UNIVERSITY NEWS

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Dr. Fabrizio Aumento, chairman of the Department of Geology at Dalhousie University and co-chief scientist of Leg 37 of the Deep Sea Drilling Project undertaken during the summer.

DEEP DRILL '74 WAS NO BORE

The international team of scientists who took part in Leg 37 of the ongoing Deep Sea Drilling Project set out to investigate the origin and properties of the volcanic layer of the oceanic crust in the Atlantic by drilling one deep hole.

That the expedition was successful is evident in the collection of over 3,000 samples taken from recovered cores for shipboard and subsequent shorebased study in the United States, Canada, Russia, France, Germany and Britain, and in the fact that the team drilled to record depths.

At the post-cruise conference at Dalhousie last week, the co-chief scientist on the expedition, Dr. Fabrizio Aumento outlined for visiting scientists the team's experiences, findings to date, and some of the problems he and his colleagues ran into.

For example: One deep hole was planned. "We ended up drilling five."

More stories and pictures of Leg 37 appear on Pages 3, 4, 5, 6, & 7.

Diamonds, it seems, are not a geologist's best friend when they are on the end of drill bits for ocean-bed drilling; on land yes, where there's high speed, constant pressure and adequate coolants. But in water, thousands of feet below the surface, the drill string is wobbly and despite a heave compensator there is still too much pressure. "So we went back to using tungsten-carbide roller cone bits."

A heavy cushion of sediment on top of the volcanic crust is needed for stable drilling, and it wasn't always there.

Getting a new drill bit 6,000 feet below the surface of the ocean into its sonar-using re-entry cone was no problem, but when the casing below the re-entry cone broke it slipped sideways and the old hole was lost.

Worn drill bits were easy to replace, but if part

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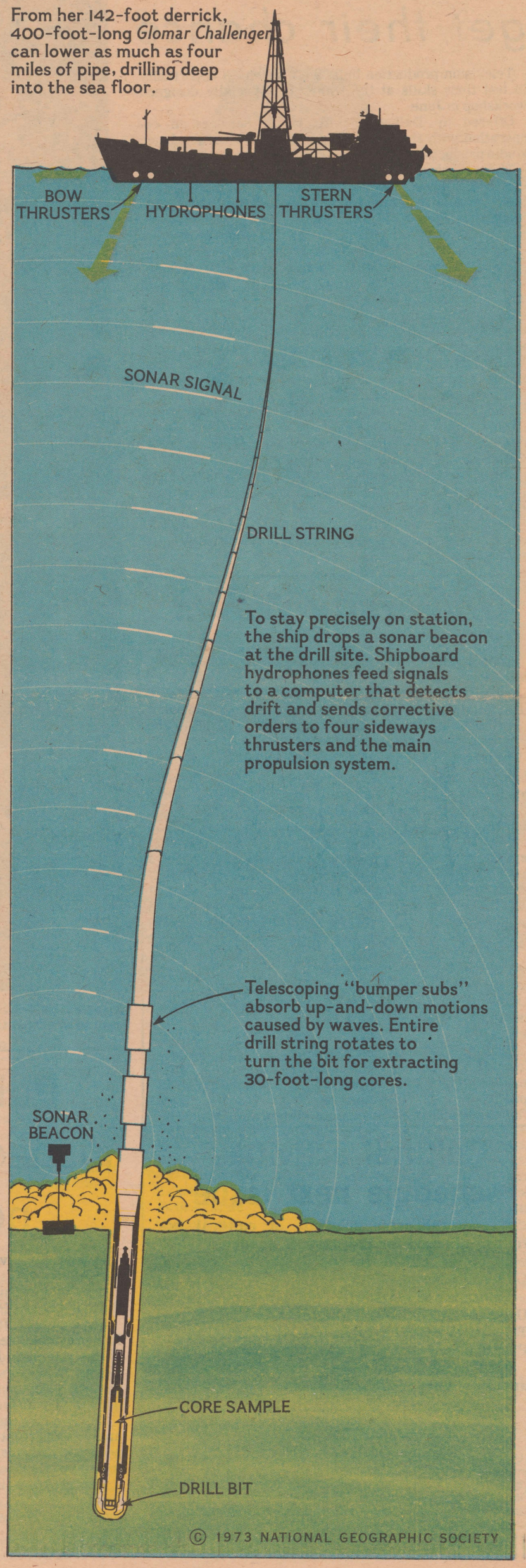
IN THIS ISSUE

Scout of the sea floors

She drills at record depths

The Glomar Challenger, a highly sophisticated floating drill rig, zigzags across the oceans on the ongoing Deep Sea Drilling Project. She is able to take core samples at depths no ship could probe before. Samples come up in long plastic sheaths to be analysed by shipboard scientists and in laboratories ashore. During Leg 37 of the project in June and July, which was co-directed by Dalhousie geologist Dr. Fabrizio Aumento, the Challenger drilled to record depths, at one point to 1,910 feet into the rock of the ocean bed — and this below 6,000 feet of water.

(Drawing by National Geographic magazine staff artist Robert W. Nicholson; publication of the drawing courtesy National Geographic).



GENERAL NEWS

Television buffs get their chance

Television production buffs were given an opportunity to test their skills at the trade at a specially designed workshop in June.

Offered by Dalhousie's Television Services in co-operation with the School of Library Service, the basic studio production course attracted 24 enthusiasts.

The workshop stressed three areas — skills in basic studio hardware, development of critical analysis of television quality along with emphasis on the co-operative dimensions needed for production.

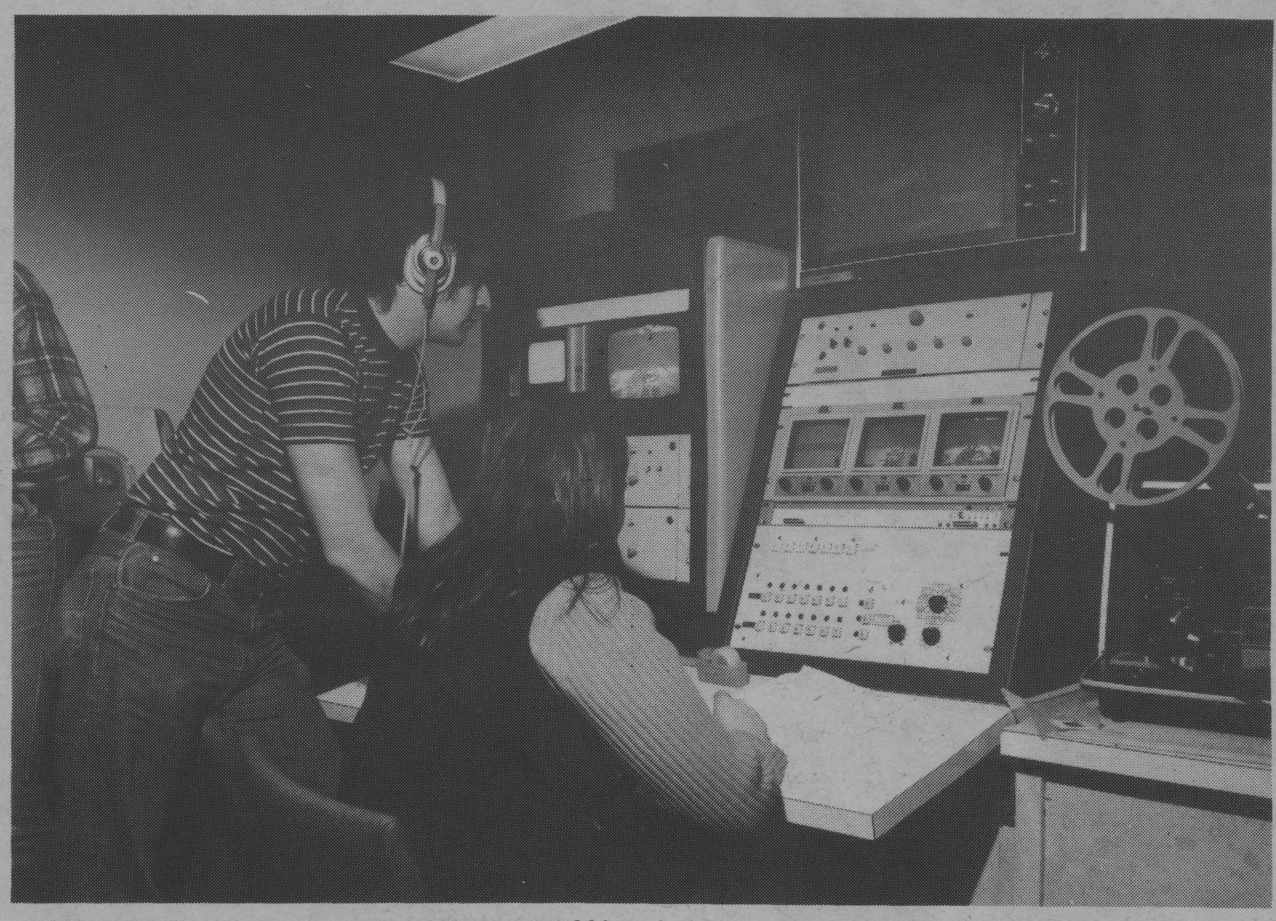
Students were introduced to the following production elements: technical fundamentals and studio equipment, camera handling, lighting, audio control, switching, script preparation, directing, program planning and production techniques.

The would-be directors were then required to design, write and produce their own show, using the entire group as a production team. When the sessions had ended, each member of the group had gone full circle, having been assigned to and responsible for every phase that goes into putting a production "on the road."

Themes for the shows indicated a broad spectrum of tastes and interests. Included were game and cooking specials, poetry readings, dramatic presentations, promotional pieces and documentaries.

The objective throughout was to provide a training ground for students interested in television as a communication medium.

The basic course will be given again this fall. An advanced course for persons with some previous experience will also be offered.



Show director for the day (standing) and his switcher get set for a production run through.

Douglas Barrett, third-year Dalhousie law student and course director at the patchboard.

University News

Today's issue of University News is the first of the 1974-75 academic year.

It is also unusually large — 28 pages — because of a substantial backlog of late spring and summer material.

For the balance of the year — the next 16 issues — the paper will run to eight or 12 pages.

The 1974-75 deadline and publishing schedule:

General Deadline	Late-breaking or urgent news deadline	Publication Date
Monday	Thursday	Thursday
Sept. 9	Sept. 12	Sept. 19
Sept. 23	Sept. 26	Oct. 3
Oct. 7	Oct. 10	Oct. 17
Oct. 21	Oct. 24	Oct. 31
Nov. 4	Nov. 7	Nov. 14
Nov. 18	Nov. 21	Nov. 28
Dec. 2	Dec. 5	Dec. 12
(Christmas Break)		
Dec. 30	Jan. 2	Jan. 9
Jan. 13	Jan. 16	Jan. 23
Jan. 27	Jan. 30	Feb. 6
Feb. 10	Feb. 13	Feb. 20
Feb. 24	Feb. 27	March 6
March 10	March 13	March 20
March 24	March 27	April 3
April 7	April 10	April 17
April 21	April 24	May 1

(There may also be a Convocation edition after May 1)

Cultural activities schedule next issue

A comprehensive schedule of cultural activities planned for the current academic year will be published in the Sept. 19 issue of University News.

Also in the next issue:

DENTAL HYGIENE IN THE COMMUNITY.
THE UNIVERSITY TRAFFIC OFFICE.
PHYSICAL EDUCATION ON THE MOVE.

Plus news from schools and departments, appointments, people and places.

University News

University News is published fortnightly between September and May by Dalhousie University, Halifax, Nova Scotia; it is produced by the University's Information Office.

Inquiries and contributions should be addressed to: The Editor, University News, Information Office, Old Law Building, Dalhousie University. (424-2517/ 8)

Public health inspectors' course next week

Dalhousie University's Institute of Public Affairs in association with the Faculty of Medicine, will conduct a course for approximately 55 public health inspectors from the four Atlantic Provinces Sept. 9-13.

The course is offered annually under the auspices of the four provincial departments of health and at the request of the Atlantic division, Canadian Institute of Public Health Inspectors. Instructors include specialists from university departments, government agencies at all three levels and from industry.

The five-day course will give attention to the chemical analysis and treatment of water; sanitation of swimming pools and dishwashing machines; rodent control; sewage treatment plants and metric conversion.

The program is open to certified public health inspectors and, by arrangement, to students formally entered upon a recognized training program in public health inspection.

Four students from Maine U at Dal

Four students from the University of Maine at Orono will be in residence at Dalhousie University for the 1974-75 term.

They are among ten students selected from the New England institution to take their junior year at schools in Nova Scotia, New Brunswick and Newfoundland.

The students studying at Dalhousie are pursuing different academic majors. They are: Stephen Aylward (economics-political science), James Gagne (public management), C. Kingsley Sleight (sociology) and Christopher Stratton (marine biology).

The University of New Brunswick will receive four students. Acadia and Memorial universities will each take one exchange student.

UNIVERSITY HOLIDAYS for the balance of 1974-75

1974

Monday	October 14	Thanksgiving Day
Monday	November 11	Remembrance Day
Wednesday & Thursday	December 25 & 26	Christmas Day & Boxing Day

1975

Wednesday	January 1	New Year's Day
Friday	January 31	Munro Day
Friday	March 28	Good Friday
Monday	May 19	Victoria Day

Student holidays:

Saturday, Dec. 21 to Sunday, Jan. 5, Christmas vacation
Monday, Jan. 6, All classes resume
Saturday, Feb. 1, Winter Carnival
Monday, Feb. 24 to Sunday, March 2, Spring study break
Monday, March 3, All classes resume.

GEOLOGY: DEEP DRILL '74

Over 3,000 samples, record drilling depths

LEG 37 'VERY SUCCESSFUL'

By Dr. FABRIZIO AUMENTO

Chairman, Geology Department, Dalhousie University and co-chief scientist of Leg 37 of the Deep Sea Drilling Project.

Co-chief scientists of Leg 37, Dr. William G. Melson (left) of the Smithsonian Institution and Dr. Fabrizio Aumento of Dalhousie University, check some of the 3,000-plus samples drilled from the ocean bed during the summer.

Leg 37 of the Deep Sea Drilling Project set out to investigate the origin and properties of oceanic crustal layer 2 — the volcanic layer of the oceanic crust. Our main scientific objectives were to find:

1) the thickness, depth, and magnetic properties of any rocks that may give rise to the oceanic linear magnetic anomaly pattern,

2) the lithologic character of layer 2 in terms of pillow lavas, massive flows, instrusive rocks, and interbedded sediments, and the products of their alteration and metamorphism,

3) the chemical and petrographic variations of the rocks with respect to depth and age,

4) the relationship between the lithology, the measured sonic velocities of samples recovered, and the seismic refraction models of layer 2, and

5) the temperature distribution in the upper oceanic crust.

The Glomar Challenger sailed from Rio de Janeiro, Brazil, on May 28, for the FAMOUS area of the Mid-Atlantic Ridge, some 300 km south of the Azores. The ship was specially equipped for this basement drilling leg. In addition to equipment for basement drilling, such as re-entry cones, a heave compensator and diamond bits, special laboratory facilities included a self-contained X-ray fluorescence chemical laboratory, a CHN analyzer for determination of water and CO2 contents, a spinner magnetometer with an alternating filed demagnetizing unit, compressed and shear sonic velocity measuring equipment for determinations at up to 2 Kb confining pressure, equipment for measuring density, porosity, and electrical conductivity and a fully equipped thin-section laboratory.

