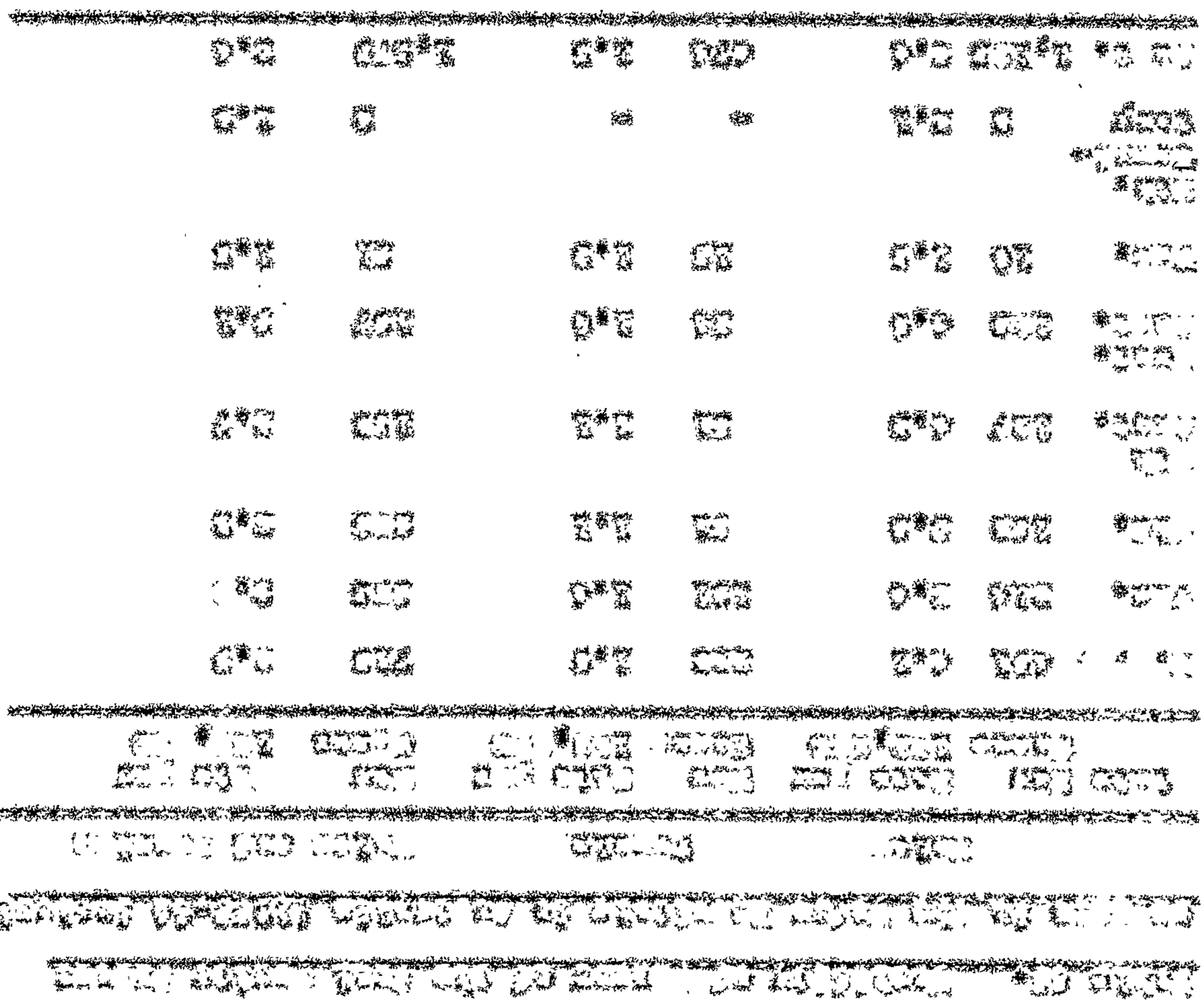


Table 47. Fertility of coal miners as they begin their underground work and relationship of fertility to subsequent exposure to coal mine dust (1962-64 examinations).

Age Group	No. Men	Coal Dust Exposure		Fecundability		Fecundity		Fecundity Ratio	
		Mean mg/m³	Mean mg-yrs/m³	Mean %	Rel. Risk	Mean %	Rel. Risk	Mean %	Rel. Risk
20	10	0.6	0.1	30	0.8	0.0	29	0.5	0.1
20-24	60	1.3	2.3	29	1.7	0.0	72	1.3	1.7
25-29	89	2.1	4.6	23	1.0	1.3	117	3.1	3.1
30-34	153	3.6	8.6	31	2.5	1.6	134	2.3	4.0
35-39	126	5.2	9.9	28	1.7	1.5	370	6.7	7.0
40-44	259	6.7	13.5	41	2.1	1.9	321	6.3	9.9
45-49	230	7.9	17.5	30	2.6	4.7	693	7.3	11.3
50-54	473	11.5	20.1	29	2.3	5.0	551	9.7	16.3
55-59	453	11.1	26.7	22	1.4	9.0	617	10.1	21.3
60-64	255	13.3	53.1	207	12.1	11.7	703	10.1	31.9
65-69	125	12.2	61.1	20	12.1	13.6	651	13.2	50.7
70-74	63	10.0	67.6	10	15.3	21.3	653	11.6	61.6
75-79	20	9.1	63.7	17	9.1	21.1	677	9.1	61.3
80-84	11	6.3	37.9	7	7.3	27.6	311	6.3	53.5
85+	10	3.5	30.3	6	5.3	23.7	117	3.1	62.3
All Ages	2,670	11.0	31.1	1,220	11	9.9	3,003	11	9.1

Table 23. Use of Ready Reserve for Fuel		
Fuel	Billion Gallons	Days of Use
Motor Gasoline	0.09	33
Distillate	0.07	28
Residual	0.04	23
Jet Fuel	0.03	10
Kerosene	0.03	30
Propane	0.01	3
Aviation Gasoline	0.01	2

Table [illegible]. [illegible] - Histopathologic Type.

Diagnosis	No. of Cases	Distribution Percentage
Squamous cell carcinoma	[illegible]	[illegible]
Basal cell carcinoma	[illegible]	[illegible]
Salivary gland type		
Malignant pleomorphic adenoma	[illegible])	[illegible]
Adenoid cystic carcinoma	[illegible])	[illegible]
Muco-epidermoid carcinoma	[illegible]) [illegible]	[illegible]
Acinic cell adenocarcinoma	[illegible]	[illegible]
Other carcinoma	[illegible])	[illegible]
Unspecified gland salivary tumor	[illegible])	[illegible]
Carcinoma unspecified	[illegible]	[illegible]
Malignant neoplasm unspecified	[illegible]	[illegible]
Total	[illegible]	[illegible]

Table 2. [illegible] Variables Regression

	Beta	Std. Error of Beta	B	Std. Error of B	t	Sig.
(Constant)			1.000	.000		
Age	.000	.000	.000	.000	.000	1.000
Gender	.000	.000	.000	.000	.000	1.000
Education	.000	.000	.000	.000	.000	1.000
Income	.000	.000	.000	.000	.000	1.000

Dependent Variable: [illegible]

a. [illegible]

b. [illegible]

c. [illegible]

d. [illegible]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.000[a]	.000	.000	.000	.000	.000	4	995

a. Predictors: (Constant), Income, Gender, Education, Age

(b) Cuando el Director de Obra lo estime conveniente, podrá ordenar la ejecución de unidades de obra no previstas en el Proyecto, o la modificación de las previstas, siempre que unas y otras sean necesarias para subsanar cualquier error u omisión del Proyecto o para atender a circunstancias imprevistas.

(c) Cuando el Director de Obra ordene la ejecución de unidades de obra no previstas en el Proyecto, o la modificación de las previstas, siempre que unas y otras sean necesarias para subsanar cualquier error u omisión del Proyecto o para atender a circunstancias imprevistas.

(d) Cuando el Director de Obra ordene la ejecución de unidades de obra no previstas en el Proyecto, o la modificación de las previstas, siempre que unas y otras sean necesarias para subsanar cualquier error u omisión del Proyecto o para atender a circunstancias imprevistas.

(e) Cuando el Director de Obra ordene la ejecución de unidades de obra no previstas en el Proyecto, o la modificación de las previstas, siempre que unas y otras sean necesarias para subsanar cualquier error u omisión del Proyecto o para atender a circunstancias imprevistas.

(f) Cuando el Director de Obra ordene la ejecución de unidades de obra no previstas en el Proyecto, o la modificación de las previstas, siempre que unas y otras sean necesarias para subsanar cualquier error u omisión del Proyecto o para atender a circunstancias imprevistas.

