

Dental

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Research News

Research Development Office, (902) 494-1675

Happy New Year

VOLUME VI, NUMBER 1.

The year 1992 is an important year as a preparation for 1993. Two major celebrations are set for 1993. First we will celebrate 25 years since our first abstract was presented at the IADR. Secondly we will celebrate the presentation of our 200th research abstract at the Chicago IADR meeting.

Achievement of Goals

"We have accumulated a considerable corpus of basic science provided to us by earlier generations of scientists upon which our technology draws for development. Not a day passes but that some element of basic science is extracted from the literature and applied to some problem which demands solution. Basic science, in a sense, is the ammunition which we use to fire on targets when targets are selected. The larger the reservoir of basic science information, the greater is the likelihood that targeted research will succeed and that goals can be achieved."

De Witt Stetten, Jr.

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Justified Research Activity

"no research activity need be justified by its probable contribution to comfort, convenience, or profit."

Tyrus Hillway

Derek W. Jones

Assistant Dean

TRIVIA QUESTIONS

- 1) Who gave the very first IADR paper in the history of our Dental Faculty?
- 2) Who gave the 50th paper at the IADR for our Faculty?
- 3) Who gave the 100th paper for our Faculty at the IADR?
- 4) Who gave the 150th paper for our Faculty at the IADR?

The Answers to these intriguing and very probing historical questions are to be found on pages 7, 8 & 9.

The Lunch Time Series of Research Presentations

is being held on
Wednesdays 12:30 to 1:30.

Most of these sessions will be held in Room #5236, However, some may be held in the Faculty Lounge. Look out for the announcement of topics posted on the Research Notice Board.

Competitiveness

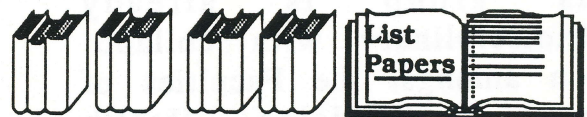
Four reports of the National Advisory Board on Science and Technology (NABST) have been forwarded to the Prime Minister during the past six months. These reports stress the importance of Canadian international competitiveness. The implications of these recommendations should not be overlooked in the context of the current discussions taking place between TUNS and Dalhousie. The Nova Scotian government is keen to see innovative cooperative developments between our Universities. In times of constraint we should see this as an opportunity not as a threat. If we are to develop centres of excellence with a critical mass of intellectual capability we have no option but to develop innovative enterprises which build on our strength. In the Faculty of Dentistry we believe that our excellence in the field of Biomaterials could be further strengthened by additional collaborative efforts. Our Biomaterials group is already multidisciplinary with collaboration amongst the Faculties of Dentistry, Medicine, Health Professions, Science and with Physics at St. FX. We also have a history of collaboration with TUNS, having graduated two PhD's jointly in the past four years. The Prime Minister stated in 1989 "Our goal is an economy that can compete with the best in the world, producing

stimulating new jobs and new opportunities for future generations of Canadians. Science and technology are the keys to a modern competitive economy." The the Business Council of Canada said "We need a new intellectual foundation for our economic future, fresh ways of thinking, and a solid consensus upon which to build. What really is at stake is whether or not we will remain among the leading economic powers in a fast-changing world." One of the important recommendations in the report on Human Resource Development dealt with the question of research funding from the federal agencies. This stated - "Funding for the three federal Granting Councils should be doubled in order to expand the Canadian stock of competitive, talented, and renowned graduates. The increased funding would build concentrations of world-class research capability in key subject areas, enabling certain Canadian universities to attain world class status through differentiation and specialization. Most of the increase in funding should be devoted to the development and implementation of strategic plans proposed by universities to develop their chosen priorities in research." These reports and recommendations from NABST give us encouragement as we look to the closer collaboration and ties with colleagues at Dalhousie as well as at TUNS.