On this very successful leg over 3,000 samples were taken from the recovered cores for both shipboard and subsequent shorebased detailed studies in the U.S., Canada, U.S.S.R., France, Germany and Great Britain. Hundreds of basement samples were examined on board for chemical composition, magnetic polarity and intensity, sonic velocity and petrographic characterics.

Record penetration into the acoustic basement was achieved at each of the four sites drilled during Leg 37. Two holes were drilled to depths of 582.5m and 313m using re-entry capabilities. These were Holes 332B and 33A, respectively, both in young (3.5 million years, Late Pliocene) crust. In Hole 332B the casing broke just below the re-entry cone, and was displaced downwards and sideways after four successful re-entries, which eventually prevented further re-entry to the bottom of the hole. Hole conditions had otherwise been excellent, indicating that much deeper penetration could otherwise have been possible. In Hole 333A, the bit became irretriveably struck at a depth of 312m and the string had to be blasted free. The "sticking problem" had been encountered in previous deep basement drilling attempts. and was the main reason for the failure of Leg 34 (Geotimes, April 1974) to achieve more than 59m of basement penetration.

In addition to deep drilling attempts with re-entry, three single bit holes were drilled, numbered 332A, 334, and 335. These were drilled until the tungsten-carbide insert, roller cone bits wore out. Each of these holes reached more than 100m into basement. The total basement recovery for all four sites was 242.7m for a total of 1453m of acoustic basement penetration, giving an overall recovery rate of 17 per cent.

After the re-entry experiments, subsequent site selection was based primarily on obtaining a sequence of holes along a sea-floor spreading flow line oriented at 285 degrees outwards from the ridge axis into the American Plate, to reveal secular variations in the make up of layer 2. Ages of the crust sampled at these sites are 3.5 m.y. (Sites 332 and 333), 8.9 m.y. (Site 334), and 16.5 m.y. (Site 335) based on their positions in the linear magnetic anomaly pattern and the time scale of Heirtzler et al. (1968). In addition to age considerations Sites 333, 334, and 335 were drilled near the base of steep, east-facing slopes to test the hypothesis, suggested by dredging experiments, that such slopes represent deep, normal faults along which deeper crustal materials are brought closer to the surface.

The paleontologic ages at and below acoustic basement agree with those predicted from the magnetic anomaly ages at 11 sites except 335. Here, the sediments are considerably younger than anticipated and the magnetic anomaly pattern is less distinct. The spreading rate from the median valley along the flow line through Sites 332, 333, and 334 to crust at least 12 m.y. years old is consistent at 1.17 cm/ yr. In this interval it was possible to identify all anomalies in the time scale of Heirtzler et al. (1968). However, unique identification of specific magnetic anomalies was not possible at the most distant site, 335.

Site 332

The near-axis site (332) was the most successful for deep basement drilling. The slope of the basement beneath the site is a gentle (6 degrees), suggestive of a primary depositional slope. Recovery rates were high, up to 75% in massive lithologically continuous basalt units, to very low, down to one percent, in interlayered sediment and loose rubbly basaltic zones. Penetration rates were high, probably because of the scarcity of massive basalt units. One of the most important observations at this site, as well as Site 333, is the common occurrence of unconsolidated and lightified foram-bearing nannofossil ooze within the basaltic sequence. The high penetration rates indicate that these and a high proportion of basaltic rubble zones may make up to 75 per cent of the upper meters of acoustic basement at the near-ridge sites. The percentage of these materials diminishes rapidly below 300 meters, but some recrystallized ooze persists as veins and irregular zones in basalt to at least 544 m.

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Summary of operations

Total days (May 22, 1974 - July 1974)	67.67
Total days in port	6.63
Total days cruising	26.24
Total days on site	34.80
Trip time	6.96
Drilling time	1.46
Coring time	15.35
Stuck time	1.52
Position Ship	0.56
Mechanical Downtime	0.96
Re-entry time	2.06
Other	5.93
Total Distance Travelled (Nautical miles)	5987.0
Average speed	9.5
Number of sites	4
Number of holes drilled	9
Number of cores	156
Percent of cores with recovery	97.4
Total Penetration	3181.5
Total meters drilled	1405.0
Total meters cored	1776.5
Total meters recovered	405.8
Percent of core recovered	22.8
Percent of total penetration cored	55.8
Maximum water depth (meters)	3198.0
Minimum water depth (meters)	1680.0

GEOLOGY: DEEP DRILL '74

'Very successful'

Continued from Page 3

Seismic refraction studies over Sites 332 and 333 by Laughton (unpublished survey) Show the existence of seismic layers 2A, 2B, and 3. Sonic velocities of both sediments and basalts were measured on board; when combined according to the proportions of the various litholgies drilled, an approximate effective velocity profile was obtained for the holes drilled. At Sites 332 and 33, the velocity of layer 2A from seismic refraction correlates well with that determined for the upper 200 meters of drilled basement. This layer consists of a few massive basaltic units, along with numerous sediment and basaltic rubble zones. Measured velocities for the more massive basaltic units of the lowermost 300m (300-582.5m into acoustic basement) agree well with refraction velocities determined for the top of layer 2B.

Fresh basaltic glass occurs throughout to sequence, to at least 573m depth. However, many of the basalts show considerable evidence of halmyrolysis, with the ubiquitous occurrence of smectite. The smectite is more abundant and is oxidized near joints and shear zones. Some of the altered zones containe abundant zeolites. The lowermost massive units are medium-grained basalt with joints and small shears coated by chlorite, clay minerals, carbonate, and sulfides. The orientation and direction of slip on the shear zones suggest that deformation resulted largely from horizontal tension. There is no evidence of current hydrothermal activity. The maximum temperature is 14.15 degrees C. at 541 meters subbasement. The temperature gradient is approximately linear to this depth, showing that low heat flows at the Ridge Crest extend to a considerable depth into the crust.

Basalt lithologies include common highly platicolase phyric and olivine phyric (picrite) basalts and less aphyric basalts, and many gradations between these extremes. The major element chemical composition of all lavas correspond to tholeiite basalt. However, the range of composition is as great as that of all lavas recorded for most of the theoleiitic lavas dredged from the abyssal mid-oceanic ridge system of the world. Variations of basalt chemistry with depth suggest that several eruptive cycles occurred, progressing from differentiated to less differentiated in a single cycle.

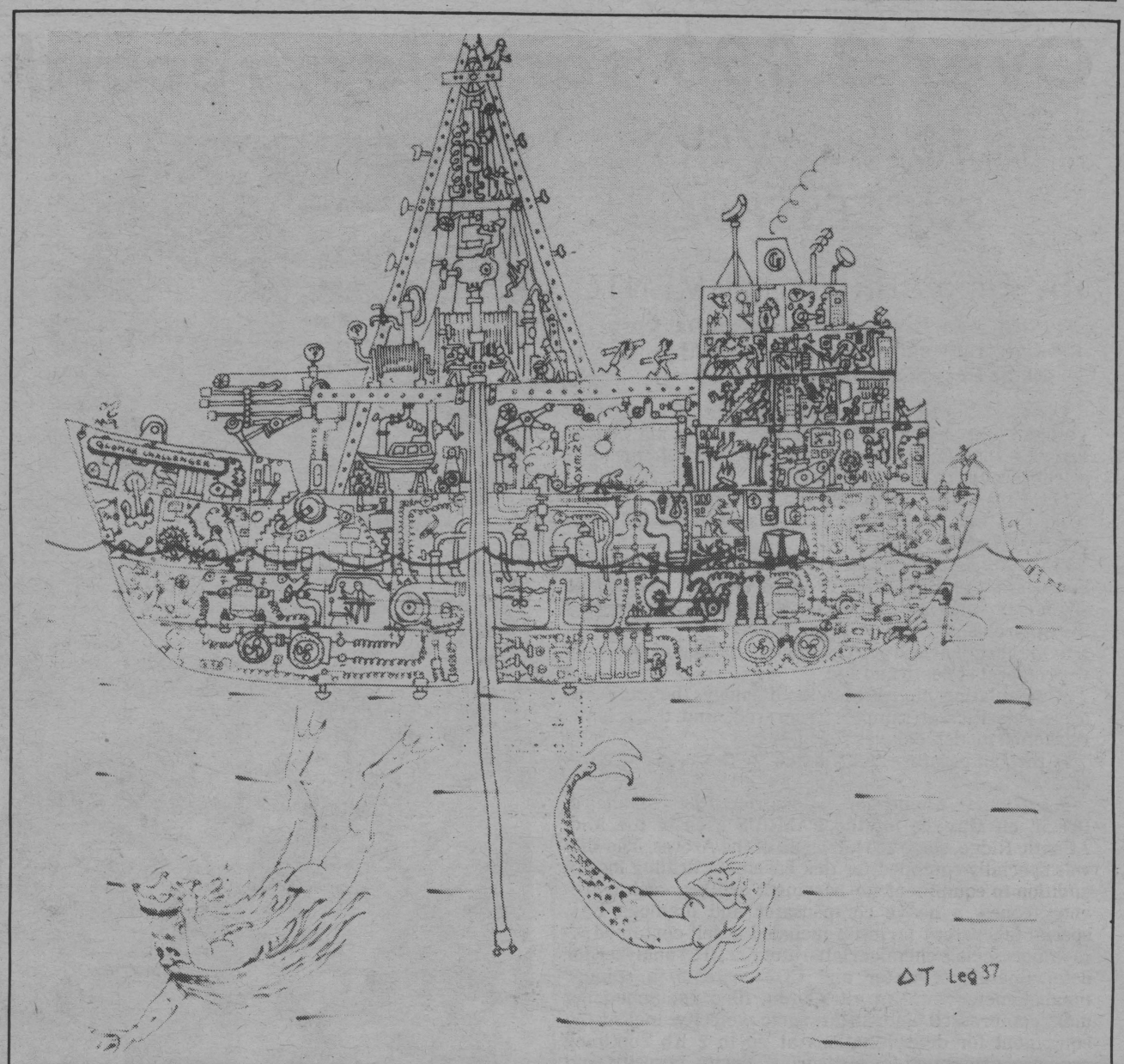
Correlation of magmatic cycles and litholgic units with single bit Hole 332A one hundred meters to the southeast, reveals considerable local variation in unit thickness. Differences in composition within eruptive cycles can be explained largely by near-surface fractional crystallization involving addition or subtraction of one or more of the liquidus phases olivine, plagioclase, and augite.

The consistent paleomagnetic inclinations within single units suggests that thick sections of petrographically and geochemically coherent lavas may have erupted over relatively short time intervals, compared to the total time for accumulation of the section.

The magnetic stratigraphy includes normal, reversed, and transitional zones, with rapid changes in profiles between Holes 332B and 332A. A significant part of the local negative magnetic anomaly is probably generated by a 57-meter thick strongly magnetized zone close to the top of layer 2B, that is, 250m below the basement surface. Although strongly magnetized basalts occur higher in the section, the complete 580m section drilled does not appear to have sufficient magnetization to produce the observed anomalies. In some sections of cores from Sites 332 and 333, a number of strongly magnetized sequences have nearly horizontal magnetic inclinations, probably recording a polarity transition of the geomagnetic field. Assuming these units extend in a north-south direction, they produce negligible external magnetic fields.

The current width of the floor of the median valley is about 2 kilometers. If layers 2A and 2B form only within this zone, we infer from the 1.17 cm/ yr spreading rate that the crustal section at Sites 332 and 333 formed in no more than 100,000 years. Preliminary paleontologic evidence from the cores fives similar age restrictions. Several zones of mixed magnetic polarities are consistent with this model if we assume the sequence of reversely magnetized lavas were intruded by a series of normally magnetized minor intrusions.

Sample core drilled from the ocean bed during Leg 37.



Dr. Leonid Dmitriev, of the U.S.S.R. Academy of Sciences, Moscow and the only Russian on the expedition, showed his sense of humor and artistic talent by drawing this sketch of the Glomar Challenger during his spare time.

Site 333

In contrast to the gentle slope of basement beneath Site 332, Site 333 is on the steep (24 degrees), possibly faulted slope on the west side of the 2-3 km wide pond in which Site 332 was drilled. Site 333 was drilled in the hope of getting a deeper section of oceanic crust through uplift by normal faulting. Hole 333A, drilled with one re-entry, revealed again a 200 meter thick section of basaltic rubble with interbedded sediments. As in Holes 332A and 332B, recovery in this zone was very poor, and there was considerable torquing up of the drill bit in some zones.

Chemically, and petrographically, the basalts of Hole 333A, located 6.4 km southwest of 332, correlate if at all with the lower sequence of sparsely olivine-phyric basalts in Holes 332A and 332B. The paleomagnetic inclinations for 333A also suggest a correlation with the deeper parts of the 332B section. It is not clear, however, whether or not these features in fact reflect deeper exposures by uplift along normal faults. As at Site 332, a number of massive, continuous basaltic sequences were reached near the bottom of the hole.

Site 334

Drilling at Sites 332 and 333 took 27 of our total of 35 drilling days. It was then decided that maximum scientific returns could be gained by drilling two single entry holes in older crust to the West along a line perpendicular to the spreading axis. This would give comparisons of the upper part of layer 2 produced from the same segment of the Median Valley at three different times. The Glomar Challenger's track along the flow line into Site 332 provided excellent survey data from which to choose Site 334, located on the prominent positive magnetic anomaly 5 with an apparent magnetic anomaly age of 8.9 m.y. A steep, possibly fault produced, east facing slope was drilled in a small, deep basin on the east flank of anomaly 5. Just above acoustic basements, 14 cones were taken in late Miocene foram-bearing nannofossil ooze. Particularly interesting is the 3-4% volcanic glass content of some of the cores. Acoustic basement was found beneath 259 m of the unconsolidated ooze, and was drilled to 117.5m with 21 per cent recovery. The basement section consists of 60.5 of basalt overlying a coarse grained intrusive sequence. In contrast to Sites 332 and 333, where the only significant magnetic sources are located at 250m or deeper in the basement section, the basaltic magnetic sources at Site 224 (and 335) extend continuously downward from the top of the basement.

The basement below 60.5m at Site 334 is composed of very coarse-grained fresh gabbros, and partly serpentinized plagioclase bearing peridotites. Zones of breccia, both tectonic and possibly sedimentary, were cored between the zones of plutonic rocks. The contact between the basalts and gabbro-peridotite complex was not recovered; however, basalts cored immediately above within 9.5 of the first gabbro are underformed and not obviously different in lithology, and degree of alteration from the overlying basalts. Thus, the nature of the actual contact between the basalt and the plutonic complex is unknown, but the lack of shearing in the rocks recovered suggests that the contact is not a tectonic one.

The breccias interlayered in the plutonic complex consist of mineral and rock clasts derived from the gabbros and peridotites. No basalt clasts were noted. The matrix of the uppermost breccias is commonly loosely to highly consolidated nanno-bearing ooze. The ooze is slightly recrystallized and so far a definite paleontologic age has not been determined. These sedimentary breccias may reflect surface exposure of a plutonic melange prior to burial by subsequent basaltic eruptions. The plutonic

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GEOLOGY: DEEP DRILL '74

Members of the Leg 37 team and their support staff, take a breather to pose for this group picture on the Glomar Challenger. Seated, far left, is Dr. Roy D. Hyndman of Dalhousie University, and also seated (in black shirt) is co-chief scientist Dr. Fabrizio Aumento, of Dalhousie. To Dr. Aumento's right is Dr. William G. Melson, of the Smithsonian Institution, the other co-chief scientist. The third Dalhousie University member of the expedition was Dr. James M. Ade-Hall (white sweater, sandals), standing between Dr. Aumento and the capstan on the right.