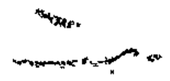
(g) Cuando el Director de Obra ordene la ejecución de unidades de obra no previstas en el Proyecto, o la modificación de las previstas, siempre que unas y otras sean necesarias para subsanar cualquier error u omisión del Proyecto o para atender a circunstancias imprevistas.

Sección 24. Cada 2 años, el Jefe Ejecutivo someterá a la Cámara de Representantes un informe de la situación económica del País, incluyendo un estimado de los gastos necesarios para el próximo año fiscal.

Sección 25. Ningún proyecto de ley aprobado por la Cámara de Representantes y el Senado pasará a ser ley sin la aprobación del Jefe Ejecutivo. Si éste no aprobare el proyecto dentro de los diez días laborables después de haberle sido sometido, firmará y hará constar en el mismo su aprobación y lo convertirá en ley. Si no lo aprobare, lo devolverá con un mensaje escrito explicando las objeciones que tuviere a dicho proyecto, a la Cámara de Representantes, la cual hará constar en el Diario de Sesiones las objeciones del Jefe Ejecutivo y reconsiderará el proyecto. Si después de reconsiderado, dos terceras partes del número total de los miembros de la Cámara de Representantes lo aprobare nuevamente, será enviado al Senado, el cual también lo reconsiderará y si lo aprobare por mayoría de dos terceras partes del número total de sus miembros, será ley. En todos los casos mencionados en esta sección la votación de ambos cuerpos será nominativa y se hará constar en el Diario de Sesiones el nombre de los representantes y senadores que votaren a favor o en contra del proyecto de ley objetado.

Sección 26. Si el proyecto de ley no fuere devuelto por el Jefe Ejecutivo dentro del término de diez días laborables después de haberle sido sometido, se convertirá en ley como si hubiere sido firmado por el Jefe Ejecutivo.

Sección 27. Todo proyecto de ley aprobado por la Cámara de Representantes y el Senado será sometido al Jefe Ejecutivo antes de diez días laborables después de la fecha de terminación de la sesión legislativa. El Jefe Ejecutivo lo aprobará dentro de los diez días laborables después de haberle sido sometido, y lo firmará. Si no lo aprobare, lo devolverá con un mensaje escrito explicando las objeciones que tuviere a dicho proyecto, a la Cámara de Representantes, la cual hará constar en el Diario de Sesiones las objeciones del Jefe Ejecutivo y reconsiderará el proyecto. Si después de reconsiderado, dos terceras partes del número total de los miembros de la Cámara de Representantes lo aprobare nuevamente, será enviado al Senado, el cual también lo reconsiderará y si lo aprobare por mayoría de dos terceras partes del número total de sus miembros, será ley. En todos los casos mencionados en esta sección la votación de ambos cuerpos será nominativa y se hará constar en el Diario de Sesiones el nombre de los representantes y senadores que votaren a favor o en contra del proyecto de ley objetado.



2.2. [illegible]

The problem of, attitudes of people to [illegible], [illegible] and [illegible] has in general been [illegible] two [illegible] of investigation:

a) 'Qualitatively' - that is, by [illegible] to [illegible] of [illegible] human situations

b) 'Quantitatively' - to calculate [illegible] and [illegible] using survey techniques on [illegible] populations. [illegible], one of these studies give a [illegible] of the [illegible] attitudes [illegible] to [illegible] classification.

On account of this dual approach, it is found that reviewing the following sections separately could be both uneconomical and not particularly useful. The sections will therefore be reviewed together.

2.2.1. [illegible]

2.2.2. [illegible]

2.2.3. [illegible]

2.2.4. [illegible] to the [illegible]

2.2.5. Summary:

(a) An exploratory investigation of the [illegible]/[illegible] relations [20]

This study is an investigation in depth of the [illegible]/ [illegible] and [illegible] the [illegible] of [illegible] in this area, in [illegible].

"Section"

In this section, unless the context otherwise requires, a reference to a "necessary thing" is a reference to any thing of the kind mentioned in paragraph (a) of the definition of "necessary thing" in section 2(1).

For the purposes of determining whether, for the purposes of this section, a person is likely to require a necessary thing, the following rules apply—

(a) a person is to be taken to require a necessary thing if the person requires the thing to prevent the person's life being endangered, whether in the immediate future or otherwise;

(b) a person is to be taken to require a necessary thing if the person requires the thing to prevent the person suffering significant harm, whether in the immediate future or otherwise;

(c) a person is to be taken to require a necessary thing if the person requires the thing to prevent the person's condition deteriorating, whether in the immediate future or otherwise;

(d) a person is to be taken to require a necessary thing if the person requires the thing to prevent the person suffering significant pain, whether in the immediate future or otherwise;

(e) a person is to be taken to require a necessary thing if the person requires the thing to prevent the person suffering significant distress, whether in the immediate future or otherwise;

g) Cabeças de selo, tais como as indicadas a baixo citados no dado ao chefe da repartição aduaneira.

h) Tubos ou frascos de vidro ou de outra substancia qualquer, inclusivamente cortiça, para acondicionamento de drogas ou de outros quaisquer productos.

i) Caixas de folha de flandres ou de papelão para acondicionamento de drogas ou de outros quaisquer productos.

j) Caixas de papelão ou de madeira, para acondicionamento de drogas ou de outros quaisquer productos.

k) Caixas de madeira, para acondicionamento de drogas ou de outros quaisquer productos.

l) Caixas de madeira, para acondicionamento de drogas ou de outros quaisquer productos.

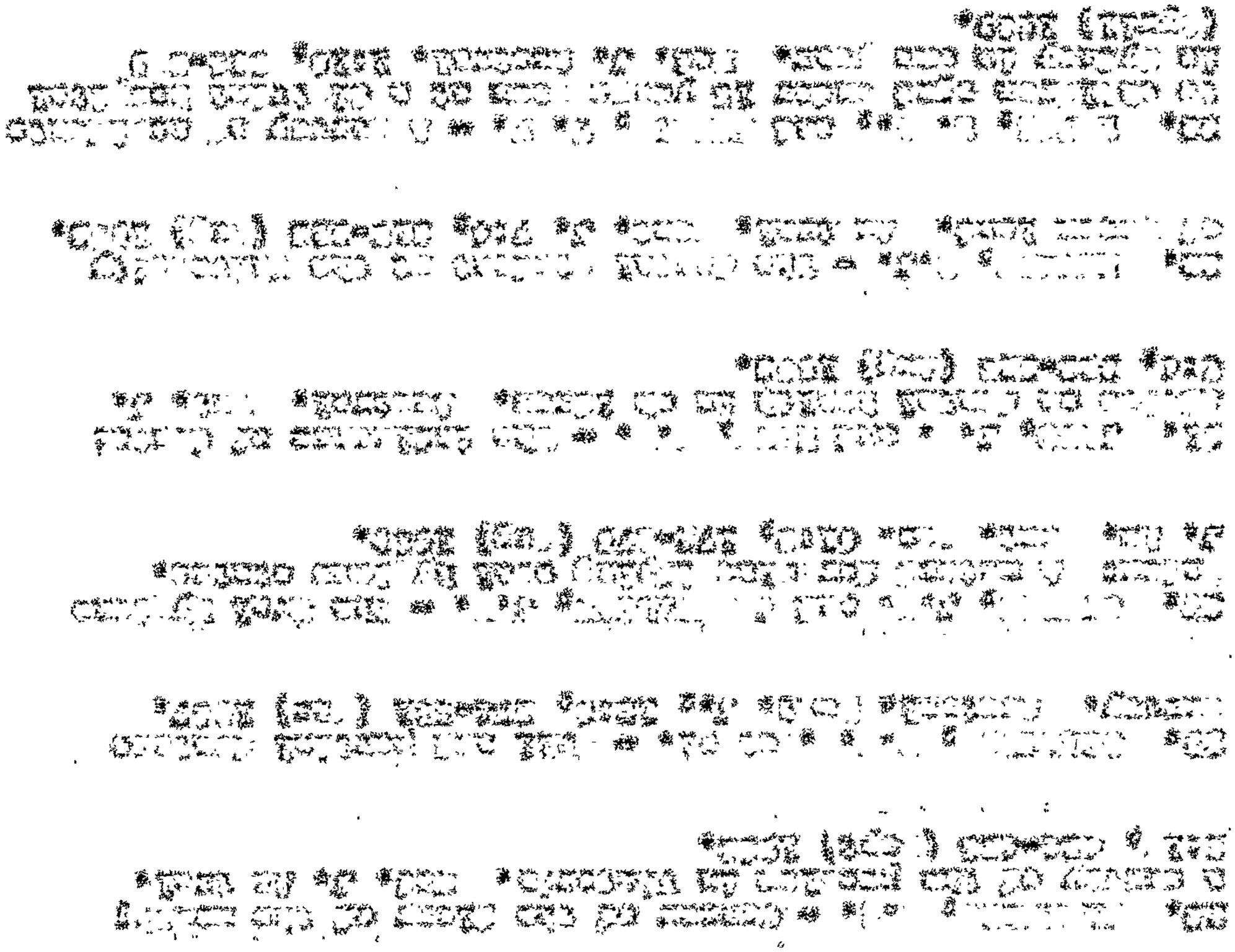
m) Caixas de madeira, para acondicionamento de drogas ou de outros quaisquer productos.

n) Caixas de madeira, para acondicionamento de drogas ou de outros quaisquer productos.

o) Caixas de madeira, para acondicionamento de drogas ou de outros quaisquer productos.

p) Caixas de madeira, para acondicionamento de drogas ou de outros quaisquer productos.

q) Caixas de madeira, para acondicionamento de drogas ou de outros quaisquer productos.



