

MAY 1988

Dalhousie University

Dental



Research News

Research Development Office
Faculty of Dentistry,
(902)424-2545

\$9 Million for Advanced Materials.

The establishment of the Advanced Materials Centre (AMEC) in Halifax is good news for the Division of Dental Biomaterials Science. Derek Jones who is also an Adjunct Professor in Engineering Physics at TUNS believes that it will open up important opportunities for materials research.

The centre was unveiled by Stewart McInnes Minister for Public Works Canada and Department of Supply and Services and Housing and Premier John Buchanan on Friday 29th April. The centre is due to open in September 1988. Stewart McInnes described it as "an important milestone for the region and for our strategy to become a world player in the field of advanced materials"

The centre will receive \$4.5 million for equipment and operating expenses from the Department of Regional Industrial Expansion and a further \$1 million from the ACOA programme. In addition the provincial government will be making a loan of \$1.5 million through the Nova Scotia Business Capital Corporation. A further \$2 million will be contributed from the industrial sector by the Grumman Aerospace Corporation and a new Nova Scotia Company General Composite Technology Ltd. The technical research and engineering expertise of the Technical University of Nova Scotia makes up the high-tech centre.

Premier Buchanan said that "Nova Scotia is entering a new age of technology on the ground floor". TUNS president Clair Callaghan said "The new centre will be vital to the future development of high technology industries in the Atlantic region. Stewart McInnes said that "By combining public and private sector resources with the expertise currently available within TUNS we can create a first rate establishment for the application of new materials".

The current plans at Dalhousie and TUNS to put forward an application for a "Canadian Centre of Excellence in Materials" under the programme announced by the federal government is in no way in conflict with the development of AMEC since the objectives are very different. In fact the TUNS-Grumman development which is arms length from the university will provide an excellent compliment to the activities of the proposed University based advanced materials centre and will significantly strengthen the argument in favour of an Atlantic initiative for a university based materials research centre of excellence.
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"It's a Matter of Time"

The validity of one minute topical fluoride applications was the subject of Melinda Ferguson's table clinic presentation last February. Melinda a second year Dental Hygiene student won first prize with the same presentation in the table clinic competition at the Student American Dental Hygienists' Association meeting in Boston (April 8-10th 1988). Congratulations Melinda on a fine effort.
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TRADITION and PRACTICE

"The confines of scientific subjects are seldom if ever defined by strict logical statements, but come to be recognized more or less imperceptibly by tradition and practice"

Sir Cyril Hinshelwood FRS.
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OSTOM

History has placed France among the major world powers, and its present-day international influence is certainly not limited to fashion, perfume and haute cuisine. Among its modern economic activities, scientific research plays an essential role. In the 1940's, France created a unique research instrument: the French Institute for Cooperative Scientific Development Research (ORSTOM). It is present in thirty-two countries throughout Africa, Latin America, the Caribbean and Asia, as well as in six French departments and territories.

The prosperity of any country depends on its ability to make optimal use of its natural resources, to manage its environment efficiently so that its potential is not squandered and to combat natural disasters that threaten development in many areas of the world. These conditions are indispensable to economic expansion and are based on a thorough understanding of individual regions, available techniques and local populations. Japan's present prosperity proves that even countries with little natural wealth can succeed if they know how to approach their problems.

In 1987 more than two billion francs (about 0.4 billion Canadian dollars) was spent on cooperative development research; in absolute spending volume, this sum places France second in the world. With a budget of 787 million francs for 1988. ORSTOM plays an important part in this effort, which also involves the Center for International Cooperation in Agronomic Development Research (CIRAD), and the Pasteur Institutes overseas and non-specialized agencies for development such as the National Center for Research, the National Institute for Agronomical Research and the National Health and Medical Research Institute. A total of 5,000 researchers, engineers, technicians and administrators participate in these programmes. (Notes from "Atlas" Air France in flight magazine.)

Chemistry Fall Short of Dental Record.

President Howard Clark is listed amongst the authors/presenters of research papers being given at the 3rd Chemical Congress of North America in Toronto in June. A total of 33 research paper will be presented resulting from research in the Chemistry department, Trace analysis Research Centre and the College of Pharmacy. However, it should be pointed out to our colleagues in chemistry, that even with the efforts of our president to help them they have failed to reach the total of 37 papers presented by the Faculty of Dentistry at our IADR AADS meetings in Montreal last March.