"Very Successful"

Continued from Page 4

rocks recovered consist of about 47 per cent gabbro and olivine gabbro, with the former predominant, 24 per cent serpentinized periodotite, and 30 per cent breccia. Shipboard chemical analyses on the plutonic rocks show magnesia contents ranging from 38% to 10%.

The plutonic rocks have primary igneous textures, except for rare zones, with minor granulation of grain boundaries and incipiently developed tectonic lineations. Amphiboles, both brown hornblende in the gabbros, and nearly colorless amphibole is common but minor phase. The primary textures suggest an olivine accumulative origin for the periodotites. The pyroxene of the gabbros contains well-developed coarse exsolution lamella in the co-existing orthopyroxene and clinopyroxene.

Compressional wave velocities range from 6.40 to 7.29 km.sec in the gabbors and perioditites, and average 6.88 km/ sec for 9 samples, all measured at 0.5 kilobars. The highest velocities were obtained in the fresh babbros (mean 7.13 km/ sec for 6 samples) and the lowest in the serpentinized peridotites. Because of their friability, velocities could not be measured in the breccias. The velocities in the babbros and peridotites are appropriate for layer 3 materials, and in all measured samples the velocities are higher than the average of 5.95 km/ sec found for the basalts from all five holes.

The plutonic rocks show scattered but predominantly reverse magnetization, in contrast to the overlying normally magnetized basalts. Magnetic intensities vary by three orders of magnitude, and are directly proportional to the amount of serpentinized olivine. The most strongly magnetized plutonic rock, the serpentinized peridotite, has an intensity comparable to the basalts. If such serpentinized rocks are widespread, they could well contribute to the magnetic anomaly pattern.

Site 335

Site 335 penetrated 108 m into acoustic basement and revealed a comparatively homogeneous sequence of sparsely phyric basalt with common baked foram-bearing nannofossil ooze layers and veins, and very common glassy rinds. Recovery was the highest of any site, averaging 41.5 per cent, and more fresh basaltic glass was recovered than at any site. The basalt densities are high, and the porosities low. The basalts, as at Site 334, have strong, uniformly high upward inclination remanence magnetizations, in accord with what was expected at this site based on the location of the site within a negative magnetic anomaly.

The compositions of basalts from both sites 334 and 335 fall within the variation found for 332 and 333.

SCIENTIFIC PARTICIPANTS—Leg 37

Co-Chief Scientist: Dr. Fabrizio Aumento, Department of Geology, Dalhousie University.
Co-Chief Scientist: Dr. William G. Melson, Department of Mineral Sciences, National Museum of Natural History, Smithsonian Institution, Washington.
Paleomagnetist: Dr. James M. Ade-Hall, Department of Geology, Dalhousie University.
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Physical Properties Specialist: Dr. Roy D. Hundman, Institute of Oceanography, Dalhousie University.
Petrologist: Dr. Martin Flower, Ruhr-Universitat Bochum, Institut fur Mineralogie, West Germany.
Sedimentologist: Dr. Robert C. Howe, Department of Geology & Geography, Indiana State University.

GEOLOGY: DEEP DRILL '74

Sea floor drilled to record depth

From SCIENCE NEWS, Aug. 3

The Deep Sea Drilling Project now more than ever can put the emphasis on "deep." On the thirty-seventh leg of its global mission to sample the ocean bottom, the research ship Glomar Challenger bettered by more than seven-fold its previous record for depth of penetration into the basement rock lying beneath the sediments on the sea floor. Repeatedly changing the bit at the end of its drill string, it drilled, at one point, 1,910 feet into the rock near the Mid-Atlantic Rift.

Prior to Leg 37, the Challenger's deepest penetrations into the igneous rocks underlying the bottom sediments had been 260 feet. But on the latest leg, only a few miles from where a school of submersibles under Project Famous were probing the Mid-Atlantic Rift, the drills bored their way into depths of 333,405, 1,023, 1,092 and 1,910 feet. On the deepest attempt, nine reentries were required (three of them to change bits, the others for such causes as the collapse of the hole sides, requiring the bit to be removed and reinserted), more than the total in all the previous holes, according to a project official.

The results from Leg 37's holes were striking. Chief scientists Fabrizio Aumento of Dalhousie University in Nova Scotia and William G. Melson of the Smithsonian Institution in Washington report the discovery of layer upon layer of alternating marine basalt (lava) flows and sediment. That the layers seem to have been deposited in a span of as little as 100,000 years, about 3.5 million years ago, is further evidence identifying the Rift region as the birthplace of new material in the Atlantic Ocean floor.

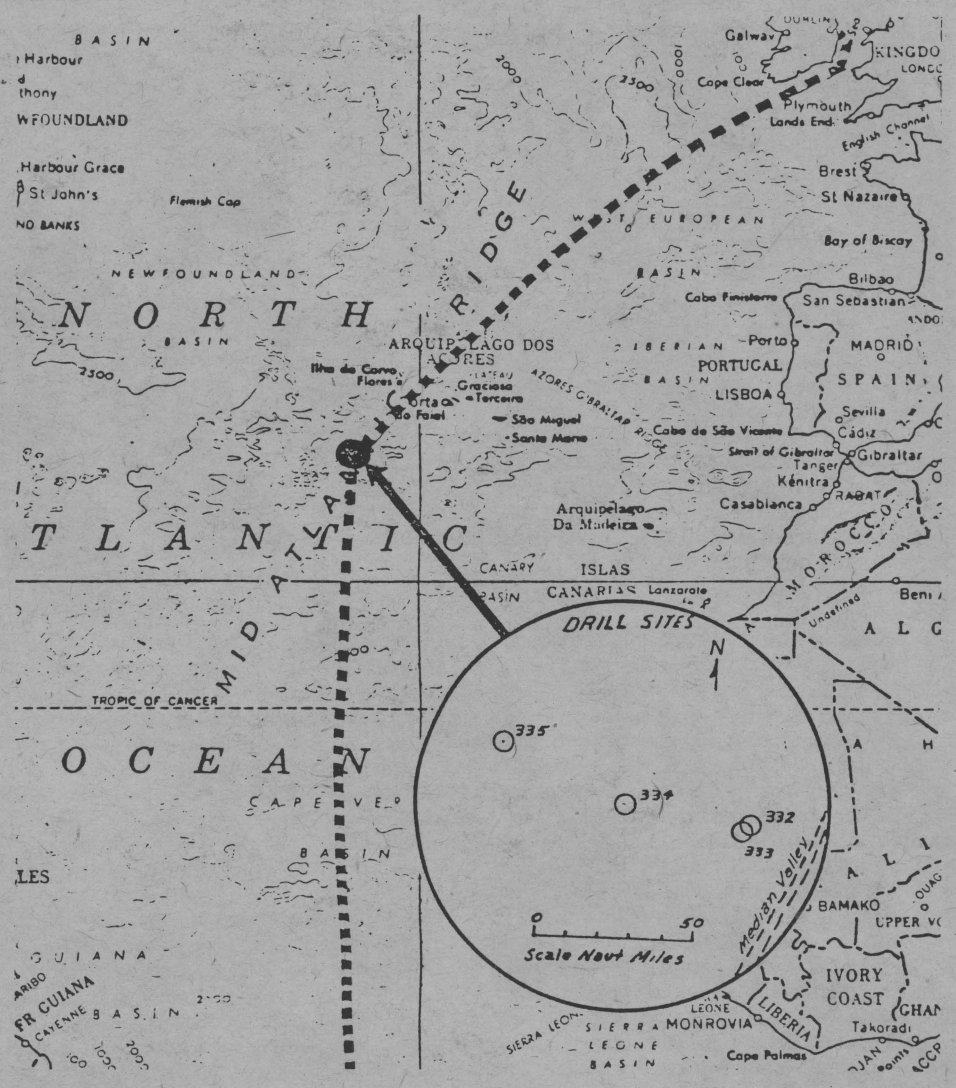
The most significant find may turn out to be a complex sequence of plutonic rocks—igneous rocks formed at great depths—which just may represent samples of the deep crust material that underlies both the sedimentary and basalt layers. Yet strangely, they seem to contain no traces of basalt, which ought to be the middle layer in the sea floor "sandwich." A possible theory, the scientists suggest, is that the plutonic rocks were originally upthrust to sediment level just before a volcanic episode began, so that the subsequent lava would be on top.

Replacing a drill bit is no major achievement itself. It is the ability to put the new bit back into the old hole, after first having to lower it through more than 6,000 feet of water, that has added new potential to the Challenger's already fruitful mission.

In the past, a dull drill bit almost invariably meant that a borehole was as deep as it was going to get. Once the flexible, multi-sectioned shaft called the drill string was pulled out of the hole it had created, the odds against relocating the hole from the ship overhead were astronomical. Dull bits were not always to blame. Currents and wave motions could have an effect, as could the mere bobbing and turning of the ship.

Deep Sea Drilling Project engineers found their answer in a technique originally conceived but never implemented for the Mohole, a stillborn idea for drilling through the so-called Mohorovicic discontinuity between the earth's crust and mantle. It's simply an embodiment of that time-honored implement for pouring things into awkwardly small holes: the funnel.

As the Challenger applies it, a 150-foot section of pipe topped with a 14-foot-diameter cone is lowered to the ocean floor via the drill string (a tube made of 30-foot, threaded sections of steel pipe), where it settles into the bottom sediment until the cone rests on the sediment surface, large end up. Awire, lowered down the pipe, trips a latch that frees the drill bit to begin working away until it becomes dull. Drill string and bit are then pulled up, the bit is changed on shipboard, and the whole string is lowered again, this time



The Leg 37 drilling sites.

carrying a scanning sonar device that seeks out three sonar reflectors mounted on the rim of the cone. The sonar can spot the reflectors from as far away as 500 feet.

Guiding the drill string to relocate the cone requires moving the entire ship, following the sonar blips on a monitor screen. The Challenger is particularly qualified for this task, being equipped not only with regular ship's propellors, but with additional screws that point sideways—the ultimate answer to parallel parking. (When the Challenger pulls into a port, says one project official, the captain sometimes likes to wave off the assisting tugboats and glide laterally—and dramatically—over to the dock.) Once the cone is directly beneath the sonar transmitter on the drill string, the rim of the cone itself acts as a reflector, signalling its presence by showing up as a ring on the monitor screen. The bit slides in.

The reentry technique was first tested three years ago during Leg 11 of the project, when its success was greeted with a pleased and lusty cheer from those aboard. It was first used operationally during Leg 14, on Christmas Day of 1971, and has since worked at water depths as great as 13,000 feet. But it was not until Leg 37 that it really began to show its true potential.

To further evaluate the technique, next week one of the Famous submersibles, Woods Hole Oceanographic Institution's Alvin, is scheduled to visit one of the drill sites to see, for example, how far the cone sinks into the sediment with use.

Project excellent example of co-operation

The deep sea drilling project undertaken this summer by members of the Department of Geology and scientists from other parts of the world is an excellent example of co-operation between international funding and scientific bodies.

The Department of Geology at Dalhousie was awarded a $235,000 grant by the National Research Council to assist in the massave research project, which involved investigations of material, extracted from deep holes drilled in the floor of the North Atlantic.

Officially called Leg 37 of the Deep Sea Drilling Project, the Dalhousie experiment was the most extensive of its type ever carried out.

Dr. Fabrizio Aumento, chairman of the Dalhousie Department of Geology and co-chief scientist on Leg 37, said before the expedition that the purpose of the project was to find out what really lies beneath the ocean floor.

"We expect that our findings will lend evidence to theories that the ocean floor is spreading as well as adding to the growing realization that many mineral deposits actually originated on mid-oceanic ridges and that ore bodies now found on land are the result of their subsequent concentration later in the history of the oceanic crusts, possibly at the time of thrusting against continents."

The project was carried out aboard the Glomar Challenger, a 400-foot vessel designed by a California offshore oil-drilling company, Global Marine Inc.

The Glomar Challenger has been literally roaming the seas for five years as a scientific base for the Deep Sea Drilling Project. The project was planned by the JOIDES group — Joint Oceanographic Institutions for Deep Earth Sampling.

The vessel was designed to lower more than 20,000 feet of pipe in the open ocean, bore into the sea floor and bring up samples.

The JOIDES sampling program has now drilled more than 250 holes, some having penetrated several hundred metres into the sediments overlying the upper deep ocean floor. "However, we felt the time was right to extend investigations into the deeper oceanic crust itself," said Dr. Aumento.

JOIDES agreed and assigned the Glomar Challenger to Leg 37 (May 9-July 2), the $2,000,000 expense to be borne by the National Science Foundation of the U.S.A.

To carry out research on the drill core, Dr. Aumento needed people and equipment. Substantial funding was necessary to undertake the work properly in a professional manner, and the National Research Council grant was used for those purposes.

The National Research Council also allocated $100,000 to a sub-committee for the distribution of special grants to Canadian researchers outside Dalhousie who would conduct specialized investigations on the material collected from the project.

Scripps Institution of Oceanography of the University of California at San Diego is managing institution for the Deep Sea Drilling Project under a contract between The Regents and the National Science Foundation. The project is a part of the Foundation's Ocean Sediment Coring Program.

Dr. M. N. A. Peterson of Scripps Institution is project manager for DSDP, and Dr. N. Terence Edgar, also of Scripps, is chief scientist.

The project receives scientific guidance largely from the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES). These institutions are Woods Hole Oceanographic Institution, the University of Miami's Rosenstiel School of Marine and Atmospheric Science, the University of Washington's Department of Oceanography (Seattle), Columbia University's Lamont-Doherty Geological Observatory, the Institute of Oceanology of the USSR Academy of Sciences, the Bundesanstalt fur Bodenforschung, Federal Republic of Germany; and Scripps Institution of Oceanography of the University of California at San Diego.

The university subcontracts with Global Marine, Inc., of Los Angeles, to accomplish actual drilling and coring with GMI's D/ V Glomar Challenger.

GEOLOGY:

"Little Mohole": Steam from below a volcano

(From the Spring 1974 issue of the Research Corporation Quarterly Bulletin)

The roar of high pressure geothermal steam from deep under a volcanic island in the Azores recently terminated what may have been one of the more unusual and successful geological research projects in years. The investigators, from Dalhousie University, Halifax, Nova Scotia, shed new light not only on the ocean's volcanic "basement," but on how one might go about exploiting a possible energy source.

It all began some years ago with Dalhousie's excellent Geology Department and a deep curiosity on the part of University faculty members as to the nature of ocean crusts in areas where molten magma has pushed up to form volcanic islands. Continental ore deposits — as well as the continents themselves — originated in similar processes. By boring through these jagged pinpoints of land in various oceans, the investigators might not only sample ocean crusts, but compare the evolution of islands and continents. Clues might be found as to how land masses form, and practical information gained on how to tap deep mineral and energy resources.