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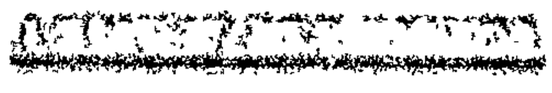

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2020
2021

Next

1. Date Level Trade Unit Service Request on Dec 06, '09.

2. Technical Variation of Grade as of Jan, '09.

3. Engineer - Civil Division of Naval Service - 1961 - 60.

4. Engineer - Electrical Naval Depot - 1951 - 60.

5. Electrician - Barracks Colonel Naval Health Service.

6. Operations - Barracks Colonel Naval Service - 1961 - 60.

7. Barracks - Naval Depot Health Service Technician Mechanic - 1960.

8. Road Construction Engineer - Naval Medical Corps as of Dec 2nd, '09.

9. Naval Hospital (Anesthesia) - Retirement as of Dec 2nd, '09.

10. Engineering - Colonel Naval Hospital of Surgery - 1951 - 60.

11. Chief Engineer and Owner's Team - Colonel Naval Hospital of Surgery - 1951 - 60.

12. Engineering - Royal Naval Hospital of Medicine - 1951 - 60.

13. Radiology Technician - Royal Naval Hospital of Medicine - 1951 - 65.

14. Engineering - Royal Naval Hospital - 3001 - 60.

15. Personal Employed - Organization Engineering as at Dec 06, '09.

16. Appellant - Application Number 1062 - 67.

17. Appellant and Coast - Secretary of Natural Resources - 1061 - 67.

18. Appellant and Rose A.B.P.I. Council Trade Marks - 1061 - 67.

19. Respondent and Fuji K. Lyon Polymer Chemicals and Acetate Ltd.

21. Natural Trees Amps - Natural, Natal, Legal - 1965.

22. Natural Trees of Namibia - 1961 - 67.

23. Appeal Natal Trees of 2,016 Zambian for the year ended 31th June, 1967.

30. Natal Paradise Curry - Cole Fragrance - Australia - 1960.

24. Natal Pradesh Curry - Cole Fragrance - Australia - 1960.

25. Natal Fragrance Curry - Cole Fragrance - Australia - 1960.

26. Natal Paradise Curry - Cole Fragrance by Cotton - Australia - 1965.

27. Appeal Daily Carriage - Australia - Cotton - 1965.

31. Analysis of Nigeria - Curry of Postmaster Trees in Victoria June, 1965.

29. Indian Professional Trees Recorded in Act - Victoria - June 1965.

28. Indian Professional Trees and Act - Victoria - June 1965.

32. Professional Trees Recorded in Employment - Railway - Victoria - 24th June, 1965.

33. Professional Trees Recorded in Employment - Railway - Victoria - 24th June, 1965.

Section 3.

Government School Mental Health Services.

Sub-section (1) Duty: The determination of eligibility for provision of School Mental Health Services.

Upon receiving the certificate for purposes of section 2(b) of the Mental Hospital Act relating to a child who is or appears to be under the age of eighteen years, the Government Psychiatrist shall determine whether or not the child requires to be provided with School Mental Health Services as a disabled child. The Psychiatrist shall in the determination of this question have regard to the following matters, which he considers to be relevant in the case of the child, namely:

(a) the child's intellectual, emotional, social and physical development;

(b) any special educational treatment or special care that may be required by the child;

(c) any disability affecting the child;

(d) the child's background and family circumstances.

TABLE 1.

Clinical Dental Dental Nurse Services - General - Dist Nos. 60.

Personnel	Establishment					Employed					Total Employed. Vacants.
	Nos.	Mts.	Ch.	C.A.	Sec.	Nos.	Mts.	Ch.	C.A.	Sec.	
Dentists	44	43	22	26	29	33	28	15	17	25	101
Chairside Assistants	39	43	-	23	27	35	30		20	20	105
Nursing Assistants	-	3	-	1	1	-	3		1	1	5
Dental Tech./ Mechanic	-	-	-	1	2	-	-		1	2	3
Casual Dental Nurses/Receptn.	0	-	-	10	30	3	-		10	34	46
Clerical/ Reception	2	-	-	4	5	2	-		6	5	11

TABLE 2.

Estimated Population at Metro as at 30th June, 1959.

Area	Estimated Population.
Sydney Metro	2,230,332
Victoria	3,207,559
Queensland	1,757,021
South Australia	1,172,575
Western Australia	931,776
	835,120

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Indirect effects on employment

"Each child born = $6,700, and 8 years in Sydney, Parramatta and Wollongong and in county areas children $6,700 = 2 years).

All else held constant in each area as see all areas of Australia individuals (approx. $2,000).

Multiplier of Private Investment by the Bureau

Use of a standard input-output framework.

Use = Expenditure specialist on a national basis.

Use employed as a measure of "use for service" basis, calculated as the difference of depreciation adjusted for profit."(5)

Table 3.

Expenditure Multipliers of Rental Services = 1981 = 85.

Index	1981	1985	1989
Total Cost of Service	$450,000	$570,000	$700,000
Index of Services employed	90	85	80
Salary Range			
Professional	$3,100-$5,010	"	$4,250-$5,510 + 12%
Rental Assistance	$1,700-$3,000	"	$2,010-$2,660
Total Employment	N/A	"	$2,450-$2,370

(b) Personnel Employed - June 30, 1930.

Certificated salary scales:

Principal: $3,225 - $3,720
Teacher: $1,215 - $2,775 } yearly

Total Number of Teachers - 939.5

Number of Kindergarten Teachers - 33.5

Number of Evening Teachers - 103.5

Evening School Provision for Americanization

"Evening school classes up to and including XI years of age in county area. Courses then also open a preceding course and children within a defined radius of the Central centres in case low general standards of the metropolitan area. Mentally and physically handicapped children at each day centre and residential centre.

The School Dental Service was commenced in Victoria in 1921 as a section of the School Medical Service under the Chief Health Officer. It was transferred to the Health Department under the Ministry of Health in 1935 and began a separate division of the School and Child Hygiene Branch in 1937 when steps were taken to revise and expand the service.

In 1925 a total of nine dentists was employed in the Service. By 1930 the establishment of the Service had increased to forty-three dentists.

Priority of treatment is given to cases of confined parturition cases for dental radiation and copy cases is cut to minimum annual visits by cable clinics to outlying districts."(5)

Arrangements of Private Practitioners in the Service.

"A specialist radiologist who attends city clinics on a 2-sessions per week basis.

Dual duties only at a secondary base at each location.

Basic duties in private practice after care patients and children's institutions in their regions and are paid on a "fee for service basis."(5)

TABLE 4.

Personnel Costs Dental Branch - 1961-69.

Year	1961	1960	1959
Total Cost of Service	$860,000	$835,000	$575,000
Number of Officers employed	37	33	24
Salary Range	$3,840-$5,280	*	$5,215-$9,720

(6) Nominal Civil Dental Monthly Income - as at 31st Dec. 1969.

Salary Scale:

Captain - Grade 3 $3,315 - $3,500

Captain - Grade 2 $3,909 - $4,200

Total Cost of Service (1963 - 64) - $170,350

Number of Patients Served - 6,666

Number of Routine Attendance - 84,078

Number of Dentists Employed - 16

Utilization of Private Practitioners - Nil

(d) Health Assistant Unit at Local Centres - as at 31st Dec. 1965.

Responsible Salary Grade.

Medical - £3,250 - £3,855

Dental - £3,000 - £10,500

Total Cost of Service - N/A

Number of Patients Served - 6,055

Number of Patient Attendance - 37,325

Utilization by Private Practitioners

"All primary and infant school children in urban areas have been established."[5]

Utilization of Private Practitioners - Nil.