RESEARCH SPACE ALLOCATIONS

Requests for research space has been received from 14 individuals or groups. Ten individuals have so far been allocated research space. A further four cases will be reviewed pending further information.

TESTING FOR TOXIC AGENTS

A review paper on the testing for toxic agents by Nelson (Envir. Health. Perspec. 75:97-103,1987) raises a number of questions, what agents should we test and how should we go about testing them. Rapid advances in molecular biology have significantly strengthened our ability to trace the action of chemicals in the body from exposure to disease. However, what is quite startling is the fact that out of a total of some 65,725 chemicals used in pesticides, cosmetics, drugs, food additives, and general commercial chemicals a mere 1.67% have a complete health hazard assessment. A staggering 70% of these chemicals have no toxicity information available. Our biocompatibility testing of a range of esters used as plasticizers in commercial dental soft polymer materials is only the tip of the iceberg.

"SCHOLARSHIP"

"Scholarly publication and university teaching are the two academic roles basically adversarial or complementary? It has long been popular to decry formidable even oppressive-pressure to publish in post secondary institutions. Even though scholarly publication is widely accepted as an indicator of an individual's contributions to the discipline and the quality of an institution's graduate programme, over-emphasis on research and writing is often blamed for persistent problems in Academe.[However], it can be argued that writing exerts a positive influence on college and university teaching... Recent research on the dimensions of scholarship,[for example] supports a teaching-writing connection. The essence of scholarship, according to both faculty and administrators, is "engagement with the novel" Creativity undoubtedly contributes to the success of both teaching and publishing; so do other variables such as an individual faculty member's mastery of the subject, habits, and self discipline.... In this perspective, those who produce knowledge attain the highest level in both teaching and writing. They function as self-actualized individuals who do not require supervision, and who have sufficient self-esteem to permit them to make their ideas public to a potentially ego-threatening world-the world of peer review. [Also], faculty members do not write to reach only the students or colleagues within sound of their own voices. Through publication, the scholar-teacher's influence extends beyond the confines of a classroom, to students in other classes and other institutions, and potentially to everywhere with a bookstore or library". Mary Renck Jalongo, Indiana U. of Pennsylvania. in "Scholarly Publishing" 19(1) :49-58 1987.

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Farewell and Good-bye to the Mouse

Siemens AG has developed a technique which permits a scanning camera to enter rough drawings into a computer-aided-design system. A rough sketch of a diagram, drawn by hand without attention to detail, can be reduced to its symbolic elements. Hand printed block letters and figures can also be machine read. The Siemens technique would replace keyboards, mice and digitizing pads as input devices for computer graphics.

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A Romantic Calling or a Sober Enterprise.

"Outsiders often regard science as a sober enterprise, but we who are inside see it as the most romantic of all callings. Both views are right. The romance, adheres to the process of scientific discovery, the sobriety to the responsibility for verification" Langley et al.

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VARNISH MAY BANISH TOOTH DECAY

Dr.Jim Sandham and colleagues at the University of Toronto have developed a varnish for teeth which may protect against Streptococcus mutans. The varnish called Chlorzoin, kills Strep mutans but does not affect the beneficial bacteria in the mouth. The transparent varnish contains chlorhexidine acetate and Sumatra benzoin. The varnish falls off after about five days.

A total of 33 adult volunteers have received up to four applications of the varnish. Twenty-one of the 33 subjects completed the treatment with no Strep mutans detectable in their saliva. A total of twelve individuals have now been free of the bacteria for more than six months.

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The Nature of Things.

Our early ancestors contemplated various objects and phenomena around them and endeavored to make sense of what they observed, they tried to make useful and logical statements about what they saw. Primitive man would have become aware of the plastic properties of mud and clay and would have discovered, no doubt by accident, that moulded shapes baked in a fire became hard. The Greek word "Keramos", in fact, means pottery or "burnt stuff".

Fire has been known to man for about 400,000 years: at some time during this period the first "burnt stuff" would have been accidentally produced. Ceramics were probably the first materials to be artificially made by humans, and porcelain was among the first materials to be the subject of early laboratory research by scientists. From the first simple, crude applications of mud and clay of up to 30,000 years ago and the production of household vessels 6000 to 7000 years ago, man's (and woman's) skill and wider use of ceramic materials has steadily increased, taking us from the stone age to the twentieth-century space age.

Our early ancestors no doubt would have made statements which they considered illuminating when they related unknown things to that which was already known. They would have observed green leaves turn yellow and red in the fall, wood was found to burn, metals were found to corrode. Aristotle made note of the fact that the offspring of goats look like goats and the offspring of humans look like humans, not goats.