With a six-year background of dredging and drilling projects in the Mid-Atlantic Ridge and the Bermuda Islands, Dalhousie scientists under the leadership of James M. Ade-Hall determined in 1973 that the time was ripe to gather data from the Azores. Core samples from these "young" islands atop the Ridge would provide interesting comparisions with older materials from Bermuda and other locales. Six research projects were proposed, all centered around a borehole 5000 feet deep on the rugged island on San Miguel. R. D. Hyndman, a physical oceanographer, would concentrate on heat and water circulation measurements — important in evaluating the possibilities of geothermal power. Geochemistry, the study of the formation of ocean crusts (and, by extension, ore deposits), was to be th concern of geologists Gunter K. Muecke and Barrie Clarke.

Fab Aumento, Peter H. Reynolds and James Ade-Hall, also of the Geology Department, would tackle mineralogy, radiometric dating, and studies of rock magnetism and palaeomagnetism.

Although shipboard drilling is an expensive procedure, the Dalhousie proposal to study ocean crusts by drilling through the flanks of an island volcano was to be relatively economical. A $40,000 grant from Research Corporation, added to funds made available by the University, the National Research Council of Canada and the National Science Foundation (under the International Decade of Ocean Exploration program) would provide the necessary resources — a total of some $120,000.

With the commitments in hand, a contractor was found to do the drilling, and two members of the team set off for San Miguel to select an exact site and to make transportation and other arrangehents. A Pan Am 707 was chartered to carry equipment to the international airport on the island of Santa Maria; from here, it would have to be shipped to the port city of Ponta Delgada on San Miguel, and then trucked 12 miles to the drilling site on the flanks of the volcano, Agua de Pau.

Although Agua de Pau last spewed forth in A.D. 1563, it is an active volcano. "We were warned by islanders that we would be held totally responsible if our drilling caused an eruption," Aumento jokingly comments. Aside from that half-serious word of caution, relations with government administrators and others were amiable from th start, and became even more cordial with the promise of a new energy source as well as some startling geological discoveries.

TAPPING A VOLCANO

The drilling rig was erected at a carefully selected spot 230 feet above sea level, and work got under way. The expectations were that the bit would soon strike lava which had erupted under water, and that botton-hole temperatures at the 5000-foot depth might indicate the presence of deeper geothermal steam. Both predictions proved wring — and dramatically so. "It was a bit of an embarrassment," reports one team member. "Temperatures got hotter and hotter, and at much shallower depths than had been anticipated. All of the rubber gaskets used in the drilling rig were failing, and we were afraid we were on the verge of a blowout."

Undaunted as the thermocouple indicated higher and higher bottom-hole temperatures and rubber started to melt, the group devised new gaskets out of Teflon and had them flown from Dalhousie to the work site. At 1600 feet, temperature reached 446 degrees F, and technical difficulties prevented possible higher measurements. Still, drilling continued without major difficulties down to 3200 feet and slightly beyond. Here, just as the drill string was being lowered for another pass, extreme pressures and temperatures sent steam roaring up the small borehole and brought the project to a halt.

"We went as far as we could with available equipment and technology," says Dr. Aumento.

Both the geological findings and the promise of steam at relatively shallow depths indicate that the Dalhousie group did very well indeed. Excited by the prospects of a new energy source, the local power company made a monetary contribution to the project, and is planning to reopen the borehole in the near future. If monitoring indicates that water flow and temperature would provide enough steam to run turbines, full-scale wells will be put down.

Geologically speaking, however, there are other results that are as spectacular as the promise of geothermal energy. While it was anticipated that the drill would soon bring up samples of lava that had erupted under water, sample after sample contained volcanic ash, pebbles and lava that had flowed above the surface of the water hundreds or thousands of years ago. Such proved to be the case to a depth of roughly 2600 feet below sea level, providing striking evidence that the island of San Miguel is sinking about as fas as it is being built up by volcanic action.

"It seems like nature is playing with a deck of cards," Aumento muses. "The island sinks as lava leaves its reservoir underneath, but then the lava gets pumped up and redeposited on the surface."

And how about the formation of continents and ore deposits, drive plate motions and the flow of the earth's mantle' The data derived from San Miguel and from previous drilling and dredging projects may well be useful in formulating tentative answers. Much more information must be collected, and even now the Dalhousie team has embarked aboard the Glomar Challenger for a deep sea drilling project south of the Azores. Regardless of the eventual outcome of that project and those planned for the future, however, the exploratory drilling at San Miguel proved once again that important and unforeseen developments of economic importance often follow the search for answers to basic questions.

Scientists from many parts of Canada and elsewhere gathered in the Green Room of the Student Union Building for the post-cruise conference of Leg 37 of th Deep Sea Drilling Project which was co-led by Dr. Fabrizio Aumento (standing, right). Dr. Henry D. Hicks (seated in foreground beside Mrs. Hicks), president of Dalhousie, welcomed the scientists and called the drilling project "a remarkable accomplishment." Inset, at top: Dr. D.J. LeRoy, vice-president of the National Research Council of Canada, with Dr. Aumento and Dr. William G. Melson, of the Smithsonian Institution, the other co-chief scientist on Leg 37, at the post-cruise conference.

Dr. Leonid Dmitriev, of the U.S.S.R. Academy of Sciences in Moscow, chats with co-chief scientist of Leg 37, Dr. Melson. Dr. Dmitriev was the igneous petrologist on the expedition.

DEEP DRILL '74 WAS NO BORE

—Continued from Page 1—

broke off and dropped into the hole, a new bit would simply destroy itself on the old detached piece.

"On one occasion," said Dr. Aumento, "we got the drill bit back into the re-entry cone, which rests in the sediment on the ocean bed, about eight times, but since the cone casing was moving sideways, we thought we had had it.

"But the drillers on board showed great skill in reversing the drill, which is normally a no-no. There was great relief when we finally re-entered the hole.

"On another site, the drill got stuck for good. We used up to 700,000 lbs. of pull, and then explosive charges on the ocean bed, but nothing happened. Then more pull, and the drill string parted, and that was the end of that hole."

Dr. Aumento had high praise for the Glomar Challenger, the sophisticated vessel that for the past six years has been drilling holes into the ocean floor. "We insisted on special equipment for this leg, and the ship was in top shape when we left Rio de Janiero in May."

Dr. Aumento was followed by other specialists on the Leg 37 team, who went into greater scientific and technical detail about their roles and findings.

Dr. Henry D. Hicks, who welcomed the Leg 37 team and scientists who had commissioned samples to the post-cruise briefing, called the two-month project a remarkable achievement. "We have brought together scientists from many countries of the world in a co-operative effort to learn more about our environment, and on behalf of the university I express its thanks to the many agencies for their work and support in this project."

At the beginning of the conference proper, an excellent descriptive color film about the Glomar Challenger and the work it undertakes was shown.

After the first session of the conference, delegates took time out to visit Oak Island which, like the Atlantic, has been drilled, but for a different kind of treasure.

GENERAL NEWS

ALUMNI AFFAIRS

B. G. Irwin new CAUDO head

Bruce G. Irwin, Director of Alumni Affairs at Dalhousie University, has been elected president of the Canadian Association of University Development Officers. Mr. Irwin, who succeeds Roy L. Jones of the University of Toronto, has served CAUDO as a director, secretary-treasurer and vice-president. He was elected at the association's annual meeting in Montreal.

Members in CAUDO consists of universities from across Canada who are engaged in educational fund raising for their institutions. One of the main objects of the association is to give professional assistance to the members through the sharing of fund raising knowledge and experience.

CAUDO also sponsors an annual industry-university conference at which people sit down with the people from the universities who are responsible for the fund raising proframs. Other CAUDO projects include seminars and workshops on such things as capital campaigns, annual funds, bequests and direct mail solicitations.

Mr. Irwin, who has been at Dalhousie since 1959, is also executive secretary of the Dalhorizons, the University's $11,100,000 capital campaign. He received a Bachelor or Commerce degree from Dalhousie in 1953 and worked in industry in Ontario before his appointment at the University.

Mrs. Giffin honored

Mrs. Clara M. Giffin was elected honorary president of the Dalhousie Alumni Association at the annual meeting of the association.

Mrs. Giffin, a devoted Dalhousian, worked in the Alumni and Fund Office since 1948.

She succeeds Murray M. Rankin who was given an honorary Life Membership in the association in recognition of his contributions.

The meeting opened with a special welcome to the representatives of the graduating class of '74, the reunion classes of '24, '34, and '49, Donald McInnes, chairman of the board of governors, and Dr. Henry D. Hicks, president of the university.

Reports were presented by H. Larry Doane, treasurer; Mrs. Peter Pronych, associate treasurer; Dr. G. Ross Langley, medical alumni association; and Bruce G. Irwin, director of alumni affairs.

A change in the association by-laws, dealing with the amalgamation of the University and the Nova Scotia Technical College, was approved by the meeting. The revision was an addition to Clause 3, MEMBERSHIP IN THE ASSOCIATION, and read:

3.0 (4): Any person who is a graduate of the Nova Scotia Technical College and who is not already a member of the Association, may elect to become a member of the Association.

This clause shall become effective on and not before the effective date of a proposed amalgamation of Dalhousie University and the Nova Scotia Technical College.

The new officers of the association are: John R. Grant, president; Mrs. Michael Kirby, 1st vice-president; George T. H. Cooper, 2nd vice-president; W. Struan Robertson, past-president; Mrs. Lionel Teed, past 1st vice-president; Mrs. John Curry, secretary; Duncan MacGregor Murray, treasurer; and Mrs. Peter Pronych, associate treasurer.

N.Y. election

The Dalhousie Club of New York has a new slate of officers and a new executive committee for this year.

The new officers are Dr. Isidore Roy Gold, MD CM '38, President; Mrs. Emma Gillies Corsi, '14, Vice-President; Dr. Irvin Deutsch, MD CM '34, Vice-President; Warren Publicover, BA '25, Secretary- Treasurer. The Honorary President is Ross McLeod, BA, LLB '19.

The executive committee consists of Dr. Harold Davis, MDCM '37; Howard C. Glube, BA '23, LLB '25; Dr. Harry Handler, MD CM '35; Dr. Leo Horowitz, MD CM '38; J. Ralph MacLean, '28; Dr. Samuel N. Rosemberg, MC CM '38; Dr. Albert Sloane, DDS '38; and Mrs. Harriett L. Morrissey Stoddard, BA '27.

Reunions held

Reunions for the Classes of 1924, 1934 and 1949 were organized by the Dalhousie Alumni Association during the Spring convocation week.

About 110 from the three classes took part in formal, informal and social events.

In June, at the Faculty of Medicine convocation, a reunion for the Class of 1969 was held, and the turnout was excellent.

Dr. Robert O. Jones

Playgroup ready for 3rd year

The Playground, a community program offered throughout the year by Dalhousie University for pre-schoolers, begins its third yar of operation this month.

In an appropriate environment and under skilled supervision, children aged three, four and five are provided with opportunities for informal play and recreation in the company of their peers.

The Playgroup's location is on the ground floor level at the south end of the Life Sciences Centre, and its facilities include a large indoor activity area, two smaller rooms and other necessary utilities.

Mrs. G.B. Jeffery is again associated with the Playgroup, this year as its director, and she will be assisted by Mrs. Cheryl Gamberg. A new member of the staff is Miss Penelope Newcombe, RN, who will be a teacher, and th fourth member of the staff is Mrs. J.M. Huntley.

There are opportunities for registration in the afternoon sessions and anyone interested should get in touch with Mrs. Jeffery (429-6426, am; 454-4009 pm). Morning and afternoon sessions (Monday-Friday) last fo two and three quarter hours (9-11:45 am; p:15-4pm).

The Playgroup will operate from Sept. 16 to Dec. 13 and from Jan. 6 to June 13.

Good turnout

With an attendance of fifty people, the 1974 meeting of the Moncton branch of the Dalhousie Alumni Association was a success.

Under the chairmanship of branch president Mrs. G. Irving Mitton, the business meeting was brief and to the point. The minutes of the last meeting and all the executive reports were approved, and the recommendations of the nominating committee were unanimously accepted.

The new officers are: Roy McBurnie, president; Mrs. William Reid, 1st vice-president; Ross Bingham, 2nd vice-president; Mrs. G. Irving Mitton, past-president; Garry MacLean, treasurer; and Miss Jennie Grant, secretary. Charles Gillespie, Dr. George Parsons, and Dr. Robert Murray are the new directors.

Speicial guest of the meeting was Dr. Henry James, Killam research professor at Dalhousie. Dr. James, who has been conducting research on the navigational ability of harbor and grey seals on Sable Island since 1969, made a few remarks concerning his research before the meeting adjourned to watch a film about Sable Island.

The film, an excellent twenty-minute color production co-produced by Dalhousie's Audio-Visual Centre and the Nova Scotia Communications and Information Centre, was extremely well received.

After the showing Dr. James answered questions from the audience.

Mr. C.E. Coldwell, assistant director of alumni affairs, represented the Dalhousie Alumni Association at the meeting.

Dr. R.O. Jones to be honored

APPA's 25th anniversary

Dr. R. O. Jones professor and head of Dalhousie University's department of psychiatry, will be officially recognized for his contribution to psychiatric education and Canadian psychiatry at the Atlantic Provinces Psychiatric Association meeting Sept. 18-21.

The meeting will also commemorate the 25th anniversary of the initiation of Dalhousie's postgraduate program in psychiatry. To mark the occasion Dalhousie alumni have been invited to present papers during the scientific program. In addition, invitations to attend have been extended to professors and heads of university departments of psychiatry across Canada as well as to provincial mental health directors.

Other eminent psychiatric professionals will be on hand for the sessions. They include Professor Jerome Frank, Johns Hopkins University; Professor Alexander Leighton, head, department of behavioural science, Harvard; and Professor Myer Mendelson, University of Pennsylvania.

A highlight of the meeting will be a round table discussion on Canadian Psychiatry in The Last 25 Years with recognized psychiatrists participating. This session will be chared by Dr. Robin Hunter, professor and chairman, department of psychiatry at the University of Toronto.

Financial data to be out earlier

Statistics Canada is trying to make financial information about universities available for public distribution much earlier than in the past.

For the past tree years, Statistics Canada and the Canadian Association of University Business Officers have collaborated in the compilation of statistics useful to universities across the country.

Now it is hoped that the statistics will be abailable by mid-December, six months earlier than in the past.

This development was rdported at the annual conference of the Canadian Association of University Business Officers which was held in June and hosted by Dalhousie University. It was CAUBO's first Halifax meeting since 1947.

Yvon Fortin, director of th education science and culture division of Statistics Canada, said at the meeting the collaboration between the two organizations had been fruitful.

"Each university has its financial information available by fall, so in order to make this information effective for use, we feel it is our responsibility to release it much sooner."

Delegates to the conference were welcomed on behalf of the university by the president, Dr. Henry D. Hicks.

Dalhousie organizers and participants included Vice-President D.H. McNeill, Controller G.R. George, Business Manager Otto Noftle, Finance Officer E.J. Nichols, Accountant Earl Wambolt, Housing Director John W. Graham, and Doris Logan, administrative assistant to Mr. McNeill.

Goldbloom back

Dr. Richard B. Goldbloom is back in harness as head of the university's department of paediatrics and physician-in-chief of the Izaak Walton Killam Hospital for Children. Dr. Goldbloom spent the first six months of the year on sabbatical leave during which he was visiting professor of paediatrics at universities in Israel, Kenya, Switzerland, Sweden and Britain.