Tanzania Dental Centres - as at 31st Dec. 1965.

The Dar-es-Salaam Dental Centre was inaugurated in 1957 with an establishment of 20 dentists. In 1964 the Service was placed under the control of the Minister for Health. The dental Centre up to 1965 consisted of an establishment of dental officers spread either to one of the five Centre clinics in the State or to one of 16 Peripheral Clinics which moved around various areas in the Centre.

In 1934/35 a special committee under Indian representative of the National Social Association investigated the situation and formulated a report with recommendations for re-organisation of the Service. The recommendations were accepted by the Government and re-organisation was effected in 1935/36.

In use of the School Board Hurse in Nairobi has proved and the size & kinds of Native Mental Cases call up their treatment, at the School of Mental Hygiene, Nairobi, on the 2nd February 1936."[5]

Table 5.

(a) Establishment of Native Mental Health Service

Rates	Numbers	Penal Rates	Local Standards
Penal Code Cases	25 (full time)	31 (full time)	20 (full time)
	0 seasonal	1 seasonal	0 seasonal
Subordinate Service	1 (Subordinate		
Penal of	1 Medical 1 Nurse = 20 Students		
Total Nursing	0 (Seconded to M/Penal) 1 Assistant		3

The Head of Service is the Medical Officer Penal Rates (Full time) and the Medical Officer Local Rates (Full time) is the Senior Medical Officer, Nairobi, and the Second Medical Officer, Penal Rates.

Houses are provided for dental officers in all county districts. All the houses have main dental surgeries attached or already available. Wherever possible and convenient the main dental clinics are used, otherwise treatment is carried out in dental caravans or in special accommodation provided at the schools.

In each county district dental officers are responsible to carry on private practice under special conditions i.e. in addition to official duty hours. Approval for such practice must be applied for.

All night or private practice are a privilege and those rights can be varied or withdrawn at the discretion of the Minister for Health.

Orthodontic Service.

An orthodontic service is available for children who are entitled for treatment in the School Dental Health Service and only those cases selected for treatment are accepted.

Dental or oral Surgery.

The School Dental Surgery is situated in 100 Pembroke Road, Ballsbridge, Dublin. In addition to Ballsbridge dental clinic there are clinics in the Coombe, Cork Street, Dolphin's Barn, Finglas, Kilbarrack, Rathfarnham, Sandymount, Stillorgan and Swords. In addition dental treatment is provided in the Mobile Dental Clinic which visits schools in the County Dublin Area.

A dental nurse may only practice at each clinic she is a member of the School Dental Nursing Service.

Dental nurses also carry out a programme of dental health education with children in the clinics and with groups in the classroom. An dietetic chart dental nurse is responsible for the allocation of school dinner lunch and the dental nurse.

Two dentists have a certificate and dental nurse, a few have a dentist, and two then one dental nurse. In some country areas one dental nurse may be responsible for several small schools."[5]

TABLE 6

Expenditure - Training - School Dental Service - 1961 - 62.

Item	1961	1965	1980
Total cost of Service	£18,570	£217,400	£536,338
Number of Students Employed	12	35	35
Salary Scale			
Dentists	£4,212-£6,003	-	£5,778-£7,836
Dental Auxiliaries	£1,371-£1,537	-	£2,112-£2,607

cuadro 7.

Balance de Calcio Total Durante Crecimiento Vacuno - 1959.

Items	Consumido	Retenido	Excretado	Depositado	Otras Pérdidas
Cuerpo	30,291	22,300	27,113	2,524	13,327
Subdividido					2,333
Piel Pelo	6,752	5,284	20,240	2,752	5,030
Calcio de Fondo Perdido	2,612	1,035	0,272	2,205	2,177
Total	39,655	31,635	33,625	9,532	22,512

* Incluye orina y heces.

Construction Plant Index - as at 31st Dec. 1969.

Capital - $3,007 - $13,070

Total - $5,713 - $9,230

Total Total Rate - $2,907 - $4,938 (calculated on

own party basis).

Total Cost of Service - $500,522 (Includes loan

fund, capital equipment and revenue expenditure)

Number of Patients Served - 49,68

Radium Module for Treatment - all school children.

Modification of Existing Remodelling for the Needs.

High Vacation Applied as Normal Rate.[5]

Summary

The five State School Dental Health Services discussed in this chapter have a combined staff as at 31st Dec. 1969 of 310 (including 169 Dentists) and employed a total of 316 (including 131 Dental Nurses).

TBL 9.

Total Cost and Patient Treatment - Dental Services 1969.

State	Total Cost (1)	Patients Served	Patient Treatments
New South Wales	$[illegible]	32,277	159,631
Victoria	579,[illegible]	32,[illegible]	131,040
Queensland	170,399	3,[illegible]	54,970
South Australia	N/A	6,[illegible]	37,215
Tasmania	50,933	4[illegible]	104,416
Grand Total	$1,985,092	101,497	420,040

Because of the city code that provides dental treatment for all school children. The other towns have exceptions, chiefly related to age, on the eligibility for treatment.

(Vol 2.

Royal Prince Alfred Hospital

Table 9 shows the authorised establishment and the employment upon 6 June establishments for

(a) the Royal Prince Alfred Hospital - the South Wing

(b) Children's Hospital - Victoria

(c) Royal Hospital for Women and Children

(d) Royal Hospital for Mentally Ill - Rozelle

Prince Henry Hospital - South Wing not yet established

Royal Prince Alfred Hospital, Sydney.

Establishment

Under the original authorising Act in 1906 the legislature provided for the constitution of the Board of Control by the Governor upon the recommendation of the Minister. The functions are vested only slightly by the existing legislation of 1953 and provide that the Board of Control may fix and collect from patients or persons charges for treatment of patients as the Board may deem proper to reimburse the cost thereof to the hospital and to waive such charges in any case where it appears that the circumstances of the patients are such that the payment of the charges would cause undue hardship.

The hospital exists for the dual purpose of providing a social service as well as facilities for the teaching of students.

TABLE 9.

Dental Hospitals (Australia) - Personnel as at 31st Dec. 1969.

Personnel	Establishment Sydney	Melbourne	Qld.	Perth	Employed Syd.	Melb.	Qld.	Perth	Total (Employed) Australia
Dentists (Fulltime)	61	51	130	53	59	37	130	50	276
Dentists (Part time)	-	-	7	-			7		7
Chairside Assistants	55	90	83	129	*55	77	83	94	309
Nursing Sisters	19	14	19	0	*19	11	19	7	56
Dental Technicians	44	51	96	30	*41	40	96	21	207
Dental Hygienists	-	-	-	-	-	-	-	-	-
Clerical/Reception	15	26	35	65	*15	26	35	63	140
Administrative	54				*53	-	-	-	53

* These figures include staff employed in support of University Departments.(5)

Of the staff establishment of 247 employed directly within the services grant aided by the hospital, 10 are seconded to the University within the building and 65 per cent of the total hospital staff are employed in relation to the teaching function of the hospital.

In addition to the provision of wards and laboratories for the teaching (dental faculty) requirements, the hospital provides a full range of dental treatments. These clinical functions are divided into four Departments namely Operative Dentistry, Prosthetic Dentistry, Periodontic Dentistry and Oral Surgery.

Apart from the above responsibilities, the dental hospital undertakes the following.

(a) Training Dental Nurses

(b) Day Nursery Clinics

(c) Dental Technicians Course

(d) Dental Orthopaedics

(e) Facilities of Dental Research

Finance

The hospital has only a relatively small regular Income. In 1969-70 financial year, income from patients for services rendered (£1,163, University contributions £2,501 and miscellaneous income received raised the total to £33,170.

Student fees are payable to the hospital by the students at rates corresponding inline on the scale of £10.00 per term, while the University of Wales makes a contribution on the scale of £80.00 per annum for each student enrolled.

The balance of the funds necessary to maintain the Hospital are provided by the U.S.V.A. Government as a subsidy through the Hospitals Commission of U.S.V.A. Fees also (1,275,270 was received for the year ending 30th June 1970.

The total expenditure for the year was (2,414,811.(5)

TABLE 10.

Expenditure Based Annual Rainfall at Suva - 1968 - 69.

Items	1967	1968	1969
Medical Annual Hospital	$780,334	$918,237	$1,014,010
Preventive Medical Clinics	59,784	64,671	109,203
Day Nursery Clinics	5,104	12,000	2,102
Dental Preventive Course	1,472	3,541	4,053
Cadets	46,557	11,293	14,320
Total	$836,954	$1,009,04	$1,552,05

* Plus Textile City.

TABLE 11.

Sewage Treated and Outlay Used : - Piped Water Supplied - Water 1968 - 69.