New Years Resolution

The Dental Research News is a monthly publication which is intended to provide news relating to the research and scholarly activities of the Faculty of Dentistry. The Dental Research News has been published continuously since September 1987. A total of 431 pages of research information were documented between the first edition up to this January 1992 edition. What will be in the next 431 pages? it is up to you. Dental Faculty members are encouraged to provide details for publication in the DRN. Such information may be about a new research project which you have started, news of one of your publications in the dental scientific literature. It may involve a report of your summer research project, or details of an abstract submitted to a meeting. The Dental Research News provides you with the opportunity to inform your colleagues in the Dental Faculty about your research accomplishments. You should note that the DRN is also disseminated to the broader Dalhousie community. Copies of the DRN are displayed prominently in the Health Sciences Library and back copies are also available on the library shelves. The DRN thus provides a useful communication to the Dalhousie University community about your research activities and accomplishments. Contribu-

tions to the DRN should preferably be forwarded on a Macintosh disc. The documentation of our research progress with details of abstracts, research grant awards etc. provides our Faculty with a very useful research record for future reference. The February 1992 publication of the Dental research News should be our 50th issue and will celebrate 4 years and five months since the first Research News was published in September 1987. Folders containing all of the published past editions of the Dental Research News from 1987 are available in the Faculty Lounge for your use and convenience. Please do not remove any copies or folders from the Faculty Lounge. Make a new year resolution to have your name recorded for posterity as a contributor to the rapidly developing research history of The Faculty of Dentistry, and don't forget to have it recorded in the pages of the Dental Research News.



Dalhousie Dental Research 1987-91

The Total Picture

"It is necessary to leave the laboratory periodically to look at the total picture of research. And that is what IADR is all about." *Gordon H. Rovelstad*
Presidential Address IADR 48th General Session 1970.

**Double Celebration set for
1993?**

1993 will be a very special year for our Faculty. It will represent 25 years since the first Dalhousie paper was presented at an IADR meeting and will almost certainly be the year in which we present our 200th paper at an IADR/AADR meeting. In documenting the number of papers presented at the IADR/AADR meetings it should also be recognized that this is not taking into account the many excellent papers presented at other scientific meetings by our faculty members, however, statistics on these other papers are not so readily available. 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 table 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. The record number of 32 papers presented at the 1990 meeting has helped to push our grand total to 165. The combined total for the 1992 meetings in Boston and Glasgow may well put the total in the 190's. The 1993 IADR/AADR meeting to be held in Chicago will almost certainly be a landmark in the history of Dalhousie University. It will

represent the 25th year of our Faculty presenting papers at the IADR/AADR meetings. This is cause enough itself for a celebration, however, it will almost certainly represent the achievement of the presentation of the 200th paper by a member of our Faculty. The Chicago meeting will thus provide us with a double celebration. Who will be the lucky person randomly sequenced in the IADR programme who will have the honour of presenting our 200th paper on our 25th anniversary?

**Dalhousie IADR/AADR
Abstracts**

1968.....1	1981....3
1969.....1	1982....5
1970.....1	1983....3
1971.....2	1984....2
1972.....3	1985....1
1973....4	1986....8
1974....0	1987....9
1975....1	1988....28
1976....2	1989....27
1977....2	1990....32
1978....1	1991....17
1979....7	1992....??
1980....5	1993....??(200?)
<u>TOTAL (1968-91) 165</u>	

In looking at the record of our presentation of papers, what is most encouraging is the fact that 104 (63%) of these papers have been given during the period 1988-91. Our average for the four year period is a remarkable 26 papers each year, a record which many Canadian Faculties of Dentistry would be proud of.

An Abstract Question!

The following mystery abstract has been presented at an IADR meeting. See if you can identify the year of presentation and the name of the first author presenting the paper?

"Subcutaneous Tissue Response to Composite Resins in Dogs."

The biological effects of Adaptic (A), Concise (C), Epoxylite HL-72 (E) and ZOE (Z) were studied in subcutaneous tissue for preliminary rating of materials and selection of criteria for comparison of skin and pulp responses. Discs of freshly prepared test materials were implanted subcutaneously while tooth cavities were filled from the same mix. Surgical wounds without implants served as controls (O). After 1, 3 and 6 weeks a minimum of 8 specimens were obtained for each group. A total of 150 coded samples were graded blindly for density, extension and type of inflammatory cells, topography and density of fibroblasts, mast cells and metachromasia of ground substance and capsule thickness. Three zones could be distinguished in all test site: Zone I, next to the implant, was cellular; zone II had fibers parallel to the implant; zone III merged with the dermis. The distribution and intensity of the inflammation and fibroplasia varied with the zone, time and test material. Rating for inflammation in descending order was Z, A, C, E and O at one week, while at 6 weeks C rated above A

and E. Fibroplasia was greatest in Z; A and E followed at a distance. Z was rated markedly more irritant than the composite resins in subcutaneous tissues. Answer on page 6

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Building Blocks

"There are at least as many facets to the realm of research as there are facets to a crystal of rare rock. Surely the building blocks of new knowledge are fundamental to research. These of course, are depicted in every issue of the Journal of Dental Research as well as in countless others. Motivation and education are also important in locating and preparing the individual and the team for conducting research." Frank J. Orland Editor J.D.R 1968.