Schaller on course

Douglas Schaller, Dalhousie's director of security, took part in a week-long seminar for protection and security personnel in July at Wittenburg University, Ohio.

The program concentrated on management competency rather than technical proficiency.

ECONOMICS

Dalhousie's economists active

Membership on regional and national policy-making bodies, studies ranging from U.K.'s entry into the Common Market, zoning in Halifax, the off-shore fishing labor force, and frequent radio and television commentaries were just a few of the "applied advisory" activities of members of the Department of Economics in the 1972-73 academic year.

In the first annual report of the department, published recently, the section on "The Economics Department and the Community" is of most interest to the layman.

During the year, said the report, the department tried to strike a balance, in over-all rather than individual terms, as between teaching, academic research and applied advisory work. "Obviously there is considerable overlap between these main functions, and the following (summary) is not intended to be a comprehensive list but rather a general picture of the kind of roles that a number of departmental members played in the past year in the applied advisory field."

F. Michael Bradfield continued to serve as the chairman of task force on guaranteed annual income of the Eastern Canada Synod, Lutheran Church of America. Apart from his active participation in the public discussion on the continuation of succession duties, he gave several interviews on current economic issues on CBC - Radio.

Dr. Roy E. George was elected a Director of the Maritime Chamber of Commerce.

Professor John R. Graham served as chairman of the Royal Commission on Education, Public Services and Provincial Municipal Relations.

Professor Paul B. Huber designed and air exit survey for the provinces of Nova Scotia and New Brunswick and an auto-air exit survey for Cape Breton Island. He also submitted a preliminary report to the Canadian Consumer Council on Regulatory Bodies in the Atlantic area.

Professor R. Ian McAllister reviewed the potential implications of the U.K. entry into the Common Market for Canadian regional policy for the Federal Department of Regional Economic Expansion. For the Executive Council, Government of Newfoundland, he acted as advisor on the development planning process being undertaken by that government. he continued to serve on various boards and committees concerned with economic policy and planning.

Professor H. Morse's numerous memberships in policymaking bodies include Voluntary Planning Board of Nova Scotia, Canadian Council on Rural Development (Department of Regional Economic Expansion) Canadian Environmental Advisory Council (Department of the Environment) Water resources research Program of the Island Waters Directorate (Department of the Environment).

Professor Tom Pinfold directed a study of the impact of zoning on urban property value and land use for the Planning Department, City of Halifax.

Professor Charles Steinberg prepared a study on "The Nova Scotia Offshore Fishing Labor Force: A Study of Prospects and Potentials", for Industrial Development Branch, Fisheries and Marine Service, Department of the Environment, and the Nova Scotia Department of Fisheries. Further activities in cluded his appointment to the arbitration board on the provincial nurses dispute. He was also nominated as a member of the labor panel, American Arbitration Association.

In addition to the varied "applied advisory" activities and the wide-ranging subjects covered in their publications by Dalhousie's prolific economist-authors, members of the Department of Economics took part in and presented papers at conferences in Canada and Europe during the 1972-73 academic year.

Professor R. L. Comeau gave a paper on regional banking issues to the research department of the Royal Bank of Canada, **Roy George** addressed the Canadian Institute of Bankers on the economic situation of the Maritimes, and at a conference at the University of Aberdeen in Scotland, discussed the impact of large-scale industry on small isolated areas.

John F. Graham attended the annual meeting of the Canadian Economics Association in Kingston and took part in a discussion of a paper on Canadian resources policy by Eric Kierans, and John Head attended the annual conference of the Econometric Society in Toronto.

Other members of the department involved in conferences were **P. B. Huber**, "A Measure of Productivity in the University", Canadian Economis Association; **E. Klein**, "Topological Methods in General Equilibrium Theory," Conference on Topology and its Applications, St. John's ; participated in the 1972 annual meeting of the Ecomonetric Society in Toronto; **R. I. McAllister**, "Brief on the Experiences of the Multiplex Corporation, Devco and the P.E.I. Plan", Council of Maritime Premiers; **C. MARFELS**, "Tax Subsidies for Merger", Austrian Economic Society, Vienna; "New Methods in the Analysis of Concentration Measures", German Statistical Association Wuerzburg; **U. Murata**, "Government Expenditure and Economic Growth, Laurentian University; **T. Pinfold**, "The Welfare Costs of Nonoptimal Pricing and Investment Policies in Highway Transportation", Toronto Meetings of the Econometric Society; **U. L. G. Rao**, "Specification of the Transformation Matrix used in Gernerating Multivariate Normal Vectors and Finite Sample Properties of Simultaneous Structural Estimators", European Econometric Society Meetings in Budapest; **A. M. Sinclair**. "The Formation and Effectiveness of Planning Units in Tanzania". —circulated to CIDA, University of Tanzania and Planning Ministry in Tanzania; "Some Notes on the Role of an Industrial Strategy in Canada", Committee on Socialist Studies; **C. Steinberg**, "Towards a Labor Education Resource Centre", Dalhousie-Labor University Committee of the Institute for Public Affairs.

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Nova Scotia's industry-luring Crown corporation, Industrial Estates Ltd., modern fiscal issues, evolution of Canadian tax reform, infant malnutrition in Africa, regional development policy in Canada, and the economics of fisheries management relating to the Atlantic salmon were among a wide range of subjects covered by members of the Department of Economics in the form of books, articles and reviews during the 1972-73 academic year.

A list of the publications as it appeared in the first annual report of the department is as follows:

F. M. BRADFIELD "A Study of the Atlantic Development Corporation", **Seventh Annual Review of the Atlantic Provinces Economic Council**, October, 1973.

J. F. GRAHAM "Equalization in Federal Support for Post-Secondary Education", **Canadian Public Administration**, 1973 (with John R. Cameron).

J. G. HEAD Modern Fiscal Issues, University of Toronto Press, 1972, (co-editor with R. M. Bird).

"Public Goods: The Polar Case", **Modern Fiscal Issues**, University of Toronto Press, 1972.

"Public Goods and Multi-Level Government", in W. David (ed.) Public Finance, Planning and Economic Development, **New York: MacMillan, 1973.**

"Evolution of the Canadian Tax Reform", Dalhousie Law Review, Vol. 1, No. 1, 1973'. **Public Goods and Public Welfare**, Durham: Duke University Press, in press.

E. KLEIN Mathematical Methods in Theoretical Economics: Topological and Vector Space Foundations of Equilibrium Analysis, Series Economics Theory and Mathematical Economics, New York: Academic Press Inc., 1973.

Topological Set-Ups of the Equilibrium Existence Problem, in **Topology and Its Applications, Proceed**, of a Conference, New York: Marcel Dekker Inc., forthcoming.

Z. A. KONCZACKI Pre-colonial Economic History of Africa South of the Sahara, Frank Cass & Co. Ltd., in press (co-editor).

Economic History of Tropical Africa: Colonial Period, Frank Cass & Co. Ltd., in press (co-editor).

"Infant Malnutrition in Sub-Saharan Africa: A Problem in Socia-Economic Development", **Canadian Journal of African Studies**, Vol. VI, No. 3, 1972.

Houghton, D. H., and J. Dagut, **Source Material on the 1860-1899, New York and London: Oxford University Press, 1972 ; reviewed in The International Journal of African Historical Studies**, Vol. 6, 1973.

Schatz, S. P., **South of the Sahara: Development in African Economies**, London: Macmillan, 1972; review to appear in **Canadian Journal of Economics.**

R. E. GEORGE The Life and Times of Industrial Estates Ltd., Dalhousie Institute of Public Affairs, March, 1974.

A Leader and A Laggard: Manufacturing Industry in Nova Scotia, Quebec and Ontario, Toronto: University of Toronto Press, 1970; reviewed in **Queen's Quarterly**, Winter 1972.

Houghton, D. H. , and J. Dagut, **Material on the South African Economy, Vol. II, 1899-1919**, New York and London: Oxford University Press, 1972; review to appear in **The International Journal of African Historical Studies.**

R. I. McALLISTER "Regional Development Policy in Canada", in: **Issues in Canadian Economics**, edit by Officer and Smith, New York: McGraw Hill , in press.

Green, A. G. , Regional Aspects of Canada's Economic Growth, Toronto: University of Toronto Press, 1971; reviewed in **Queen's Quarterly**, Winter, 1972.

C. MARFELS "Absolute and Relative Measures of Concentration: Reply", Kyklos, Vol. 25, Fasc. 4, 1972.

"Zur Messung der regionalen Konzentration", **Raumforschung und Raumordnung**, Vol. 30, No. 6, 1972.

"Testing Concentration Measures", **Zeitschrift fuer Nationaloekonomie**, Vol. 32, No. 4, 1972.

'Relevant Market and Concentration: The Case of the U. S. Automobile Industry", **Jahrbuecher fuer Nationaloekonomie und Statistik**, Vol. 187, No 3, 1973.

"Concentration in the Petroleum Refining Industries of the Common ,Market Countries", **Economia Internazionale**, Bol. 25, No. 4, 1972.

"Whither Industrial Organization?" **Zeitschrift fuer Nationaloekonomie**, Vol. 33, No. 3-4, 1973.

"Towards a Theory of Concentration Measurement", **Mitteilungsblatt der Oesterreich, Gesellschaft fuer Statistik und Informatik**, Vol. 3, No. 11-12, 1973.

N. H. MORSE "The Economics of Fisheries Management: The St. Hohn River System - with Particular Reference to Atlantic Salmon", **Proceedings of the International Symposium on Atlantic Salmon**, St. Andrews: The Atlantic Salmon Foundation, 1972 (with A. G. DeWolfe).

Y. MURATA "An Input-Output Analysis of Disguised Unemployment in **Japan**, 1951-1965", in: M. Morishima (ed.) , The **Working of Econometric Models**, / cambridge University Press.

"An Alternative Proof of the Frobenius Theorem", **Journal of Economic Theory**, Vol. 5, No. 2 (Oct. 1972).

T. PINFOLD Winch, D. M., **Analytical Welfare Economics**, London: Penguin, 1972; reviewed in **Canadian Journal of Economics**, November, 1972.

U. L. G. RAO "A Note on Monte Carlo Studies", **Metroeconomica**, forthcoming.

"Specification of the Transformation Matrix used in Generating Multivariate Normal Vectors and Finite Sample Properties of Simultaneous Equation Estimators", **Metroeconomica**, forthcoming.

A. M. SINCLAIR "The Meaning of and Criteria for Development in the Maritime Provinces", Maritme Regional Seminar, Institute of Public Administration, Charlottetown, June 1973 (forthcoming in Proceedings).

C. STEINBERG Woods, **H. D., Labour Policy in Canada**, Toronto: Macmillan, 1972; review to appear in **Dalhousie Review.**

Richardson, **H. W., Urban Economics**, London: Penguin, 1971; review to appear in **Journal of Urban Anthropology.**

Richardson, H. W., **Elements of Regional Economics**, London: Penguin, 1969; review to appear in **Journal of Urban Anthropology.**

Hodgkins Disease symposium set

Dalhousie University's Faculty of Medicine will present an Atlantic Symposium on Hodgkins Disease Sept. 19-21 at the Sir Charles Tupper Medical Building.

The three-day event is co-sponsored by the National Cancer Institute of Canada and the Nova Scotia Division, Canadian Cancer Society in conjunction with Dalhousie's Division of Continuing Medical Education.

The course is designed for physicians with responsibilities for the management of Hodgkins disease. The importance of medical teamwork in the treatment of the disease will be emphasized. A review of basic concepts and discussion of new approaches will also be included as part of the sessions.

Key faculty taking part in the presentations are: Vincent T. DeVita, chief, medicine branch, National Cancer Institute at Bethesda, Maryland; Costan W. Berard, head, hematopathology section, Department of Health, Education and Welfare, Bethesda; Gerald R. Berry, assistant professor of McGill University's department of pathology; Raymond S. Bush, assistant professor from the University of Toronto's department of radiology and Anthony B. Miller, director, epidemiology unit, National Cancer Institute of Canada, Toronto.

Club prepares

Dalhousie Faculty Club, which now has nearly 600 members, is preparing for a busy season.

This week the Pub-in-the-Club, the lunchtime sandwich bar in the Great Hall, reopened after the summer break. The Pub will be open from 12 noon until 2 pm, Monday to Friday.

A report on proposed development for the club will appear in the next issue of University News.

MEDICINE

Good rating for televised "grand rounds"

"Grand rounds", one of the most valuable parts of medical education for students and seasoned practitioners alike, went on TV in the spring.

And despite the limited audience, it was given a good rating.

A six-week pilot project initiated by the Department of Medicine at Dalhousie University's medical school with the technical assistance of the school's Audio-Visual Division and Maritime tel & Tel, the "rounds" were televised from three Halifax hospitals to hospital staffs in Sydney, Saint John, N. B., and Charlottetown, P. E. I.

The series began April 9 and ran for the following five Tuesdays. The "grand rounds" — the regular on-location conference at which the problem or problems of one or more patients are discussed by fourth-year students, internes, residents and specialists — gave doctors in the Sydney, Saint John and Charlottetown areas the opportunity to take part in the discussion of important medical problems.

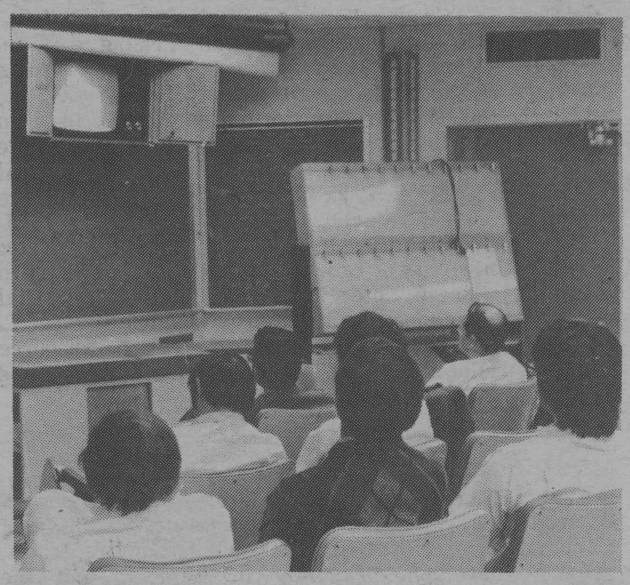
The first two presentations were from the Victoria General Hospital, the next two from Halifax Infirmary, and the last two from Camp Hill Hospital. The cases were presented by the staffs of the three source hospitals, and each presentation was on the air from 8:30 until 10 a.m. Reception in Sydney and Saint John was in the City Hospital and the General Hospital respectively. In the case of Charlottetown, the staffs of the hospitals there were at the CBC studios to take part in the programs.

All the participants on both transmission and reception ends of the programs used a "white line", a direct telephone link which remained open during the 90-minute presentations for questions and discussion.

Main purpose of the project was to find out whether it was a worthwhile development in responding to ever-increasing demands for continuing medical education.

After the six presentations, the Faculty of Medicine's Division of Continuing Medical Education were to evaluate the pilot project by means of a questionnaire which went to the Sydney, Saint John and Charlottetown audiences and and the hospital staffs who made the case presentations. In addition, the technical aspects were evaluated by the Audio-Visual Division.