Items	1967	1968	1969
Number of Premises Supplied	43	45	52
Outlay Results			
Premises	$3,258-$5,230		$5,851-$9,009
Total Collection Premises	$252-$1,402	*	$1,310-$2,520

Zonal Uptake of Radiopharmaceuticals - Liver

Uptake of Radiopharmaceuticals by Liver:

Normal Parenchyma:-

Posterior (Rt) 55,055 Total = 61,30

Posterior (Studied) 5,305

Abnormal Enhancement:-

Posterior Segment (Rt.) 6,269 Total = 11,537

Posterior Segment (Studied) 1,589

Focal Uptake Abnormal:-

Surgical Scar (Rt.) 1,039 Total = 2,077

Surgical Scar (Studied) 038

Surgical Anastomosis 107

Surgical Scar 134

(b) Surgical Bleeding Section Number of Patient Studies

11,023

(b) Hepatic Lesion Interpretation

20,075

(c) Radiography Section Number of Patients

37,701

(d) Clinical Pathology Section Number of Abnormalities

1,119

Recorded Radiology Procedures

(a) Renal Scan Total Radiation Dose

3,377

(b) Cholangio Scan Number of Patients

Scanned (Rt.)

650 Total = 72

	Number of Patients Employed (Numbers)
(c) Paediatric section	Number of Patients Employed
	1,029
(d) Paediatric section - Assessment	2,143
Paediatric - Nutrition Problems	2,213
Dental Nurse Application	1,530
(e) Speech Therapy - Number of Attendances	307

Problems Arising for Treatment

"A team must be applied to all incoming patients. This takes into account cleaning and teeth with discussion for daily operations. No eligibility exam to display doctor for specialised treatments (e.g. oral surgery, orthodontic periodontal) than for general treatment.

Eligible patients are screened to pay fees according to a graduated scale, the cards of which is considerably less than that usually applicable in private dental practice.

Completions of dental service Reasons who also passed a Dental Assistant Card and their operations are graded into 3 stages.

In the 1978-79 financial year the Areas Health Board could $10,100. The balance of funds necessary to cover expenditure was provided by a Dental Assistant study."(5)

Calculation of Gross Emolument by the Method.

132.

Local Rental to Rent of Columns.

Page 23.

Comparative Rural Rental Method of Calculus = 1901 = CD.

Years	1902	1910	1920
Local Cost of Service	0321,090	£000,280	31,017,2'2
Means of Production	35	30	37
Money Wages			
Production	00,000-00,130	-	00,070-00,005
Rental Accumulated	02,230	-	00,850
Total Users	01,160	-	02,024

Index of Inflation Trend (1909) = 99,326

TABLE 19.

Patients Treated: Royal Dental Hospital of Melbourne - 1963 - 65.

Age	1963-64	1964-65	1965-66
Outstanding - Re Attendance For Year	44,601	43,763	39,316
Previously Treated - Recall	37,319	31,035	34,330
Patient Presented - Emergency	10,535	11,107	10,255
Previously Treated - Broken Appointment	12,121	9,204	10,324
Fresh Enquiry Accepted	304	378	340
Previously Treated - Referred (a) Local Dentist	1,523	1,046	1,104
(b) Local Hospital	10,105	11,603	11,457
Own Choice - Dentist - Accepted	2,427	2,937	2,763
Previously Treated - Dentist - Accepted	11,515	14,120	13,184
(a) Full Denture	1,763	1,839	1,976
(b) Partial Denture	701	1,150	1,1
(c) Bridge	1,724	1,101	1,552

Paterson Middle for Secondary

"Code was cause for allowance for daily and
other Celebrations."[9]

Recreation of Educ. Precautions by the Council - Mr.
Recreational Penal Permits and Other

Salary Range ($000)

(a) Assistant Principals -

Lower Quartile - $ 80,100

Median - $ 94,385 - 97,625

(b) County Vocational Offices -

Lowest to Highest - $ 87,033 - 97,970

Average - $ 93,030 - 97,018

Penal Code of Conduct ($000-00) - $ 93,603,433.

Duties of Patient Record (for Penal) 303,240.

Duties of Penal Regulations 304,405.

Modification of Educ. Precautions for the Service.

Police patrol precautions are carried out
also in Local Police and Penal Clinics."[9]

Lower Penal Penalty.

"The Penal Control Hospital as an Incorporated body
was agreed by the Minister for Health in April 200.
It has a Director and a Board which has
a Penal Code of Conduct with the power
to regulate College of Penal Clinic. The regulation
gives a duty to the hospital's activities and provides
that the daily clinical, to ensure safe high degree
control in the teaching of doctors. The training

body must have the responsibility of providing clinical experience and the day to day needs of teachers and study materials by managed by the Dental Board.

In 1969 the Dental Hospital and the Undergraduate College of Dental Surgery became known as the Royal College of Surgeons, part of which dealing the Dental Hospital.

1969 also saw the establishment of the Post Graduate Medical & Dental Council, which was responsible for all Postgraduate Medical & Dental Education in the London area. It was replaced by the Royal Postgraduate Medical School in 1974. The Dental Committee of the Council was responsible for Postgraduate Dental Education in England & Wales until it was replaced by the General Dental Council and responsible for undergraduate & postgraduate dental education.

The Dental Hospital & School (Eastman Dental Institute)

In 1948 a new institute of dental surgery was established in Gray's Inn Road, associated with the Royal Dental Hospital of London School of Dental Surgery. The Dental Hospital was opened in 1957. The final examination is conducted by the Dental Board and successful candidates are awarded the diploma in dental surgery.

Post graduate courses are conducted in:

(a) Renal Radiography

(b) Renal Health Education

(c) Specialized Nursing in Orthopaedic

Duties of Nurse of Renal Unit:

Year 2	330	Lectures and Class Presentations
Year 3	219	
Year 3	75	
Total	472	

Duties in Radium

Year 2	17	
Year 3	37	Total: 72
Year 3	20	

Below the Standard Training Period for Nos. 27

Salary Scale Nurse Training Period.

Year 1	£1,150 per annum
Year 2	£1,215 per annum
Year 3	£1,454 per annum

Table 14.

Expenditure Road Transport Corporation - 1981 - 85.

Items	1981	1984	1985
Staff Cost of Buses	₦103,776	₦320,240	₦1,120,770
Number of Vehicles Employed	33	51	61
Salary Range:			
Driver	₦3,300-₦9,560	-	₦6,360-₦20,370
Technical Personnel	₦3,123-₦9,357	-	₦3,747-₦3,351
Clerical Staff	₦1,515-₦1,713	-	₦2,007-₦3,463

Number of Passengers Carried (1980-70) - 30,515

Number of Passengers Transported - 170,362

Passengers Liable for Purchase

Approximately 90 per cent of the total population i.e. 22,0.

Advantages of Reduced Passenger by the Service.

Monetary denial economic is provided between ₦0.20 p.m. and ₦0.30 p.m. each ride by an "all day" service and between ₦ p.m. and ₦0.50 p.m. on Saturdays and Sundays by a city canal can in accordance of the hospital.

This economy service is based by sending four buses for four peace periods; and one for the hospital and Teddy canal.

Local private passenger are employed as part time or base of the hospital canal scale."[9]

Summary

The Dental Hospital of Australia including the Royal Melbourne Dental Hospital in 1960 employed a staff of 289 (including 270 dentists) a school of dentistry of 120 (including 20 dentists) at a total cost of $5,672,491.

CLAUSE 9.

Laboratory Courses and Non-Convocation Dental Degrees.

The following Examinations and Non-Convocation Dental Degrees will be included in this Clause.

(a) Preliminary Science Dental Examination

(b) Preliminary Organisation Control Dental Course

(c) The Institute of Dental Surgery (The Odontological Society of Sydney)

(d) Australian Lung and Paper Pulp Research Laboratories

(e) Zinc Oxide Replaces Lime and Acetone Fund.

(f) Preliminary Course of Dental Mechanics.

The Course of Dental Mechanics was established in 1927 by taking over the stock and functions of the Australian Research Laboratory which was then part of the Australian College of Dentistry in Melbourne. The Preliminary Examination of Dental Students under the auspices of the Laboratory under the name of the Preliminary Course of Dental Mechanics.

Since 1967 part of the activities of the Dental Laboratory has been devoted to research although in recent years, because of the presence of other units in Sydney and Newcastle, the area available for research has already limited.

The Bureau is an agency of the Massachusetts Department of Health and it operates under the National Health Act. The field of research is largely limited to dental materials and instruments."(5)

Date

1971 - 7 (including secretarial assistance)

1972 - 3 (including secretarial assistance)

1973 - 3 (including secretarial assistance)

Total

1971 - 63 - $63,300

1972 - 60 - $70,100

1973 - 70 - $80,200

(6) Massachusetts Registration Statement - 11 Mass. Regulations.

