

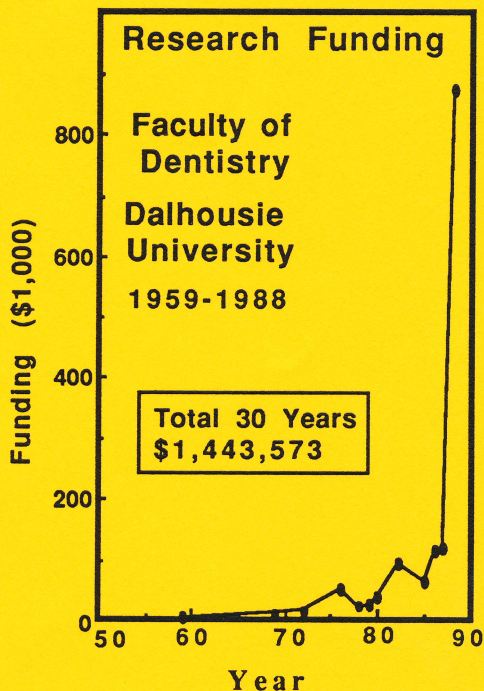
# Dental Research News

Research Development Office, (902) 424-1675

## VOLUME IV, NUMBER 3.

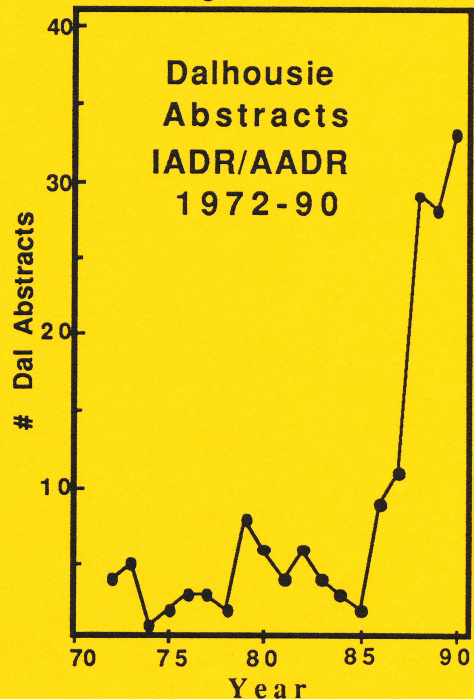
### Research Funding Obtained

The research funding obtained from federal agencies over the past thirty years by the Faculty of Dentistry at Dalhousie has steadily increased even when we take into account the level of inflation during this period.



### Dalhousie Abstracts

In 1990 at Dalhousie we have started the decade very well with the largest ever number of papers carrying the name of Dalhousie University at a single international Research meeting. Thirty-two papers will be given at the 1990 IADR meeting in Cincinnati.



## **MRC Farquharson Research Scholarships**

We have recently been reviewing the level of support received by Dalhousie University for our undergraduate dental students through the Farquharson Research Scholarships. During the past 15 years the level of support has remained constant other than increases due to inflation which has allowed support for three students each year. We are indeed grateful for this support from MRC which has had a major impact on our research development over the period and has been a great stimulus for our undergraduate students to take up graduate training.

At one time in the 1970's MRC had a policy in which they related the number of undergraduate summer Research Scholarships to the undergraduate enrollment at each faculty. It should be noted that the number of dental undergraduates has increased at Dalhousie University by 33% in fifteen years and was at one time 66% higher than in 1974. About 4 to 5 years ago several faculties of dentistry (British Columbia, Montreal, and Toronto) had increases based upon their research productivity. The research productivity at Dalhousie University Faculty of

Dentistry has significantly increased over the past 15 years as can be seen from the graphs on the front page of this months Dental research News. We have written to the MRC asking them to reconsider the level of support for Farquharson Summer Research Student Scholarships for our faculty.

A good example of our undergraduate research activity is the fact that Dalhousie University was successful in competing for the 1990 top international Scott award of the IADR for the best undergraduate research student in Canada. This will be the only time that Canada will receive this award during the next 17 years. The international quality of research conducted in the Faculty of Dentistry at Dalhousie University was also recognized in 1988 when Derek Jones received the Distinguished Scientist Award from the International Association\* of Dental Research.