It was Dr. Robert C. Dickson, former professor and head of the Department of Medicine and an ardent proponent of continuing medical education, who got the



pilot project off the ground — literally, since Maritime Tel. and Tel.'s cross-Nova Scotia microwave system was used.

Dr. Dickson has been concerned for a long time about the ability of medical educators to respond adequately to the increasing demands for continuing education.

Since the end of the World War II the demand for continuing medical education has increased progressively year by year, and it is to their credit that the need for increased availability of continuing education has been recognized concurrently by medical schools and medical societies, according to Dr. Dickson.

While considerable progress has been made in increasing and improving continuing medical education programs, even though many are of the traditional variety — refresher courses, lectures, presentations by top-flight visitors — Dr. Dickson does not hesitate to point out that the availability of educational activities and their use are not synonymous. "The fact that a doctor has attended a meeting or a refresher course does not guarantee that most of his time was not spent on another kind of course, one with 18 holes."

There are two ways, says Dr. Dickson, of doing a better job in continuing medical education. One is to increase the number of staff who are providing the continuing education; this, however, is costly and could be wasteful. The other is to find a way of reaching a wider audience with programs already underway.

"This is where the audio-visual facilities come into the picture. For the last two years we have presented Saturday morning TV programs for the residents in the Halifax teaching hospitals, and we are now condensing these to 15-minute audio tapes for distribution to hospitals in the Maritimes.

"The weekly grand rounds in hospitals have always been a most useful part of medical education for internes, residents and specialists and, I believe, should be of interest to our colleagues in Sydney, Charlottetown and Saint John," said Dr. Dickson.

Total cost of the six, 90-minute presentations to begin in April, including cost of installing reception facilities was about $3,500, which came from a special fund in the Department of Medicine.

Dr. Dickson said it cost the Division of Continuing Medical Education about $200 to send one of its staff to present a day-long refresher course in both New Brunswick and Prince Edward Island. This amount covers travel, accommodation and other expenses.

In addition to the financial cost of putting a medical educator on the road, there was the cost in time. "For example, if one of our people goes to Edmunston in northern New Brunswick for a one-day visit to the hospital there, he is away from Halifax for three days, two of which are taken up in travelling."

The television service could be extended as well within Nova Scotia, if the pilot proves successful and if funds could be found for a continuing series of telecasts, to cover the hospitals in Antigonish, Truro, Kentville and Yarmouth, Lunenburg and Bridgewater.

The transmission of the "grand rounds" was via cable and microwave and was arranged with the co-operation of Maritime Tel. and Tel. From the three hospital sources, the programs were fed by broad band cable to MT & T's North Street microwave transmitter, switched to the company's cross-Nova Scotia microwave loop, beamed to terminals in Sydney, Saint John and Charlottetown and from there by cable again to the three receiving areas.

More med. ed. being taken out of the classroom

More medical education today — at least in the medical school at Dalhousie — is being taken out of the classroom than was the case in the past in a move to encourage students to do more learning on their own.

The formal schedules for students in the first four years have been reduced in the last year by about 15 per cent, or about one full day a week, according to the assistant dean, Dr. Paul Cudmore.

The reason? Under the guidance of the Faculty of Medicine, the student is responsible for learning the science, skills and art of medicine during the undergraduate years, and for developing learning habits which will continue throughout his career.

While the curriculum interprets the school's objectives in terms of the knowledge, the skills and the attitudes a student must acquire by the time he begins to practise as a physician, the Faculty believes that there is another more important aspect.

Because medical science is expanding and changing so rapidly, what is more important than the knowledge a student acquires, is his ability to manipulate this knowledge and act effectively, whether he eventually functions as a practising physician, a researcher, a teacher, or a combination of those.

Accordingly, the curriculum is designed to present the student with a limited, but essential, amount of material, which is commonly called "core knowledge". However, the curriculum also emphasizes totally independent study, as well as a slightly more formal elective program.

"So, by reducing the formal class schedules, we are increasing the time available for a student to learn on his own," says Dr. Cudmore.

One factor which has allowed the curriculum planners to do this has been the development of the school's Audio-Visual Division.

Established in 1967, when the Sir Charles Tupper Medical Building opened, the division has already filled a big gap in the teaching of medicine. Divided into three sections — illustration, photography and television — the division now has a staff of thirteen, and its primary functions are to provide guidance and leadership in the production of audio-visual systems and materials.

The main effort is in the support of lecture room teaching, self-learning resources, publication illustration and support for medical research.

Says D. A. (Tony) Gibson, director for the division: "The audio-visual service is a concept of a co-operative, comprehensive system. We use art, photography and television separately or combined in an attempt to make both basic medical education and continuing education easier to understand."

Two programs initiated two years ago and still evolving are the development of audio-visual study carrels and resources in strategic locations throughout the medical school, and the television cable network between the Tupper building and the teaching hospitals nearby. The TV network is in use about five hours a day.

"Meanwhile," says Mr. Gibson, "the two health sciences resource units, the Audio-Visual Division and the Kellogg Health Science Library, are organizing improved co-ordination between the central source — the Tupper building — and the outlying units, the hospitals, and together are building up health science audio-visual resources through production, collection and distribution services."

Of the pilot TV project the Department of Medicine organized, the transmission of "grand rounds" from three Halifax hospitals to hospitals in Sydney, Saint John, N. B., and Charlottetown, P.E.I., April and May, Mr. Gibson says the division looked at the technical aspects of the presentations.

He agrees, however, with Dr. Robert C. Dickson, former head of the Department of Medicine and the man who initiated the pilot project, that new audio-visual techniques must be exploited if continuing medical education is to be improved and brought to a wider audience.

"One asset in this pilot project, and one we have used in the residency training television programs on Saturday mornings (between the Tupper Building and three hospitals), is 'white line', the direct telephone link which is open during all of the telecast.

"Without the means of two-way communication, we would have passive TV learning which, despite the larger audiences, is not enough. An audience needs the opportunity to react and take part in any discussion at the time of a presentation," says Mr. Gibson.

MEDICINE

Medical licensure — lifetime or limited?

At a time when medical care in Canada is provided largely by tax dollars, it is not surprising that people should ask whether they are getting full value for their money.

And at the same time, when the rate of increase in medical knowledge is so rapid that half of what a doctor knows today will be out of date five years hence, people may well ask if their doctor is really up to date.

These points, says Dr. Robert C. Dickson, former professor and head of the Department of Medicine at Dalhousie University's medical school, serve amply to indicate why continuing medical education is essential. Since World War II the demand for continuing education for doctors has increased tremendously, and the need for increased availability of continuing medical education has concurrently been recognized by medical schools and medical societies. Indeed, considerable progress has been made in increasing the programs of continuing medical education that are offered.

But, as Dr. Dickson is quick to point out, the availability of educational activities and their use are not synonymous, and the fact that a doctor has attended a meeting or a refresher course does not guarantee that most of his time was not spent on the golf course.

In an address he made at the Prairie provinces regional meeting of the American College of Physicians last year, Dr. Dickson discussed the licensure — lifetime or limited — of medical practitioners in relation to the ever-increasing demands for continuing medical education and what those in medical schools and societies might best do to meet the needs. (Dr. Dickson's paper was published in the CMA Journal).

Dr. Dickson posed two questions in his address. "First, should a licence granted by a provincial or state licensing body (by the appropriate examining agencies in Canada and the United States) confer on an individual the legal right to perform any procedure or service in medicine or surgery? Second, should a licence to practise once conferred be valid for the lifetime of the recipient, or should it have a time limit and require renewal?

"If one considers the history of medical licensure, it is clear that at its inception all doctors received roughly the same training up to the time the primary licence to practise was granted."

"At that time postgraduate training was taken only by the exceptional few and all those licensed to practise were considered capable of carrying out all medical services then available. The only limitation imposed on the doctor was his own estimate of his ability — and the confidence he inspired in his patients.

"At a time when all that could be offered for many ailments was compassionate understanding and support it is likely that these controls were sufficient. As medical knowledge advanced with increasing rapidity over the last 100 years or so, and as specialism developed to enable those with special training to perform some services better than their colleagues, no parallel change in licensure developed.

"It fell upon hospital boards to limit 'privileges' and these limitations have progressively increased and on the whole have done a very useful job in place of limitations on scope of licensure.

"Today, with increasing interest in providing more services outside the hospital, the problem of limitation of scope of licensure becomes more acute. We must consider how the controls exercised by hospitals can be extended to a group practice clinics, community health centres and the private offices of solo general practitioners and specialists. It will require great wisdom to devise a method with sufficient flexibility to produce the best results in large metropolitan areas, sparsely populated rural areas and remote areas such as the Canadian North."

Of the question of the duration of validity of licensure, the objective was clear: all concerned in medical education and practice are anxious to ensure the best possible medical care for the people of their country.

It is not surprising, said Dr. Dickson, that the matter had been raised in the House of Commons and in a number of provincial legislatures, as well as by the Canadian Medical Association and at least one provincial medical society.

"Almost invariably an overly simple approach is taken. Periodically the doctor would be required to take an examination. If he passed all well and good. If he failed, his licence to practise would be withdrawn and he would be required to take remedial education to enable him to pass the examination.

Dr. R. C. Dickson, former professor and head of the Department of Medicine in Dalhousie's medical school, and for two years earlier this decade president of the Royal College of Physicians and Surgeons of Canada, was the 1973-74 recipient of the Duncan Graham Award for his contribution to medical education.

The award, established by the college in 1965, goes to a person who has made an outstanding contribution to medical education. It is named after Dr. Duncan Graham, a prominent educator.

Dr. Dickson is only the fourth recipient of the award. The three previous winners were Dr. John Hubbard, of the United States, Dr. Walter MacKenzie of Edmonton (a Dalhousie medical school graduate), and Dr. Douglas E. Crowell, Toronto.

"At first glance this approach appears reasonable, but on more careful consideration difficulties become apparent. Is it fair or reasonable to expect a doctor practising in a remote area of the Canadian North to compete on equal terms with a doctor practising in close proximity to a medical school with all the opportunities for continuing education immediately at hand?

"Further, if a doctor in a populous area of the country were removed from practice by withdrawal of his licence, presumably his patients would be cared for by his colleagues. But if the solo practitioner in a remote area of Canada were forced to withdraw for remedial education, one would have to ask the question 'Is the community better off with a doctor performing below an arbitrary standard, or with no doctor? If the answer is 'no doctor', then carrying the argument to its logical conclusion, all doctors who have practised in the past have been inadequate and should not have been allowed to help the sick and injured.

"Another difficulty which must be recognized concerns the methods by which the doctor's performance is to be examined. We really wish to know how well he looks after his patients. To do this we must measure two things: his recall knowledge and how well he applies this knowledge to the care of his patients.

"Recall knowledge can be measured objectively and well by the multiple-choice examination marked by the optical scanner. At present, there is no adequate method for measuring the doctor's ability to apply his knowledge to the care of his patients, though efforts are being made to develop such a method. It is agreed by those most knowledgeable in the matter that no form of medical audit or peer review now available is adequate for the purpose."

It appeared evident, said Dr. Dickson, that the "punitive approach" had serious shortcomings. It had been tried repeatedly as far back as the Code of Hammurabi (circa 2500 B.C.), the earliest known code of law. Yet never had evidence appeared to indicate any resultant improvement in the provision of health care. Rather, advances were related to the great periods of intellectual upsurge, of which three were outstanding — the 5th century B.C., the Renaissance, and the present.

"Even with the 'punitive approach' the importance of associated education is recognized. Perhaps, then, a different method which we could call the 'educational approach' should be considered. If the program is to be appealing rather than threatening to the doctor, then it should be voluntary. The successful candidate should be rewarded rather than the inadequate punished. The means for all doctors to obtain continuing medical education without the people their community suffering must be provided — no small task in itself.

Dr. Dickson said that discussions between the American College of Physicians and the American Board of Internal Medicine indicated one possible approach to this problem. The college had conducted self-assessment programs which clearly demonstrated their educational value. Those who sought answers to difficult questions in the test with the help of the bibliography provided updated their knowledge and in fact achieved the objective of "limited licensure" testing insofar as recall knowledge was concerned.

"However, those unwilling to study areas of deficiency would not profit from the exercise. For this reason the ACP and ABIM are considering offering an examination three to four months after the self-assessment test and based on the same material. This is the reverse of the punitive approach: first the educational program is offered, then the examination.

"That plan appears to be the most appealing to me that has so far emerged. It will measure recall knowledge and identify those who have updated their recall knowledge. Those who have not should be encouraged to try again after further preparation. But there still remains the need to assess the doctor's ability to apply his knowledge to the care of his patients.

"As mentioned before, efforts are being made to develop suitable methods. In Canada the Royal College of Physicians and Surgeons, through its R. S. McLaughlin Examination and Research Centre, directed by Dr. Donald R. Wilson, is working on the development of a computer-based patient simulation test which, while primarily designed as part of the certification examination, could be equally applicable to recertification. In the U.S., the American College of Physicians is combining with the San Joaquin Foundation to develop an improved type of computer-based peer review. The immediate objective is to improve the San Joaquin program, but the method could be made more widely available as part of a relicensure or recertification program in the future if this pilot project proves successful.

"What is the cost involved in the development of such a program? The answer is horrendous! The first self-assessment test of the ACP cost $90,000 to develop. Further, it utilized over 700 multiple-choice questions, the answers to which were revealed and hence rendered invalid for future use (evidence indicates that this may not be the case). It is estimated that the cost to the Royal College for the development of the patient simulation test, generously covered by the Muttart Foundation, will be $350,000 spread over a five-year period. Both programs are based on only one specialty, Internal Medicine, but the Royal College now examines in 30 specialties and sub-specialties.

"Costly it will be, but if Medicine does not take the lead in this important program, others will, and one doubts whether others have the broad knowledge to produce a plan that will achieve the objective rather than defeat it.

"It would appear desirable to embark on a progressive plan as soon as possible by:

1 Improving continuing medical education by making possible the replacement of solo practitioners in remote areas while they update their knowledge, particularly of procedures which cannot be learned by reading.
2 Exploiting newer audio-visual methods to the full.
3 Developing self-assessment tests in all fields.
4 Developing a plan of educational self-assessment to prepare doctors for subsequent examination of their recall knowledge.
5 Developing effective methods for evaluating the ability of doctors to apply new knowledge to the care of their patients.

"Only when these steps have been taken can we embark with any degree of confidence on a program of voluntary, non-punitive, educational reassessment which would raise the standard of care available to all Canadians. To rush into a program of limited licensure before completing the preparatory steps will defeat the objective."

APPOINTMENTS & PEOPLE & PLACES

Dr. G.R. Langley succeeds Dr. R.C. Dickson

Dr. G. R. Langley is the new head of the Department of Medicine.

A native of Sydney, Dr. Langley received his primary and secondary school education in New Glasgow. He is a graduate of Mount Allison University and Dalhousie Medical School.