"The Australian Folklore Corporation Act of 1917 formally stated the Corporation connection with the postwar responsibility for providing treatment for residents suffering from addiction accepted or subject to war service.

1971

Following the return of servicemen and women, Civil Council, locally provided through departmental facilities, the available to them, based on needs needed assistance in the case of the Act including medical care and the condition of the Act in providing a disability accepted as related to war service.

The nature of treatment provided has extended to orthodontics, general anaesthetics for relief of pain, treatment of cystic conditions, cleaning, the provision of intravenous sedation, medical and paramedical duties.

1947

As a result of the 1939-45 war there was a large number of casualties among the Air Force personnel at Ngaoundere and by 1948, a wider and more specialized range of dental protection care was provided, due in part to the advances in dental technology in Australia, so that period.

1953

In 1953 full dental treatment was extended to all circumstances and even in receipt of the 1/3 p.e pay general rate and special rate war pensions (including blinded soldiers, certain orphans and totally and permanently incapacitated ex-servicemen), war widows and certain other eligible categories of deceased ex-servicemen.

1971

In October 1973, the Royal Australian Dental Corps was inaugurated. This Corps provided for the specialties of local dental specialists to operational posts in specialties and county areas. The practice was aimed to provide local treatment to eligible operational personnel in cases where they would otherwise be evacuated and the Australian Naval Association.

Subsequently a Rules Panel meeting was appointed in order to advise both the Department and Local Panel colleges on more difficult cases and procedural problems and a Technical Panel meeting was appointed to advise the Appellate Committee.

1.6.

Panel hearings play vital information gathering role in order to advise the Secretary of State in his decision making process. Panel members are drawn from a wide variety of professional backgrounds, each bringing their own particular expertise to the proceedings and a Panel Chairman is appointed by the Lord Chancellor.

1.7.

The Local Panel Chairmen have been invited to attend subsequent meetings: also the Inspectors which indicates the critical role they play in the Department and the Inspectorate. A recent decision of the House of Lords has greatly enlarged the scope of procedural argument, as for example, in the Wednesbury case, in line with developments in the procedures at Inquiries as determined by the Courts.

The Panel's approach of the Chairman is to provide the case standard of service available to, and used by, the Secretary of State.

Currently the office for Local Government Studies

(a) Incentives and cash allowances received in addition to regular salary (for which dental care is provided);

(b) Tips, gratuities and cash in excess of the IRS per diem meals and lodging allowance;

(c) Bonuses paid;

(d) Sales and other allowances; and

(e) Car allowance and other allowable expenses of personal entertainment.

Deferred income, including contributions, earnings, dividends, interest, and other amounts earned or paid, provided, however, that such amounts are not taxable by the jurisdiction responsible for assessing and the relevant procedures are set out in the "Notes for Local Dental Officers" which are issued to each practitioner as appointed."[9]

Remuneration Ranges - January 2017.

Dental (full time) Class 1 £66,000 - £97,100

Dental (full time) Class 2 £93,100 - £97,600

Class 2i £97,700 - £99,116

Class 2ii £9,600 - £9,100

Medical Consultant Band 1 - Salary Only.

	Base Rate	Non-Pensionable Rate
Principal Dental Officer	£15,50	£9,05
Senior Dental Officer	£13,55	£5,65
Medical, Dental Surgeon	£12,35	£9,05
Visiting Dental Officer	£ 0,55	£3,05.

Rural Nebraska (full sta) $9,850-$9,910

Rural Rural Nebraska $9,090-$9,240

2012 15.

Personal & Household Expenditures Expressed as a Sta
Acc. 1003.

Index	Rural Nebraska (full sta)	Rural Nebraska (Urban sta)
Baseline (full sta)	1	1
Index (Urban sta basis)	44	-
Total Population (Thou)	1	1
Total Households (Full Time)	5	7
Land Total Cultivated	2%.1	-

Sta: 10.

Metropolitan Consumption Patterns - Acc - 03.

Index	1002	1003	1000
Total Sum of Values	$916,00	$330,25	$2,015,00
Mean of Families Employed of Full Sta	1	1	3
by Local Total Dollars	2,00	2,20	1,33

Salary Index:

Baseline = Mean ± $8,503-$2,0 ± $8,030-$9,300 $8,100-$7,030

Rural Nebraska $8,100-$8,330 $3,70-$8,031 $8,210-$,015

Ratio of Patterns Tested = 2000/20 43,031.

Certain Medical Services

(a) Hospitalization and treatment as an in-patient at or above the 10 per cent coinsurance rate or as an out-patient at a Covered Facility.

Appropriation Number - 105,023

(b) Office and other diagnostic or treatment services for each covered as selected in use service.

Appropriation Number - 62,750.

(c) Psychiatric Services - (The United States Dollar Equivalent).

The exclusion of the benefit cost in 1983 when the above Australian Medical Association (W.A. Branch) Schedule Fees increased rather than decreased differentials was explained to me by the Medical Director. The Director is head of the Medical Department. The Department is responsible for the Medical Benefits Scheme and Pharmaceutical Benefits Scheme. The Director is responsible for the Medical Benefits Scheme and Pharmaceutical Benefits Scheme. The Director is responsible for the Medical Benefits Scheme and Pharmaceutical Benefits Scheme.

Following the review of the Medicare Benefits Schedule in 1983, there was an increase in the Medicare Benefits Schedule fees for psychiatric services. The Medicare Benefits Schedule fees for psychiatric services are determined by the Australian Medical Association (W.A. Branch) and the Department of Health and Welfare. The Department of Health and Welfare is responsible for the Medicare Benefits Schedule fees for psychiatric services. The Medicare Benefits Schedule fees for psychiatric services are determined by the Australian Medical Association (W.A. Branch) and the Department of Health and Welfare. The Department of Health and Welfare is responsible for the Medicare Benefits Schedule fees for psychiatric services.

Coldstream, a medical graduate and Senior Lecturer in Cardiology, University of Sydney to become Head of the Pathology Department.

Dr. Aylmer-Kelly received the personal and the appreciation which arised and as a result of the recommendations to the Board of Control the Hospital Commission was instructed to recognise the importance and the need for developing dental services and to authorise the establishment of an institute of Dental Surgery within the Dental Hospital."(9)

Qualification Examined.

The Hospitals Commission of New South Wales, the National Health and Medical Research Council, the Dental Board of New South Wales

Institutes organisations like the to use.

Dean of Faculty

(Basic Science

(Basic Dental Medical

(Clinical

(Hospital

SIZE 17.

Qualified and Paid - Institute of Dental Surgery 1961-67.

Salary	1961	1965	1967
Dean of Faculty			
(a) Full Time	37	10	23
(b) Part Time	1	5	1
Budget	$65,000	$75,000	$125,000

(d) Accounting Unit and Annual Council Meeting

Normal control can be exercised by the Australian Pulp and Paper Mills Council which is the reason for the formation of the Associated Pulp and Paper Mills Limited and Associated Companies in 1961 in the concept of Group Accounts by applying one Cost Centre and a Profit Centre.

In 1963 a second Cost Centre and a Cost Centre was opened and a laboratory established.

A sales charge took place in 1964 when the basis of invoicing was changed from a three salary basic for the Centre to a volume rate of $6 per ton plus the issue fee charged to the products. The fee being based on approximately one third of the entire milling set batch Centre Income.

Cost of Operation and Income

The Council provides the building, central services, utilities and office fee of Secretary. Income is by subscription employee and their dependents at fee approximately one third of the entire milling set.

The Council's income is by fee up from Subscription fee by the meeting of the volume sales in a ratio of approximately:(5)

Rate - 1964

Subscription - 2

Issue Material

Absolute - 2

Total Combination - 1

Salary : mon + 100

Insured = $\frac{1}{2}$ of normal scale

Penal Code

Sections = Penal Code

Number of Sections Imperial = 1560/20

Introduction = 1,032

Publications = 6,765

Projects = 70

Proposed = 1,181

Rejected = (Full) = 350

= (Partial) = 65

Repaid = 237

Received = 110

Year: 20

Percentage Distribution of Personal Income, 1929 and 1933

Year	Total	1933	1929
Food and Drink			
Clothing	$30,050	$22,650	$37,142
Number of Members			
Employed	3	3	2
Salary Scale			
Monthly	$ 2,650	$ 2,650	$ 2,650

(c) Long Lyell Employees' Sick and Accident Fund - Penalty Clause

"Sick claims commenced operating on 6th Jan. 1962. The claims is controlled by the Lyell Employees Sick and Accident Fund who subscribe the fund by eight cents for each five cents contributed by an employee.