**Research Funding Obtained**  
As can be seen from the graph on the front page the research funding obtained from federal agencies over the past thirty years by the Faculty of Dentistry at Dalhousie has steadily increased even when we take into account the level  
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**MRC Farquharson Research Scholarships**

of inflation during this period. It is interesting to note that over 80% of this federal funding has been obtained in the past four years. However, we recognize that research productivity should not be measured in terms of research dollars alone. Many types of research do not require vast amounts of funding. Indeed many research projects can be conducted without any funding at all. It is time not money which is the main cost for the development of productive scholarly and research activities, we have carried out a strong policy of facilitating research within the faculty during the past three years. During the past four to five years the level of our research productivity has significantly increased. The number of presentations given at the International Association for Dental Research (IADR) and American Association for Dental Research (AADR) meetings during the past 20 years shows a dramatic increase during the past 4 years. However, what is most encouraging is the fact that 98 (68%) of these papers have been given during the past four years. Our average for the past four years is a remarkable 24.5 papers each year, and for the

past three years it is 29.3, a record of which many Canadian Faculties of Dentistry would be proud.

If we look at the funding support available for the MRC Farquharson Research Scholarships for our faculty for 1989/90, compared to other faculties of dentistry across Canada (Table I & II), we see that Dalhousie are ranked at the bottom along with Saskatchewan and Laval.

**TABLE I**

<b>MRC Funding(%)1988/89</b>		
	<u>E.Scholarship</u>	<u>/Grants</u>
Toronto	21	32.6
B.C.	13	14.1
Montreal	11	7.9
Alberta	9.6	9.3
Manitoba	9.6	15.3
Weston	9.6	zero
McGill	8.4	2.9
Dalhousie	5.7	8.1
Laval	5.7	8.4
Saskat	5.7	1.2

**TABLE II**

<b>1988/89 MRC Ranking</b>		
	<u>E.Scholarship</u>	<u>/ Grants</u>
Toronto	1	1
British Columbia	2	3
Montreal	3	7
Alberta	4	4
Manitoba	4	2
Weston Ontario	4	10
McGill	7	8
Dalhousie	8	6
Laval	8	5
Saskatchewan	8	9

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### MRC Farquharson Research Scholarships

If we consider the MRC Operating and Programme grant funding for the years 1988/89 also shown in Tables I and II on page 3, Laval and Dalhousie are ranked 5th and 6th respectively ahead of Montreal, McGill, Saskatchewan and Weston Ontario. From this data it is not clear what criteria MRC are using to calculate the level of funding for the Farquharson Research Scholarships. Clearly the number of Research Scholarships at Dalhousie University do not reflect the level of our research funding from MRC, the numbers of undergraduate students involved or indeed the level of dedication enthusiasm and research productivity currently being demonstrated at the Faculty of Dentistry in Dalhousie University. We believe that increased funding should be made available for the Farquharson Research Scholarships at both Dalhousie and at the University of Laval.

We hope very sincerely that MRC will be able to review our request for consideration of additional funding for the 1989/90 year, we believe that additional funding at this time in the evolution of our research programmes at Dalhousie will make a significant contribution

to Medical research productivity not only at Dalhousie but in Canada and will result in stimulation of more of our young undergraduates to choose dental or medical research as their future career.

A further consideration for the MRC Farquharson Research Scholarship committee would be to review the stipulation of limiting the awards to the top 20% of the class, this can be a handicap for the more senior students in the programme who are involved in a higher proportion of clinical work and much less didactic academic activities. Very often under these circumstances the students who are the best research material do not always qualify. We have suggested to MRC that it might be possible to make the awards to students ranked in the top 33% or even the top 50% of the class.

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*SMILE*

What's the difference between a fatal car crash and a fatal hard disc crash? After your hard disc crashes you know you're dead. Have you backed up your data lately?