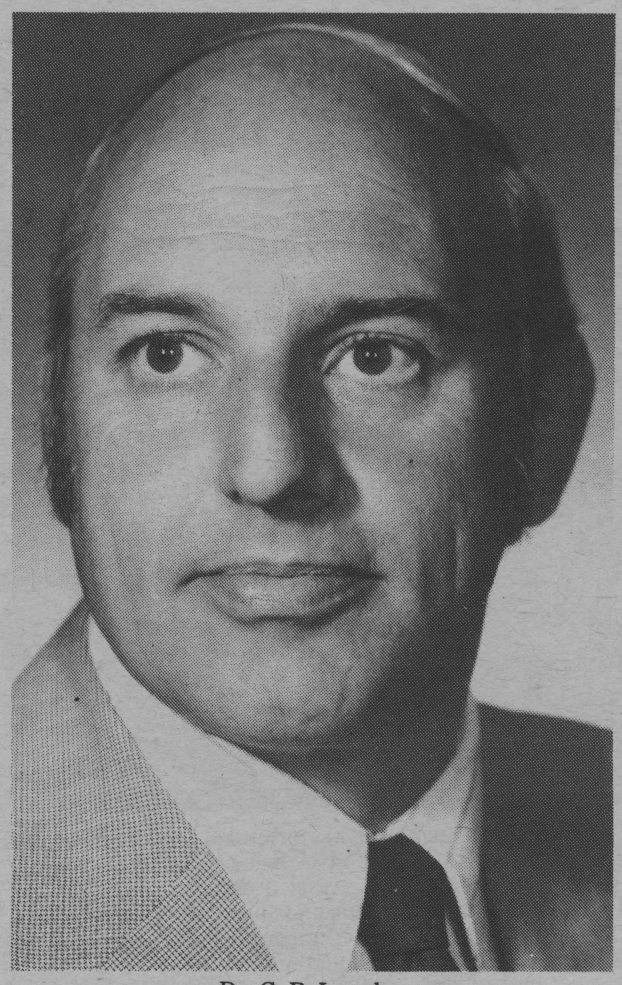
He did his medical residency at the St. John's General Hospital, Newfoundland; the Victoria General, Halifax and the Toronto General. In 1960, he was the recipient of the Dr. Arthur Haatz Fellowship from the University of Toronto, spent as Fellow in Hematology, University of Melbourne, Australia. In 1961, he was a teaching fellow in medicine at the Victoria General, followed by a Medical Research Council Fellowship spent as research assistant, University of Rochester School of Medicine and Dentistry.

A John and Mary R. Markle Scholar in Academic Medicine from 1963 to 1968, Dr. Langley was appointed lecturer in medicine at Dalhousie in 1963. He was subsequently named assistant and associate professor, and in 1968, was made full professor of medicine.

In 1969, Dr. Langley was appointed Chief of Service, Dalhousie Clinical Teaching Unit, Camp Hill Hospital, a position he held until his new appointment. At Camp Hill, Dr. Langley was in charge of the hospital's department of medicine, conducted research in haematology and operated the haematology laboratory.

In addition, his teaching responsibilities involved students in all four years, as well as interns and residents. Dr. Langley has also been involved in planning for the new Camp Hill Hospital.

He is a Fellow of both the Royal College of Physicians and Surgeons of Canada and the American College of Physicians. He is also a member of numerous other medical and scientific associations. He has been the recipient of both the Elizabeth Archibald Bowes Travelling Scholarship from the American College of



Dr. G. R. Langley

Physicians and the Canadian Society for Clinical Investigation Travelling Fellowship.

He is currently a member or examiner on six different committees and boards of the Royal College of Physicians and Surgeons of Canada. He is also president of the Nova Scotia Society of Internal Medicine, chairman of the internal medicine section, Nova Scotia Medical Society and a member of the society's council. He is also chairman of seven different university and hospital committees and subcommittees.

Dr. Langley has presented numerous papers, invited lectures and has been widely published.

In his new position he succeeds Dr. R. C. Dickson, who has been head of Dalhousie's Department of Medicine since 1956. Dr. Dickson was honored at a testimonial dinner in June.

W.I. Speakers

Dr. J. P. Anderson, director of outpatient services at the Izaak Walton Killam Hospital for Children and an associate professor with Dalhousie's department of paediatrics, and **Professor R. A. Craig** of the university's Maritime School of Social Work, were guest speakers in July at an area convention of the Women's Institute of Nova Scotia.

Dr. Anderson's topic was child abuse, and Prof. Craig spoke on communications in the family.

MacLennan honor

E. A. Electa MacLennan, director of the School of Nursing until her retirement in 1972, was honored at a special ceremony during the annual meeting in June of the Canadian Nurses Association.

Miss MacLennan is a former president of the CNA.

Voting on CUPE

Non-academic clerican and technical staff at Dalhousie were scheduled to vote in a Nova Scotia Relations Board election.

The vote was to decide whether or not to accept the Canadian Union of Public Employees as their bargaining agent with the university.

About 500 employees of the university were eligible to vote, and boting was to take place between 9 am and 5 pm in the Student Union Building.

Receptions Bureau transferred

The Receptions Bureau, which has been a section of the Information Office since its establishment several years ago, has been transferred to the Directorate of Housing and Catering Services.

Effective immediately, all requests for catering and reception facilities on campus by departments or individuals should be directed to the bureau at its new location in the Student Union Building.

The bureau's new telephone number is 424-8840.

The Student Union Buidling's own reservations office will continue to operate in Room 210.

Dr. D.G. Gwyn new Anatomy head

Dr. David Graham Gwyn has been appointed head of the Faculty of Medicine's Department of Anatomy.

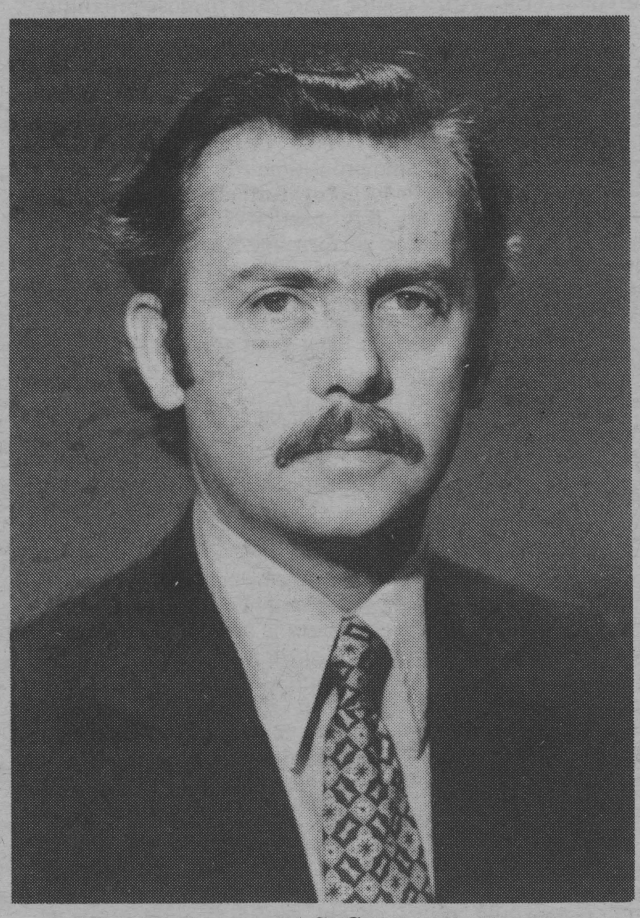
Dr. Gwyn, who has broad teaching, research and administrative experience, took up his duties on July 1.

He is a graduate of the universities of London and Birmingham and before coming to Dalhousie was associate professor of anatomy and honorary lecturer, department of diagnostic radiology at the University of Western Ontario.

His teaching responsibilities over the years have included undergraduate instruction for medical and dental students, physiotherapists and science students. More recently he has been involved in postgraduate teaching of anatomy for radiology residents and students studying orthodontics. Last year he was guest lecturer at the annual conference, Ontario Society of Radiology Technicians.

Dr. Gwyn's administrative experience was extensive in the University of Western Ontario's faculties of medicine and dentistry as well as in the departments of anatomy and diagnostic radiology. He was also involved in course organization and showed keen interest in medical and dental education generally actively participating in a number of planning committees.

He has engaged in research projects while on staff at University College, and the universities of Birmingham and Western Ontario. Dr. Gwyn has received annual grants from the Medical Research Council since 1968 and for the current year (1973-74) his grant totalled $19,573.



Dr. D. G. Gwyn

He has collaborated with others on a number of publications and is a regular contributor to conferences and scientific meetings.

Dr. Dr. Steeves

Dr. Lea C. Steeves, associate dean of the Faculty of Medicine was awarded an honorary degree of Doctor of Science by Memorial University of Newfoundland at Memorial medical school's convocation ceremonies in St. John's in June.

Dr. Steeves was honored by Memorial for his great contribution to medical education in Newfoundland before Memorial medical school was established, and, in particular, for his efforts in continuing medical education.

Following wartime service with the Royal Canadian Navy, Dr. Steeves joined the staff of Dalhousie and in 1957 was appointed director of Continuing Medical Education. At the same time he was a very active member of the teaching program of the department of medicine at both the undergraduate and graduate levels.

In 1963, he was appointed professor of medicine and in 1966 assistant dean, retaining the directorship of continuing medical education.

He was appointed associate dean of the Faculty of Medicine in 1969.

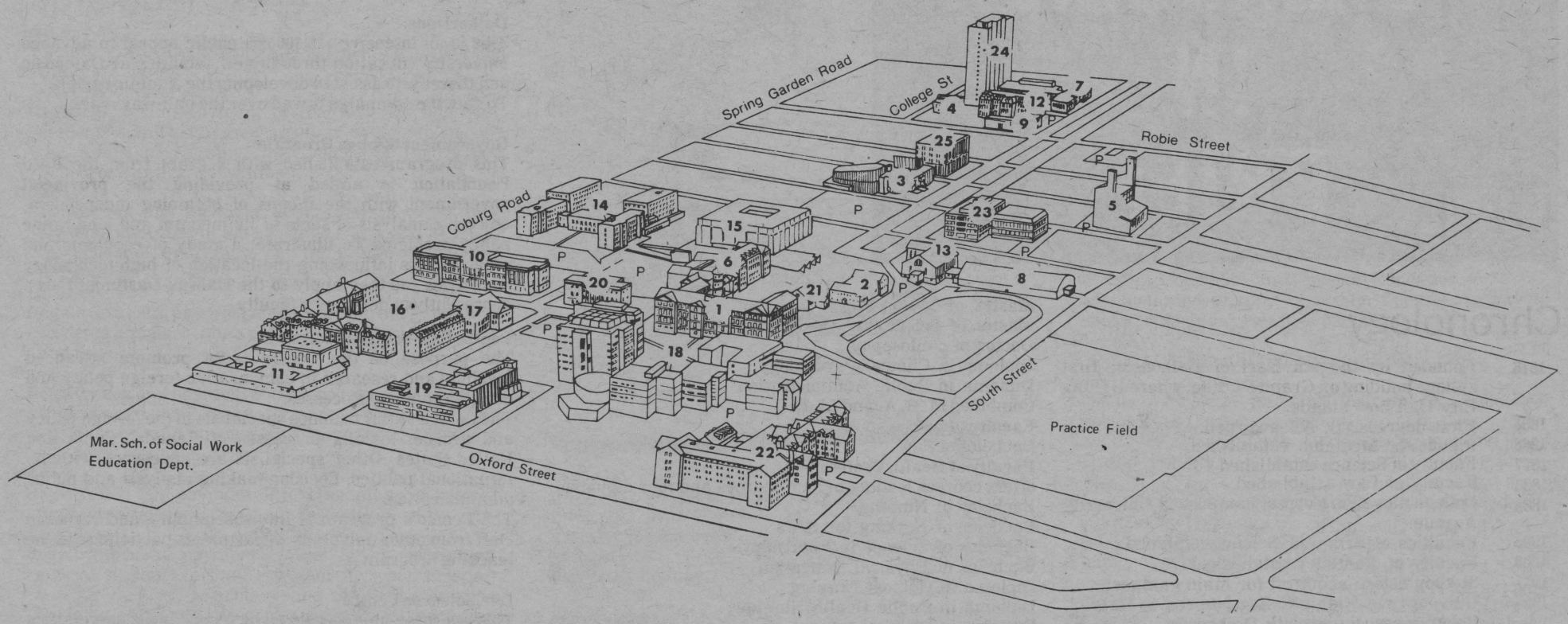
McNevin report

A report on public participation in development plans for Prince Edward Island, made public in July, was prepared by **Dr. J. D. McNevin**, research associate with the Institute of Public Affairs.

The report, which suggested that islanders were taking part in decision-making at a greater rate than before, said some thought had to be given to strengthening the bureaucracy for response to the growth.

The report is the first of several commissioned by the P.E.I. government to cover a series of sectors of the province's comprehensive 15-year development plan.

If you're new to Dalhousie, here's what's where...



1. **Arts and Administration Building**
President, Vice-Presidents, Business Office, Payroll, Purchasing, PBX, Registrar, Admissions, Awards, Faculty of Arts and Science, Faculty of Graduate Studies, Summer School-Extension office, Centre for Foreign Policy Studies, Political Science, Student Services, Classroom Reservations, Controllers Office, Data Centre, Cashier's Office, Public Administration.

2. **Arts Annex**
Physical Education, School of

3. **Dalhousie Arts Centre**
Music and Theatre Departments, Art Gallery, Rebecca Cohn Auditorium, Sir James Dunn Theatre, Central Box Office, Cultural Activities, Technical Services.

4. **George A. Burbidge Pharmacy Building**
College of Pharmacy.

5. **Central Services Building**
Departments of Physical Plant, Planning and Development, Commerce Department, Central Heating Plant, Traffic Office, University Mail Office, Carpenter Shop, Security Office.

6. **Chemistry Building**
Chemistry Department, Main Bookstore.

7. **Clinical Research Centre**
Family Medicine Centre, Cardio-Vascular laboratory, Infertility Clinic, Estrogen Lab, Preventive Medicine, Secretarial Services, Heart & Lung Unit.

8. **Dalhousie Memorial Rink**

Dental Building

9. Faculty of Dentistry, Dental Clinic, School of Dental Hygiene.

10. **Sir James Dunn Science Building**
Geology Department, Engineering/ Engineering Physics Department, Physics Department.

11. **Education Building**
Classrooms

Fenwick Place
Accommodations Office, Manager's Office, Student Residence.

12. **Forrest Building**
Sociology and Anthropology Department, Nursing, Dentistry.

13. **Gymnasium**
Athletics Department, Equipment Room, Gymnasium.

14. **Howe Hall**
Student Health Services, Men's Residence, Dean of Men's office, Dean's apartment, Visitor's apartment, dining halls, Food Services, squash courts, games room, lounges.

15. **Killam Memorial Library**
Library, School of Library Service, English Department, French Department, Computer Centre, Printing Centre, Language Lab, Dal Archives, MacMechan Auditorium, Special Collections, Communication & Information Systems, Advisory Group on Planning & Co-ordination, Mathematics Department, Dalhousie Review Office, Graphics, Typsetting.

16. **King's College**
Residences, Administration, Classrooms, Dining hall, Chapel.

17. **King's College Gymnasium**
Gymnasium, Swimming pool.

18. **Life Sciences Centre**
Psychology Department, Biology Department, Oceanography Department, Radiation-Biology Department, Trace Analysis Research Centre, Freshman Bookstore, Geology Department.

Macdonald Science Library

19. **National Research Council**
Atlantic Regional Laboratory

20. **Nova Scotia Public Archives**

21. **Old Law Building**
Dalhousie Faculty Club, Information Office.

22. **Shirreff Hall**
Women's residence, dining hall, (food services), Dean's office and apartment, Study halls, lounges, library.