The fund controls the hospital claims and subsidises it by $4,500 per year. During the last three years the average loss has been $6,000 per year which is made up by the Sick and Accident Fund so in reality the fund is paying a subsidy."(5)

Fund - 1960

Opening Balance - £

Annual Subscription - £

Annual Interest - 1960

Receipts - £8,000 per annum (no private patients permitted)

Payments - £8,000 per annum

Number of Patients Treated - 1960

3,091

Number of Patient Days - 1960

Europeans - 2,429

Non-Europeans - 1,032

Average Stay - 35

Maximum - 523

Minimum - 125

TABLE 19.

Expenditure and Staff (Gross Full Equivalent) Yields and Deaneries 1961-63.

Service	1961	1962	1963
Total Cost of Service	£40,534	£47,052	£51,402
Index of Expenditure (Trend)	2	3	3
Salary Uncal-			
Basic £	£ 5,300	-	£ 6,[illegible]
Total Deductions	£ 5,960	-	£ 4,[illegible]
Total Basic	£ 850	-	£ 3,22[illegible]

CHAPTER 6.

Reinsurance Treaties - In re.

(a) Introduction.

"What is the scope of the average contract" this is a difficult question to answer. In the first instance what is meant is, the word "average." For most purposes it is considered as the arithmetical mean.

The words "ordinary contract" are in most instances determined by a mutual mass custom are a matter of public record. In government service the relation of contracts are used as a comparative basis with other professions. Problems employed by other callings have their examination aided by minute agreement between the two parties.

With respect to the issues of the self-employed contracts the courts are not readily available, results are seen in order to for the year ended June 30 1907 applied from the statistical appendix to the 45th report of the Commissioner of Internal. Figures in this statistical appendix relate to business issues and classification of individuals subject to professional earnings(6)

(b) Central [illegible] 2001: 29.

[illegible]	[illegible]		[illegible]		[illegible]	
$ [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
417 - 1,999	163	1.3	7	2.0	123	2.9
2,000 - 2,999	516	5.0	204	10.1	427	7.3
3,000 - 3,999	700	9.5	220	13.3	607	12.5
4,000 - 4,999	950	10.5	403	16.0	702	14.3
5,000 - 5,999	1175	13.3	450	13.5	720	13.0
10,000 - 11,999	1413	15.4	351	24.5	650	13.3
12,000 - 13,999	1010	13.3	337	11.3	501	10.3
14,000 - 15,999	644	10.3	101	6.3	351	6.0
16,000 - 17,999	595	6.5	105	3.0	254	4.3
18,000 - 19,999	435	4.0	67	2.3	250	3.0
20,000 - 29,999	730	3.1	93	3.2	445	3.4
30,000 - 39,999	177	1.9	10	0.3	107	3.0
40,000 & over	73	0.3	3	0.1	43	0.9
TOTAL	6104	100	2936	100	5011	100

"The said used cases about solely to the sale captured because it only includes those who are subject to provisional tax.

"Local taxes" do store taxes (including except taxes) have captures declared in column one taxes. It includes taxes like all sources (c.f). sales and dividends) both in and out of municipalities as well as proceeds from the province.

The rate bulk of the actual taxes for the year ended June 30 1997 was 2012: 25 taxes.

[2528 - $16,00 to $24,00 group - 23.6 per cent.

[2'2L - $ 6,00 to $10,000 groups - 23.3 per cent.

[2'2L - $ 6,000 to $24,000 groups - 22.1 per cent.

For the second income bracket 13 per cent of the total case load in the dividend each side of the $6,000 to $8,000 range. Over half (63.1 per cent) of the local taxes case falls the $2,000 to $12,000 dividend.

For statistical purposes the most significant taxes range in the table is the median i.e. the centre position and is located in 2'2L 21 in the $7,000 to $10,000 range."(6)

TABLE 21. [illegible] Fraction Income - 1961 - 1967.

[illegible] - 1963 - 67.

[illegible] (Rs.)	1963-64		1964-65		1965-66		1966-67	
	No.	[illegible]	No.	[illegible]	No.	[illegible]	No.	[illegible]
417 - 1,000	105	0.5	190	4.0	110	4.0	97	3.0
2,000 - 3,000	370	10.4	323	11.3	311	10.6	304	10.1
4,000 - 5,000	407	16.5	441	15.5	501	19.7	535	19.1
6,000 - 7,000	536	19.0	440	16.3	431	16.3	403	16.0
8,000 - 9,000	430	17.3	519	19.3	491	17.3	450	15.5
10,000 - 11,000	267	10.0	207	15.6	410	14.7	431	14.5
12,000 - 13,000	176	7.3	364	9.3	260	9.4	337	11.3
14,000 - 15,000	103	3.5	135	4.3	153	5.4	151	6.3
16,000 - 17,000	53	1.9	69	2.3	96	3.3	105	3.6
18,000 - 19,000	34	1.2	46	1.6	56	2.0	67	2.3
20,000 - 30,000	40	1.5	57	2.1	72	2.5	93	3.3
30,000 - 50,000	1	0.04	7	0.2	9	0.3	11	0.3
50,000 & more	4	0.1	3	0.1			3	0.1
	2330	100	2304	100	2853	100	2966	100

Because of the total spread it may be argued that the legal decision in the case for 1966-67 had an actual income of £2,000 approximately. Since years earlier the median annual income was less than £1,000 - probably about £750.

The trend of current cancel income is indicated by the data in Table 21 indicated clearly that the decline inflation has not been stable. The median actual income averaging an annual increase of approximately £50 over the three year period.

Based on this calculation of an estimated annual increase the median annual income for 1969-69 would be in the region of £1,250.

Absolute numbers and percentage of taxable cases actual income rose in the £2,000 to £10,000 range (Table 21) more fully consistent with a slight demand trend. Those less than £2,000 decreased markedly every year, except for bracketing in 1965-66 in the £2,000 to £3,000 bracket. On the other hand all members (with one significant exception) and proprietors in the over £10,000 range increased steadily.

Consideration of the speed of income, the median, the rate and an appreciation of the trend are all important elements in understanding the total picture. A distant approach to note may be realize the average.

Table 22 was compiled from an analysis of the returns of Income Tax(1) by the 2306 male employees of Australia for the year ended June 30 1967. It does not include income of the young men who [illegible] 0.07%. This figure is the "male median" [illegible] by the author. The difficulty is that the data [illegible] by income activity in addition to the professional practice.

Of all the most interesting facts [illegible] study is the [illegible] total income [illegible] all self-employed medics at $23,703.00 and the [illegible] persons whose self [illegible] per-[illegible] at $30,540.00. Many medics may be [illegible] [illegible] but there would be a discrepancy [illegible] the figure. Even if no data available [illegible] [illegible] cases which could create a reasonable [illegible] [illegible]

Table 22.

Area's annual income and expenditure for the year ended 31 June 1982.

	£'000	£'000
Cole Manorgate - (315 persons)		
Total Cardissa Health	41,401	10,019
Less:		
Salaries & wages: paid	33,160	
Depreciation	1,439	
Other Expenses	12,764	
Total Expenditure	31,203	9,952
Less Savings	19,539	9,933 (47.2%)
Parkwaddle (329 = 76% persons)		
Total Income Less:	11,365	10,007
Salaries & wages paid	93,321	
Depreciation	101	
Other Expenses	2,053	
Total Expenditure	9,453	7,254
Net Income	6,315	2,753 (38.5%)
Leeds (10 = 10 persons)		
Total Income Less	0	--
Less Total Expenses	0	--
Net Income	0	--

(Cont.)

TABLE 23 (cont.)

ITEM	TOTAL ($)	AVERAGE ($)
Consolidation (206 persons)		
Social business degree	52,753	---
Non-local business degree	56,210	---
Non-business degree	505,100	50,37

The following table was originally from a report Prepared "Army - Navy - 1966 by the Air Force Personnel Academy.(2)

Table 22. Total Taxation Paper - Australia - 1950.

Item - Male Taxpayer	Item - City Area. City	Suburban	Industrial
Gross Income Derived from Salary	21,499	19,605	21,713
Taxable Income in Salary - Total	18,259	9,017	18,272
Salaries	3,800	3,099	3,779
Rent	1,209	922	922
Interest	1,810	1,065	1,794
Laboratory	2,133	1,534	1,533
Miscellaneous	2,211	2,531	2,054
Net Personal Income Derived from Salary	18,022	9,731	18,415
Net Personal Income Derived from Industry	18,265	9,032	18,510
Net Income as Per Cent of Total	49.9	49.5	52.4
Salaries paid as Per Cent of Expense	37.3	31.3	38.3
Rent paid as Per Cent of Income	11.3	9.6	3.9
Cost of Rural Materials - Per Cent	17.6	10.6	17.6
Expense to Rural Laboratory - Per Cent	21.3	15.3	19.9
Miscellaneous Expense - Per Cent	22.5	25.5	22.9

The mean income derived from the coal industrial practice ($30,739) is greater than the city ($30,000) or residential practice ($10,045).