Published Papers

A study by a sociology research group at the University of California at San Diego has shown that scientists and medical doctors are more likely to get their first news concerning medical breakthroughs from the newspaper rather than from scientific journals. The findings are published by D. Phillips *et al.* New England Journal of Medicine 17th October 1991.



Biotech Boom

A recent survey by the US Pharmaceutical Manufacturers' Association shows that 132 new biotech drugs are in the last stages of being developed. 21 have completed clinical trials and are awaiting final approval, while a further 111 are currently being tested in human beings. The list of new drugs includes a number of anticancer and anti-AIDS agents. The FDA however, is not well equipped to deal with the large volume of work, one estimate suggests that a further 100 to 180 scientists are required to cope with the work load.

Abstract Answer!

The mystery abstract in question on page 5 was presented at the IADR meeting in Las Vegas in 1972 by Dr. Barbara Harsanyi, her Dalhousie coauthors were A. P. Angelopoulos and J. M. Gourley. The total number of papers at the 1972 IADR meeting was 951.

It should be noted that a follow up-paper was presented in 1973 at the IADR meeting in Washington D. C. by Barbara Harsanyi. This paper presented results which compared the discrepancies between pulpal and subcutaneous response with respect to the ranking of the same restorative materials. The discrepancies were said to be related to bacterial effects. Incidentally a total of 890 papers were presented at this 1973 IADR meeting.

Inquisitive

You can tell a man there are 270,678,934,341 stars in the universe and he'll believe you. But if the sign says "Fresh Paint" that same man has to make a personal investigation.

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None So Blind

"How many persons saw the spark caused by the discharge of a Leyden jar without perceiving its similarity to lightning prior to Benjamin Franklin? How many persons observed that many bacteria would not grow on agar plates that were contaminated with molds prior to Fleming. How many people watched a swinging pendulum and failed to perceive, as Galileo perceived, that the period was substantially constant and independent of the amplitude? How frequently did the poet associate beauty with the milkmaid before Jenner pointed out that this beauty was merely the absence of prior smallpox which in turn correlated with the occurrence of cowpox among milkmaids?

De Witt Stetten, Jr.

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Sole Reason to Celebrate?

"We in Canada have a focus on the arts, but somehow or other we never celebrate science."

Michael Sole.

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As we look to 1993 and make our preparations for submitting abstracts in October 1992 for the IADR 1993 March meeting in Chicago; we should note the words of wisdom of Michael Sole.

Answer to Trivia Quiz?

The Search for the First

In the first attempt at tracking down the first paper given by a Dalhousie Faculty member a search was made of the 1970 IADR meeting in New York. This was not an easy assignment. A number of familiar Dalhousie names were present at that historic meeting. For example a paper was being given by M. Cohen on Tuesday March 17th at 9:30 am. The title of the paper was "Periodontal Disease in a Strain of *Mus musculus* L (Grey Lethal). However, the address of the author was Tufts in Boston, it turns out of course that it was in fact M. M. Cohen senior not junior. So the search for the first paper had to continue. The second familiar name was K. L. Zakariassen who was giving a paper on Thursday March 19th at 10:45 am. The title of the paper was:- The Location of Specialty Dental Health Care Centres and Continuing Dental Education Centers Through an Analysis of Demographic Variables. However, the address of the author was the University of Minnesota, and it turns out that he was only a 4th year dental student. I wonder what ever became of him? The next name to come to light was a young lady Dr. Barbara B. Harsanyi who was giving a paper titled:- The Periodontal Status of Dogs; Correlation of Clinical and Microscopic Features. However, once again disappointment, this

young lady was an Assistant Professor at Meharry Medical College, School of Dentistry, Nashville. The tension and frustration were mounting, would we ever find the very first paper to be given by a Dalhousie Dental Faculty member? Finally, it seemed that we had success, the only paper being given at the 1970 meeting by a Dalhousie University Faculty member was located. This paper carried only a single authors name and thus appeared to leave no doubt as to who was the very first to give an IADR paper carrying the proud name of Dalhousie University. However, having got this far with the investigation a further discussion with Barbara Harsanyi revealed that the first Dalhousie IADR paper may well have been given earlier than 1970. Indeed it was soon revealed that a paper was in fact given at the meeting in 1969. This meeting was held in Houston Texas. This paper was given by Dr. A. P. Angelopoulos at 2:00 pm on Tuesday March 17th Dr. Angelopoulos was Head of the Division of Oral Pathology. The title of the paper was:- "Metachromatic Cells of the Human Gingival Epithelium: Mast Cells or Melanocytes?" However, this is not the end of the story, since a further search has revealed that a paper was given at the 1968 IADR meeting. (see page 8 for the answer)