The most important research tools are the same today as they were in Aristotles' time, or at the time when ceramics were first produced by primitive man, "observation of the phenomena around us and our endeavor to make useful statements about what we see".

The scientific revolution of the 17th century changed physics chemistry and biology, however, the real revolution in biology did not occur until the middle of the 19th century with the discovery by Darwin of natural selection and Mendels investigations into the mechanisms of inheritance.

As scientists we have also inherited a significant body of knowledge which we can use to compare with the observations of phenomena around us. Eden Phillpots once said "The universe is full of magical things patiently waiting for our wits to get sharper". We can all make useful statements about what we see, which can be the legacy we hand on to the future generations. As Sir Isaac Newton once said "If I have been able to see further than others, it was because I stood on the shoulders of giants"

We live in a world that is increasingly influenced by developments in science and technology. In the past 25 years whole new fields of science and whole new technologies have come of age. Examples can be seen in bio-engineering, molecular biology, space technology, and computers. Dental science cannot live in isolation from such changes. For example most of the drugs now in use in the treatment of disease had not been invented 40 years ago

In our biomaterials laboratory we are synthesizing ceramic materials using wet chemistry methods. What would primitive ma think about our "burnt stuff". How far hav we come in our understanding of the nature of things in the past 30,000 years?.

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Do you have any "RESEARCH NEWS ITEMS" which you would like to share with your colleagues?. If so, please forward such items to the Research Development Office, or call 2545.

"CLINICAL SCIENTISTS"

A draft report has just been produced by the "MRC Royal College Task Force on Clinical Scientists" under the Chairmanship of Dr. Philip Gold of McGill University. This task force specifically deals with medical clinical scientists not dental. However, it is of particular interest to the dental university community since we plan to put forward the dental viewpoint which would call for a similar programme for the faculties of dentistry.

The aims of the task force were to "Develop recommendations on the steps needed to ensure a high level of research by clinical scientists in Canadian faculties of medicine and their affiliated teaching hospitals and research institutions" The task force pointed out that it has restricted it's consideration of clinician scientists to those who are physicians or surgeons. It was recommended that MRC consult immediately with other health professions to determine how programmes such as those proposed should be adapted to their needs. The Deans of the faculties of Dentistry and the CADR are aiming to produce a response to the recommendations in terms of dentistry. Individuals wishing to have input at Dalhousie are requested to contact the Research Development Office.

The task force report essentially proposes three programmes.

1) The MRC Clinician Scientist Studentship.
This is proposed as an expansion of the existing Farquharson Research Scholarships. The proposal is to enhance the award, both in terms of numbers and individual value, to schools which meet the requirements of the new programme. The intent is to allow interested students the opportunity to work in an active research environment for sufficient time to contribute to the research, and to help them to pursue a clinician scientist career. Research environments suitable for the programme will be selected on the basis of the quality of the research underway, and the quality of the exposure to research provided for summer or other part-time research students and activity of the surrounding research environment. A list of suitable laboratories will be produced

and updated annually as experience is obtained in running the programme.

2) MRC Clinician Scientist Fellowship

This proposed programme is designed to add to the existing MRC programmes. It combines aspects of both the Fellowship and Centennial Fellowship programmes. The intent is to offer clinicians undertaking and expected to complete their specialty clinical training an opportunity to obtain extensive research training and help to establish their academic clinician scientist position.

The MRC Clinician Scientist Fellowships are to be offered to highly qualified and motivated clinicians having strong potential as clinical scientists. At the time of application they should have completed specialist clinical training and should intend to undertake, research training leading to a PhD. Salary support could be obtained for up to 5 years.

3) MRC Clinician Scientist Scholarship.

This programme is intended to afford the clinician scientist the opportunity on completion of research and specialty clinical training to develop and demonstrate the ability to pursue a career as a clinician scientist respected both by clinical and research peers. The award would be for three years, renewable once on evidence of satisfactory progress.

The task force recognized the need for the new programme to contain the mechanisms for evaluation of applicants to the programme, as well as the need to evaluate the programme to ensure that it fulfills its mandate and objectives. The new programme could have a significant effect on the possibility of recruiting new clinical scientists to our faculty at Dalhousie. The development of our graduate programme in Biomaterials would provide an ideal opportunity to take advantage of this new proposal if it is developed for dentistry.

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