## 1990 IADR PAPERS BY SUBJECT

The distribution of papers for the 1990 IADR meeting in Cincinnati by subject is shown in the table below. The largest sections are as usual Dental Materials and Periodontal Research with 17.3 and 14.3% of the programme respectively. Microbiology/Immunology is the next highest with 8.3%.

<u>SUBJECT</u>	<u>%</u>
Behavioral Science.	5.7
Cariology	5.4
Craniofacial Biology	6.5
Dental Materials	17.3
Diagnostic Systems	2.2
Experimental Pathology	4.4
Geriatric Oral Research	2.1
Implantology Research	3.6
Micro/Immunology	8.3
Mineralized Tissue	6.1
Neuroscience/TMJ	4.5
Oral & Maxillofacial	1.1
Periodontal Research	14.3
Pharmacol. Therap. Tox.	4.9
Prosthodontics Research	6.6
Pulp Biology	2.9
Salivary Research	4.2

If you would like to compare the distribution of papers in the various subject areas with past meetings you can consult the back issues of the Dental research News in the Faculty Lounge (Vol II #1 1988, Vol III #4 and Vol III #7, 1989). The IADR meeting in Cincinnati has a total, of 2220 papers, this includes the various invited

symposium papers and Hatton award papers. This compares to the AADR meeting held in March 1989 in San Francisco which only had a total of 1890 papers. However, a further 1266 papers were presented at the meeting in Dublin which gave a combined number of 3,156 for the two meetings. This can be compared with the total of 2,398 for the largest single IADR meeting ever held which was in Montreal in March of 1988. The total number of papers at the IADR/AAADR meetings for the years 1988-90 is 7,739. In 1990 Thirty two papers carrying the name of Dalhousie will be presented for an international audience. It is encouraging to find that our research papers at international meetings are well received and are a credit to Dalhousie University.



- 1) If a research project is not worth doing at all, it is not worth doing well.

### Abstract Number

The number of abstracts presented at the IADR/AADR meetings by Dalhousie faculty, staff and students continues to hold the excellent improvement which commenced in 1986. The graph on the front page shows the number of papers presented each year by Dalhousie at either IADR or AADR meetings. It should be noted that we have not failed to present at least one paper at a meeting since 1975. In the February 1988 issue of Dental Research News it was said that if only we could present at least 15 papers at the IADR/AADR meetings in 1989, we would bring our total of papers presented at these international meetings during a period of 19 years to 100. We far exceeded the target bringing our total to 112 for the 1972- 1989 period and now with 144 in 1990 we are rapidly approaching the next target of 150. The average for the past 20 years is now over 7 papers per year.

However, what is most encouraging is the fact that we have averaged 21 papers a year for the past five years. A further impressive statistic is that 105 (71%) of the papers given in the past twenty years have been given during the past five years.

This is a record which many Faculties of Dentistry in the world would be proud of.

A further exciting aspect of the statistics is the record number of educational research papers which are also being presented at the AADS meetings. In the year 1990 our faculty will have presented a total of 35 research papers at both IADR and AADS meetings. We should also not forget that other papers are also being given at other international meetings.



- 2) If you do enough research it will tend to support your theory.

### "RESEARCH NEWS ITEMS"

Do you have any research news which you would like to share with your colleagues?. If so, please forward such items to the Research Development Office. It would help if submissions were produced on a (Macintosh) disc in Microsoft Word, or simply call 1675.

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### Writer's Syndrome

A unique occurrence took place in the Faculty of Dentistry during January. One of our faculty members had 7 research articles published during one working week. The following 7 articles 5 in refereed journals and 2 invited chapters in major books appeared over a 5 day period, at least one per day from January 22nd to January 26th 1990. Wow!