ANSWER TO FIRST PART OF THE QUIZ

1) The very first IADR paper given by a member of Dalhousie University Dental Faculty at the 1968 IADR meeting was given by

Dr. A. P. Angelopoulos. However, records were not readily available of the abstracts or programme for this meeting. The volumes for 1967 and 1968 are missing from the library at Dalhousie and a further search at other libraries failed to yield any answers. A further complication to the story was that another Faculty member Dr. S. K. Das who preceded Dr. Angelopoulos as Head of Oral Pathology did present two papers at the 1967 meeting. However, while the records indicate that Dr. Das left Dalhousie prior to this date, it was possible that he may have submitted the abstracts while still a Faculty member and thus they may have carried Dalhousie's name. The final solution to the mystery was solved with the aid of the IADR Central Office who were able to provide photocopies of the relevant information for the 1967-68 meetings. The result was that Dr. Das did not present papers in 1967 which carried Dalhousie's name and Dr. Angelopoulos presented his paper at 9:00 am on Saturday March 23rd 1968. The title of this paper was "The Role of Mast Cells in the Pathogenesis of Diphenylhydantoin Gingival

Hyperplasia. -A New Hypothesis." The total number of papers at the meeting was 641, and the official attendance 1904. Now that we know who gave the first paper in 1968; who gave the 50th, 100th and 150th papers? To find out turn to page 9. **Clue!** These papers were given at the 1987 AADR meeting in Chicago, at the 1989 IADR meeting in Dublin and the 1991 Acapulco meeting.

Computer Simulation

David Pink and Jurgen Kreuzer are working with us on the our biomaterials programme to computer model the diffusion of molecules through polymers or tissues and to study the interface at the molecular level between surfaces. It is interesting to note that this new technology was being used as long ago as 1968. On October 10th 1968 Dr. Enrico Clement, a chemist at IBM Research Laboratories (San Jose, California), simulated a chemical reaction by visual display on a computer. The simulation showed that ammonium chloride, should exist in the form of a gas, although it had hitherto only been known to exist in the solid form. An independent laboratory study later confirmed the computer prediction to be correct. We estimate that the computerization of some of our chemical phenomena in biomaterials may save us several months or even years of laboratory experimentation.

Further Answers to the Quiz

2) The 50th paper given by a member of our Faculty was in Chicago at the 1987 AADR meeting. The paper was given on Thursday March 11th by Elliott J. Sutow. The title of the paper was "Crevice Corrosion Products of Dental Amalgam," E. J. Sutow*, D. W. Jones., C. G. Owen and G. C. Hall. The total number of research papers given at the Chicago AADR meeting was 2018.

3) Our 100th paper was given by a member of our Faculty in Dublin at the IADR in 1989. The paper was given by Choong Foong. The title of the paper was:- "New Cytotoxicity Test for Phthalate Esters and Other Lipophilic Compounds," R. E. Howell, W. C. Foong*, S. Pyke, D. W. Jones, M. Mezei. The total papers being given at the split meeting (with San Francisco) in Dublin was 1266.

4) The 150th Paper was given at the IADR meeting in Acapulco. The paper was given by Linda DeLorey this was a poster Abstract #1008 given at 11:45 am on Friday 19th April 1991. The title was:-

"Effects of Air Polishing on Various Resin Composite Systems," C. A. Bain, M. E. Mader, L. M. De Lorey*. The all time record total number of papers given at the Acapulco meeting was 2645.

Growth and Development of Research

It took our Faculty 19 years to present the first 50 papers at the IADR/AADR [average for first 19 years 2.63 papers/year]. It took only 2 years to add a further 50 to reach 100 with an average of 25 papers/year for the two year period. Following this it only took a further two years to reach the 150 total with a further average of 25 for the two year period. With our total now standing at 165, the prediction is that it will only take a further 2 years to reach the 200 total at the Chicago meeting in 1993. These statistics clearly demonstrate the dramatic change in our research productivity in the past five years. Linda DeLorey, Choong Foong and Elliott Sutow who had their names on the landmark papers (50th and 100th and 150th) are no doubt keeping fingers crossed for the IADR meetings in 1993 in Chicago as well as the 1995 meeting in Singapore, they would like to have the chance to present either the 200th or the important 250th paper at the IADR for Dalhousie. The sequencing of the unknown number of papers is naturally completely random, this will be the case for both the 200th and 250th papers to be presented by an as yet, unknown member of our Dental Faculty. It could even be you, think about it.