The total expenses incurred in practice are approximately the same for city ($10,000) and industrial ($11,271) practice. Less rent and laboratory expense but higher salary expense are incurred in the industrial practice.

This could indicate a lower fee scale and a greater number of routine patient encounters in the industrial practice compared to the city practice.

Dental Practice Survey - Australia - 1960.

Index - Gold Practice (In detail)	Less 5-9 yrs.	Less 20-29 yrs.	Over 30 yrs.
Gross Income Derived from practice	10,591	10,709	15,675
Expenses incurred in practice - Total	10,191	8,666	9,140
Salaries:	2,001	2,231	2,657
Rent	1,053	944	906
Dental:	2,045	1,060	1,060
Laboratory	1,037	1,523	1,246
Miscellaneous	3,350	3,235	1,570
Net Personal Income Derived from practice	9,340	13,071	7,434
Net Personal Income Derived from dentistry	9,543	10,059	7,430
Net Income as Per Cent of Gross	47.3	51.4	43.4
Salaries paid as Per Cent of Expense	23.0	22.1	22.3
Rent paid as Per Cent of Expense	10.4	8.9	10.2
Cost of Dental Materials - Per Cent	21.1	19.2	15.3
Payment to Dental Laboratory - Per Cent	10.5	15.7	10.5
Miscellaneous Expenses - Per Cent	33.0	24.3	23.0

Table 25 indicates that the highest rate personal income tax paid by people in Australia occurs at the 20 year interval. The next lower peak is reached at the 15-20 year interval.

After 25 years the rate begins to decline and rises again at the 30 year interval but not to the level reached at the previous peak.

This is an expected variation in that as a person ages the rate of increase slows down at the 30 year peak.

Income tax rates in Australia have the highest rate which is nearly double the lowest rate. Australian income tax rates are the only progressive tax in the Australian economy.

Table 27 shows that the average yearly earnings of adult males in Australia ($20,5) are also the lowest rate reached by any individual. Next is the Canadian ($19,105) and the highest is Canada ($11,021) a difference of approximately 20 per cent.

Income and wealth in Australia have the highest rate which is nearly double the lowest rate. Australian income tax is the only progressive tax in the economy. The highest rate is reached at the average income of $20,000 in Australia.

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[illegible] 21. Typical Families Insured - Australia - 1930.

Area - Type Families by Income		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Gross Income Derived from Families		17,045	27,129	21,233	23,772	21,533	21,109
Types to Insured in Families-Total		3,014	11,031	9,060	11,945	11,033	9,949
	Salaries	2,709	3,305	3,213	3,012	3,731	3,134
	Coal	012	257	035	1,511	1,105	051
	Clerical	1,701	3,432	1,030	1,913	3,040	1,315
	Laboratory	1,327	1,330	1,535	1,403	1,011	1,053
	Miscellaneous	3,327	3,477	3,006	3,003	3,010	3,402
Net Personal Income derived from Families		9,133	11,153	10,347	11,313	10,261	10,170
Net Personal Income Derived from Country		9,120	11,130	10,372	11,310	10,000	10,134
Net Income as Per Cent of Gross		53.6	53.3	53.3	40.3	47.7	50.7
Salaries paid as Per Cent of Income		33.7	20.7	33.1	25.0	33.1	31.5
Coal paid as Per Cent of Income		9.8	7.3	3.6	13.1	9.0	9.4
Cost of Clerical Material - Per Cent		20.0	33.0	10.5	16.7	13.2	12.6
Payment to Dental Laboratory-Per Cent		24.0	17.1	20.6	13.5	10.3	10.0
Miscellaneous Expense - Per Cent		33.6	33.5	33.6	24.3	33.3	34.4

Page 37.

Average Yearly Earnings ($) - Females - 1965.

Index	Dist. Vic. (2)	S.A.	N.S.	Tas.	Australia
Male Rate	62.98	63.20	59.50	53.03	60.40	61.10	61.23

The main reason for the comparatively high income for females in the high proportion of females (15%) employed full time on salary by the Commonwealth Government Departments and Local Bodies. These Departments and Bodies give a greater coverage of Award rates to salaried jobs to special male-female wage than any of the other Australian Governments.

(c) The following tables are from a survey of Professional Earnings in Victoria - June 1966 by La Trobe.

Validity of Sample

"In a survey of this type the results depend upon three factors

(a) the proportion of those approached who reply

(b) the honesty of the replies actually received

(c) the absolute number of cases in each category.

One fact in an inadequate survey about the honesty of the respondents and the small proportion of [illegible] [illegible]

Page 03.

Region	Rate of Unemployment	Number of Population	Regional Per Cent.
Dentistry	999	333	41
Midland	6,129	1,702	43
Lee	7,209	1,112	44

Although distant populations are included in this survey only those are considered here for comparison of issues between various populations because of the relative equality of social standing of these populations and particularly as the per cent response between them showed a variable of only three per cent.

The median income of men in the unemployed populations together with the median ages are given in Table 39.

"It might be expected income vary with age and experience but there is a marked variation in the ages at which the median income is earned."(9)

This variation is most noted in a comparison of Dentistry and Law. The median income in Dentistry is earned from 33-45 years over an income range of $19,750-$23,000. In Law the median income is earned from 41-51 years covering an income range of $14,500 - $25,000. Even in a particularly noted variation of median income in the 41-45 age group that

TABLE 30.

Ending Years According to Age - Records - June 1930.

Profession	Age in Years								
	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65
Dentistry	0,050	0,000	10,[illegible]	10,000	13,700	13,000	11,440	0,350	0,000
Medicine	4,000	5,000	10,000	13,000	13,050	13,500	10,[illegible]0	11,540	11,010
Sec.	3,000	5,500	10,000	13,240	10,[illegible]20	14,000	12,[illegible]00	12,000	12,000

TABLE 31.

Median Income and Age - Records - 30 June 1930.

Profession	Median Income $	Median Age (Years)
Dentistry	$12,000	42
Medicine	$11,075	42

the median income of the local professor is only high at $10,000 while that of the dental profession has fallen to $9,000.

"The median has been used as the average in this survey as this is usually regarded a. the more satisfactory average to use for income since it is not affected by extreme value so the two extreme; the house income distribution can still give a misleading impression particularly since a small number of extremely high value cases.

The median hours for students in both the dental profession has also experienced this trend the dental profession has also exceeded variable of being low in the younger age groups and increase in the older age groups through a median income range of $6,500 to $10,000.

The close association between the median income of can together with the median age of the medical and dental professions in Victoria is given in tables 20 and 21.

TABLE 31.

Income According to Ordinance - Records - 31 Jan 1960, Penalties.

Ten Employed	Low Income	Median	Upper Income	Median Age
Farmer in Professional Practice	$31,400	$46,200	$57,200	41.6 years
Solo Practitioner	9,310	12,400	18,500	44 years
Employee of:				
State Corporation	6,600	8,[illegible]10	9,200	43 years
Professional Practice	7,400	7,910	12,600	33 years
All Families	$ 9,700	$11,[illegible]5	$25,600	42 years

TABLE 33.

Income Accruing to Landowners - Wisconsin - 31 Jan. 1962, Estimate.

Tax Payers	Lower Quartile	Median	Upper Quartile	Median Age	
Farmer in Traditional Practice	$12,[illegible]	$20,000	$[illegible]	49	years
Safe Practitioner	10,000	14,000	21,[illegible]	43	years
Employee of:					
Union Oil	9,000	9,000	12,000	33.5	years
Professional Practice	6,000	9,000	13,000	41	years
Commercial Concern	5,000	7,000	9,000	41	years
State Government*	4,000	6,500	12,000	39	years
Private Hospital or Clinic	6,000	9,200	9,000	37	years
All Holding	$ 6,500	$11,000	$19,000	42	years

* Excludes Public Hospitals.

Conclusions

Variations in income groups between States, location of production in city areas, also between city and country areas and with the age of the dwellers, the per unit index of domestic power production appears to have increased approximately 6.5 per cent annually from 1960 - 69, which must be adjusted to a national inflationary trend of 3 per cent per annum.

With the increasing consumer population zone in all States and an increasing national standard of living this annual increase in note income will most likely be accelerated.

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