1. Cohen MM Jr, Kreiborg S: The central nervous system in the Apert syndrome, American Journal of Medical Genetics, 35:36-45, 1990.
2. Cohen MM Jr: Syndromology: An updated conceptual overview. Part V. Aspects of aneuploidy, International Journal of Oral and Maxillofacial Surgery, 18:33-338, 1989.
3. Cohen MM Jr: Agenesis of the corpus callosum and limbic malformations revisited, Archives of Neurology, 46:1270, 1989.
4. Cohen MM Jr.: Anomalies, syndromes, and dysmorphic growth and development, in DH Enlow, Facial Growth, Third Edition, Saunders Co., Philadelphia, 1990, Chapter 13, pp. 331-345.
5. Cohen MM Jr: Syndromology: An updated conceptual overview. Part VI. Molecular and biochemical aspects of dysmorphology, International Journal of Oral and Maxillofacial Surgery, 18:339-346, 1989.
6. Gorlin RJ, Cohen MM Jr: Craniofacial manifestations of Ehlers-Danlos syndromes, cutis laxa syndromes, and cutis laxa-like syndromes, Birth Defects Original Article Series, 25(4):39-71, 1990.
7. Cohen MM Jr: Dysmorphology, syndromology and genetics, in Plastic Surgery, Volume 1: General Principles, J.G. McCarthy, Ed., Saunders, Philadelphia, 1990, Chapter 2, pp. 69-112.

Well done Michael, but what have you done this month?

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**Forefront of Knowledge**  
"Researchers making the national and international scene are teaching students, (bringing) them much closer to the forefront of knowledge."  
Gudrun Curri, Dalhousie University, Registrar.

The brief summary of the following three papers on pages 7, 8 and 9 dealing with **Educational Research** are being presented by faculty members at the AADS meeting in Cincinnati in March 1990.

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**Test Predictors of Student Performance**

D.V. Chaytor, H. J Murphy  
Disembedding visual information such as irregular patterns in radiographs and interpreting three-dimensional negative images such as impressions are important procedures in dentistry. Knowledge of visual perceptual ability could prove helpful in admissions decisions and in identifying students who might benefit from assistance. The importance of the latter increases as applicant pools decline.

This project explored visual perception as a factor in selected course grades and grade point averages. Two tests were employed along with the students' Dental Aptitude Test results. These were a test for the cognitive style field dependence/ independence, requiring identification of simple geometric shapes within complex figures and an impression/die matching test which is a three-dimensional

test requiring matching negative and positive dental objects. Subjects were 145 volunteers (57 females, 88 males), from five D.D.S. classes at one university. Grades from 36 courses and 8 grade point averages were included in this ongoing study. Initial analysis found significant correlations between the tests and courses. Courses significantly correlated with one or more of the tests. Results for first-year operative dentistry were typical of the pattern seen in all four years even though this course had the highest correlation coefficients.

These findings are based on a small population selected from an applicant pool that has remained strong. However, the results tend to support the hypothesis that visual perceptual ability is an important factor in dental student performance. Further, the results suggest there is merit in data gathering and analysis employing these tests. This research should prove fruitful, in admissions and counseling decisions.



*SMILE*

**Research Definition**

"A successful research grant application" is an outline of research which has already been completed.



## Students' Clinical Treatment Management Skills

B. S. Graham, H. J. Murphy. will present a paper at the AADS meeting dealing with assessing students' clinical treatment management skills.

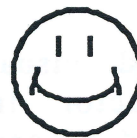
For ten years, clinical dental educators in the Faculty of Dentistry at Dalhousie University have used a criterion-referenced clinical treatment outcome evaluation system. While this system has made it possible for clinical instructors to reliably assess a student's patient treatment outcomes, it has not facilitated the evaluation of a student's capability to manage the process of clinical treatment.

A managements skills assessment checklist has been used it to facilitate student-instructor dialogue about the student's capability to effectively manage the process of clinical and preclinical treatment procedures. In 1987, Graham slightly modified this instrument and used it at Dalhousie in a pilot project involving dental students and their instructors in one preclinical and one clinical course.

Two data forms were used for evaluation, one was printed with two cover sheets to protect the confidentiality of

the forms and evaluators. The second form allowed the module instructor to see how the students graded themselves and allowed the final instructor to see the evaluations of the students and of the module instructor. Students alternated the forms used throughout the course. Correlation between final instructors relative to traditional glance-and-grade evaluations were relatively weak, indicating that problems exist with traditional grading by different instructors.