The Right to Know and the Need to Know.

The dental profession and those in academic dentistry should take note of a recent court case. The case involved the medical doctor who was found negligent after one of his patients was infected with the AIDS virus through artificial insemination. In an age of ever changing medical, dental and scientific knowledge it is clear that this precedent-setting court decision can have significant implications for dentistry. Patients have a right to know and the dental profession have a need to know. Dentists may be found guilty for failing to use the most up to date treatments. They may be found negligent for not understanding the potential drug-interaction which can be a problem with patients on long-term medication. They may be negligent for using a nickel containing alloy for a patient who has a strong sensitivity to nickel. They may be found negligent for failing to be knowledgeable enough to explain to their patients the limitations and properties possessed by the biomaterials they place into patients mouths. The implication for the Dental Faculty member is that we will be required to understand the cutting edge of the body of knowledge for which we are the guardians. The further implication is that the Faculty of Dentistry has to be the resource for the dental

profession and be in a position to provide continuing education and advanced graduate education for dental practitioners. The necessary knowledge can only come from research. It is clear that in the not to distant future there will be a call for compulsory continuing education. Such education must be based upon sound scientifically validated knowledge. The dental profession have a difficult job to keep abreast of the latest developments simply because there are so many advances. There has been literally an avalanche of new scientific information which has implications for the day-to-day practice of dentistry. Clearly the dental profession will likely be faced with compulsory continuing education to update them. It also follows that Faculties of Dentistry will face the prospect of having to ensure that they are involved in scholarly and research activities which keep them at the cutting edge.

Verification

"The story of scientific progress reaches its periodic climaxes at the moments of discovery; verification is the essential but not very glamorous aftermath - the sorting out of facts that comes after the tale's denouement and tells us that matters worked out all right."

Pat Langley *et al.*

**Faculty of Dentistry
Wednesday Lunch Time
Seminars.**

Lunch time seminars have been planned for the coming months. These will be held in the Faculty lounge or in room#5236 on Wednesdays from 12.30 to 1:30 pm. The exception being the Dry Run session for the AADR papers which is 5:30 - 9:0 pm. The following times and dates are subject to change, look out for details and the location on the Research Development Notice Board. All faculty, staff and students are invited to attend.

Wednesday January 22nd
Potential for Development of Site Directed Drugs from a Knowledge of the Biochemistry of Plaque Bacteria.
Haroun Shah.

Wednesday January 29th,
"Dental Caries in Nova Scotian Children: Implications for Dental Education."
Amid Ismail.

Wednesday February 5th,
"Research with Lasers."
Barry Paton, Ken Zakariasen and Joey Barron.

Wednesday February 12th,
Subcutaneous Tissue Reaction to Dental Soft Polymers.
Barbara Harsanyi

Wednesday 19th February, The Impact of Recent Developments in Molecular Biology to the Field of Oral Microbiology.
Saheer Gharbia

Friday 6th March, 5:30-9:00 pm,
Dry Run of AADR Papers.

Wednesday 18th March,
Review of Some Papers at the AADR Meeting.

Wednesday 25th March, "Dental Applications of Biomechanics."
Jim Johnson

Wednesday 8th April, "Drug Release from Biomaterials."
Choong Foong

Wednesday 15th April,
"Synthesis of Glass Biomaterials."
Amin Rizkalla

Wednesday 22nd April,
"Development of New Composite Materials"
Derek Jones

In addition a series of **Brown Bag LUNCH TIME Discussion** sessions, will be held from time to time. The dates and location of these sessions will be posted on the Faculty RDO Notice Board.

Topics

"Human Ethics in Research"

"Animal Protocols for Research"

"The Private Sector and University Research"

"Research, the Driving Force for the Curriculum"

"A Ten Year Plan for Faculty Research"

Further suggestions for additional topics will be welcomed.

Scholarly Activity

".....as a profession and as a faculty in a university environment, obligations exist to educate clinicians, and to generate new knowledge which invariably involves some type of research."

Dennis Gilboe