In conclusion, since interrater reliability is relatively weak using the traditional glance-and-grade system, a more objective system is needed. The format used in this study provides one example utilizing specific criteria and their relative importance.



*SMILE*

### Research Definitions

"An abstract submitted to a meeting" is an outline for a proposed research project.

"The specimens were pre-stressed" means that the specimens were accidentally dropped on the floor prior to testing.

## Canadian Students in US Programs

M.E. Kinnear and M.G.E. Forgay will present a paper at the AADS meeting evaluating the enrollment of Canadian Students in US Hygiene programs.

Dental hygiene programs in the U.S. have been faced in recent years with a declining applicant pool. This is not true in Canada, where eligible applicants frequently outnumber available positions by as much as a 10:1 ratio. In recent years, US dental schools have admitted increasing numbers of Canadian applicants, a trend that has been well documented. No such documentation exists for dental hygiene programs, but anecdotal information indicates that Canadians wishing to become dental hygienists are enrolling in the U.S.

A survey of all accredited U.S. dental hygiene programs was undertaken in 1989 to determine the extent and distribution, provincial origin, and academic performance levels of Canadian dental hygiene students. Individual Canadian students within each program were surveyed to determine demographic characteristics, reasons for attending programs in the United States, and plans for employment after graduation.

The phenomenon of Canadians enrolling in American dental hygiene programs may prove to be symbiotic, enabling Canadians to fulfil career aspirations and enabling dental hygiene programs to fill their classes with well-qualified applicants.

Although the number of respondents is too small to infer statistical significance, the results of this pilot survey suggest that some differences exist in the way students perceive their first postgraduate year. The programs appear to be meeting some of the goals set for them by the ADA, as indicated by the residents' assessment of their abilities to handle medically compromised patients and oral lesions. Further research will focus on attitudes and perceptions of future graduates, to increase the sample size and provide statistical support for these preliminary data.

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### Firm Knowledge

"The standard of firm knowledge is not one extremely significant result, but repeated results of statistical significance."

R. A. Fisher.

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### Faculty Members in Demand

Dr. Michael Cohen has been invited by the Department of Orthodontics at the Faculty of Dentistry, University of Michigan to Deliver their 6th Jarabak Lecture in June of 1990.

Derek Jones has been invited by the University of British Columbia Faculty of Dentistry as an MRC Visiting Professor during March 1990.

#### What is a Scientific Paper.

"An acceptable primary scientific publication must be the first disclosure containing sufficient information to enable peers (1) to assess observations, (2) to repeat experiments and (3) to evaluate intellectual processes; moreover, it must be sensible to sensory perception, essentially permanent, available to the scientific community without restriction, and available for regular screening by one or more of the major recognized secondary services".

Council of Biology Editors.

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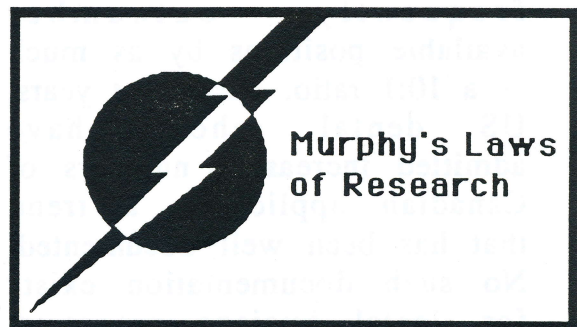
#### Testing Models of Historical Discovery

"The frequent occurrence of alternative accounts of the same data suggests an important requirement on computational models of the discovery process: Such models should be able to arrive at plausible laws or explanations

even if these were ultimately rejected in favour of others. The ability to reconstruct different and even competing frameworks, especially ones that persisted over long periods, is an important test of the historical and psychological adequacy of a theory of discovery."

Pat Langley et al

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- 3) If the facts do not conform to the theory, they must be disposed of.

#### Corollaries:

- a) The bigger the theory the better.
- b) The experiment may be considered a success if no more than 50% of the observed measurements must be discarded to obtain a correspondence with the theory.
- 4) You do not require statistics to prove that dental research kills rats.