23. **Student Union Building**
Student lounges, Meeting rooms, Council offices and chamber, Games room, Bank, College Shop, Barber Shop, Alumni Affairs and Fund office, Canada Manpower Placement Office, Student Counselling and Psychological Services, Dal Radio, Operations office, Dal Gazette, Ombudsman, University Chaplain, Pharos, Dal Music and Drama Society, Food Services, Cafeteria, Sub Affairs Office, Student Society offices, Tourist Bureau, Photography, Grawood Lounge, C.U.S.O. Office, Receptions Bureau.

24. **Sir Charles Tupper Medical Building**
Dean's office, Commissionaires Office, Faculty of Health Professions, Kellogg Health Science Library, Audio-Visual (Medicine) Anatomy Department, Animal Care Centre, Biochemistry Department, Vice-President of Health Professions, Medicine Department, Microbiology Department, Pathology Department, Pharmacology Department, Physiology & Biophysics Department, Division of Continuing Medical Education, Cafeteria, Editorial Services.

25. **Weldon Law Building**
Faculty of Law office, Director of Studies, Admission (Law) office, Sir James Dunn Law Library, Student Lounges.

UNIVERSITY

HOUSES

(The list below is subject to change as a number of departments are in the process of moving, or will move in the next few weeks)

Classics/ 1244 LeMarchant St.
Economics/ 6220 University Ave.
Education/ 1460 Oxford St.
Environmental Studies/ 1226 LeMarchant St.
German/ 1355 LeMarchant St.
Government Studies/ 1226 LeMarchant St.
History/ 1435 Seymour St.
Pediatric and Community Dentistry 1322 Robie St.
Personnel/ 6230 South St.
Philosophy/ 1400 Henry St.
Physiotherapy, Sch. of/ 6006 Univ. Ave.
Public Affairs, Inst. of/ 6209 Univ. Ave.
Religion/ 1244 LeMarchant St.
Russian/ 1376 LeMarchant St.
Social Work, Sch. of/ 6414 Coburg Rd.
Spanish/ 1376 LeMarchant St.
Transition Year Program/ 6034 Univ. Ave.

DALHOUSIE IN BRIEF

Chronology

1818	Founded by the 9th Earl of Dalhousie; first college building on Grand Parade, where Halifax City Hall now stands.
1866	First degrees (B. A.) awarded.
1868	Faculty of Medicine established.
1877	Faculty of Science established
1883	Faculty of Law established.
1886	College moved to Forrest campus, on University Avenue.
1906	Faculties of Arts and Science combined.
1908	Faculty of Dentistry established.
1911	Studley estate acquired for main campus.
1923	University of King's College moved to Halifax, Became associated with Dalhousie.
1936	Institute of Public Affairs established.
1949	Faculty of Graduate Studies established.
1961	Faculty of Health Professions established.
1968	Lady Beaverbrook installed as Dalhousie's second Chancellor.
1969	Five-year co-operative agreements entered into with Nova Scotia Technical College, Mount Saint Vincent University and the Maritime School of Social Work.

Enrolment through the years

1918-19	344	1948-49	1,770
1928-29	869	1958-59	1,700
1938-39	908	1968-69	4,553

Enrolment '73-74

	Full-time	Part-time
Arts and Science	3502	809
Graduate Studies	755	272
Health Professions	772	75
Law	428	3
Medicine	495	1
Postgraduate Medicine	215	
Dentistry and	104	
Dental Hygiene	36	1
Full-time Total	6307	
Part-time	1161	
Grand Total	7468*	

* an increase of 600 students over 1972-73

Degrees and Diplomas

Faculty of Arts and Science
offers courses in 25 departments leading to the following degrees:
Bachelor of Arts
Bachelor of Science
Bachelor of Commerce
Bachelor of Education
Bachelor of Science in Engineering Physics
Bachelor of Music Education
Certificate of Public Administration
The Faculty also offers preliminary training for students and architecture.

Faculty of Graduate Studies
It offers courses leading to 12 different Master's degrees through 27 departments and Ph. D. degrees in 15 disciplines.
Master of Arts
Master of Arts in Education
Master of Science
Master of Business Administration
Master of Laws
Master of Library Service
Master of Nursing
Master of Laboratory Science
Master of Public Administration
Master of Science (Phys. Ed.)
Master of Social Work
Master of Science in Oral Surgery
Doctor of Philosophy
Diploma in Clinical Psychology
Diploma in Public Administration
Combined M. B. A. and LL.B.

Faculty of Law
Bachelor of Law

Faculty of Health Professions
offers courses leading to four degrees and four diplomas:
Bachelor of Nursing
Bachelor of Nursing for RN's
Bachelor of Science in Pharmacy
Bachelor of Physical Education
Diploma in Outpost Nursing
Diploma in Public Health Nursing
Diploma in Physiotherapy

Faculty of Medicine
Medical Doctor

Faculty of Dentistry
Diploma in Dental Surgery
Diploma in Dental Hygiene

Recent expansion

1960	Sir James Dunn Science Building opened.
1961	Men's Residence (now Howe Hall) opened.
1963	Shirreff Hall east wing opened.
1964	Howe Hall northeast wing opened.
1965	Extension linking Chemistry Building and old library opened.
1966	Weldon Law Building opened.
1967	Sir Charles Tupper Medical Building opened Shirreff Hall west wing opened. Howe Hall southeast wing opened.
1968	Student Union Building opened.
1970	Killam Memorial Library in operation.
1971	Arts Centre opened. Central Services Building completed. Completion of the tunneling system to service most of the university from the Central Services Building Construction completed on the Life Sciences Centre, and in operation. Occupancy of Fenwick Towers, a high-rise apartment building designed for students accommodation.

Planned
Physical Sciences Complex.
Physical Education Centre.
Dental Building.

Physical Plant
The university occupies about 65 acres of the residential area of the South-end of the city. It has more than twenty research and teaching facilities and a number of on-campus houses which are occupied by teaching departments.

Fund Sources, 1972-73

Student academic fees	11.9%
Gifts for general and restricted purposes	2.2
Endowment income	5.8
Receipts from services to outside organizations	7.7
Miscellaneous	9.4
Government grants	54.5
Sponsored and assisted research	8.5
	100.0%

Fees and Residence Charges
Tuition fees for students in Arts and Science, Graduate Studies and Health Professions are between $720 and $725 for one academic year. Fees for professional schools range from $745 in law, $817 in medicine and $835 in dentistry.
Rates for residences are $1125 a year for single accommodation and $100 less for a double room.

Staffing
The University employs about 2500 people. Full-time academic staff totals 702 with part-time staff numbering 132. In addition there are more than 1670 administrative, technical, clerical, and maintenance personnel.

Graduates
In 1868, six degree were awarded. In 1974 more than 1400 degrees were awarded.

Dalhorizons
This is an intensive $11,100,000 public appeal to advance university education through new facilities at Dalhousie and thereby to assist in developing the Atlantic region.
To date the campaign is well over the half-way mark.

Government Studies Program
This program established with a grant from the Ford Foundation is aimed at providing the provincial government with the means of obtaining independent, objective analysis of some of its medium and long-range policy problems To illustrate, a study of economic and other factors influencing the location of high-technology industries as they apply to the Halifax-Dartmouth area is presently underway by faculty.

Centre for Foreign Studies
The purpose of the Centre is to promote advanced teaching and research in comparative foreign policy and decision-making processes.
The Centre's staff includes specialists in the foreign policy and decision-making processes of Canada, China and United States. Other specialists are concerned with international politics, decision-making analysis and public administration.
The Centre's program is interdisciplinary and resource staff from other university departments participate in the teaching program.

Life Sciences Centre
This is a three-unit complex which houses the university's departments of biology, oceanography and psychology.. The centre places Dalhousie in the forefront of oceanographic and marine biology research, while providing the most up-to-date teaching and research facilities in the field of experimental psychology.

Killam Library
A Humanities and Social Science Library providing resources for undergraduate teaching programs, graduate and faculty research projects, and specialized schools. It serves as the technical and administrative centre of the University Library System. Its design enables effective service to be given to the collection resources and permits appropriate use of the new media in support of teaching and research programs.

Dalhousie Arts Centre
The Dalhousie Arts Centre is primarily intended to be an educational and cultural resource for the university community. The major emphasis in the utilization of its facilities, therefore, is academic.
A comprehensive program of extra-curricular cultural events related to the objectives of the academic departments, has been developed by the Dalhousie Committee on Cultural Activities. These events are available and attractive not merely to the academic community but also to the general public. The nature and intent of this program is to broaden and deepen the range of cultural interest in the Halifax community at large.

Institute of Environmental Studies
The institute has been developed to bring together university resources in the scientific, social and legal areas to deal with specific environmental problems and is designed to offer improved opportunities for students and faculty to understand as fully as possible every aspect of the man-enviromnent system.

Dalhousie Legal Aid
In 1970 a program for providing legal aid was initiated by a group of law students. During the academic year, 1970-71, the Dalhousie Legal Aid Service was formally organized and has received assistance from the Nova Scotia Barrister's Society, the Faculty of Law, the Law Students' Society and othe local organizations. The Service has provided a clinical law program aimed at initiating education and training of final year law students in the needs and demands of advising poor people in our community.

Family Practice Teaching Unit
A family medicine centre providing team-approach training for fourth-year medical students and resident doctors in family practice, in a setting which approximates that of a private practice.

Out-Reach Tutoring
An enterprising venture initiated by students and faculty and supported financially by the Dalhousie Student Union. Volunteers are providing tutoring and remedial services free of charge to school-age young people in the community.

Continued on Page 16

Academic calendar (Sept. 1974—June 1975)

September 1974

Thursday,5
Faculty of Arts and Science Council meeting, 10:00 a. m.
Monday, 9
Senate Council Meeting.
Registration and payment of fees for new full-time students admitted to the Faculty of Arts and Science, the School of Nursing, the College of Pharmacy, School of Physical Education.
Tuesday, 10
Registration and payment of fees for new full-time students admitted to the Faculty of Arts and Science, the School of Pharmacy, and the School of Physical Education.
Wednesday, 11
Registration and payment of fees for returning full-time students and part-time students in the Faculty of Arts and Science.
Thursday, 12
Registration and payment of fees for returning full-time students and part-time students in the Faculty of Arts and Science, and for nursing, pharmacy and physical education students.
Friday, 13
Registration and payment of fees for all categories of graduate students.
Saturday, 14
Registration and payment of fees for part-time and special students in the Faculty of Arts and Science, and for nursing, pharmacy and physical education students, and for all categories of graduate students.
Monday, 16
Classes begin.
Thursday, 19
Senate meeting.
Faculty of Arts and Science Council meeting, 11:30 a. m.
Monday, 23
First day for change of class or course.
Friday, 27
Last day for those expecting to receive a graduate degree in October to submit approved unbound copies of theses to the Faculty of Graduate Studies office.
Monday, 30
Last day for adding classes (except "B" classes).

October

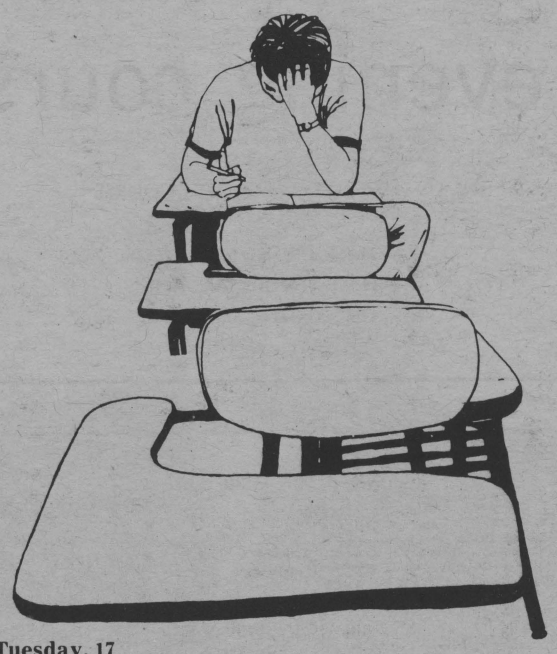
Thursday, 3
Faculty of Arts and Science Council meeting, 11:30 a. m.
Monday, 7
Senate Council meeting.
Tuesday, 8
Faculty of Arts and Science meeting, 11:30 a. m.
Monday, 14
University holiday.
Wednesday, 16
Nursing, Pharmacy, Physical Education: Last day for adding full classes and classes that terminate at Christmas.
Last day for withdrawing from classes that terminate at Christmas.
Thursday, 17
Faculty of Arts and Science Council meeting, 11:30 a. m.
Tuesday, 29
Faculty of Arts and Science meeting, 11:30 a. m.

November

Thursday, 7
Faculty of Arts and Science Council meeting, 11:30 a. m.
Monday, 11
University holiday.
Friday, 15
Last day for withdrawing from "A" classes without penalty.
Monday, 18 - Saturday, 23
Examinations — School of Physiotherapy (1st year).
Thursday, 21
Faculty of Arts and Science Council meeting, 11:30 a. m.

December

Thursday, 12
Faculty of Arts and Science Council meeting, 11:30 a.m.
Tuesday, 10
Faculty of arts and Science meeting, 11:30 a. m.
Wednesday, 11
School of Library Service examinations begin.
Last day of classes in Arts and Science, and in the School of Social Work.
Last day of classes in Law (2nd and 3rd years).
Thursday, 12
Examinations begin in Arts and Science, Nursing, Pharmacy and Physical Education.
Examinations begin in Law (2nd and 3rd years).
Faculty of Arts and Science Council meeting, 10:00 a. m.
Monday, 16
Last day of classes in Law (1st year).
Examinations — School of Physiotherapy (2nd year).



Tuesday, 17
Mid-term tests begin in Law (1st year).
Saturday, 21
Students holiday begin.
Wednesday, 25
University holiday.

January 1975

Wednesday, 1
University holiday.
Friday, 3
Registration of new students in the Faculty of Health Professions.
Monday, 6
Classes resume.
Thursday, 9
Faculty of Arts and Science Council meeting, 11:30 a. m.
Monday, 20
Last day for adding "B" classes.
Thursday, 23
Faculty of Arts and Science meeting, 11:30 a. m.
Tuesday, 28
Faculty of Arts and Science meeting, 11:30 a. m.
Thursday, 30
Last day for withdrawing from full-year or "C" classes.
Friday, 31
Munro Day (University holiday).
Last day for receiving applications for admission to the School of Social Work (Sept '75).

February

Saturday, 1
Winter Carnival (University holiday).
Last day for receiving applications for admission to the School of Physiotherapy.
Thursday, 6
Faculty of Arts and Science Council meeting, 11:30 a. m.
Monday, 17 - Saturday 22
Examinations — School of Physiotherapy (1st year).
Thursday, 20
Faculty of Arts and Science Council meeting, 11:30 a. m.
Monday, 24
Study break begins.
Friday, 28
Last day for receiving applications for admission to the basic baccalaureate degree of Nursing program.

March

Monday, 3
Classes resume.
Thursday, 6
Faculty of Arts and Science Council meeting, 11:30 a. m.
Monday, 10
Last day for withdrawing from "B" classes without penalty.
Tuesday, 11
Faculty of Arts and Science meeting, 11:30 a. m.
Wednesday, 12
Last day for those expecting Ph. D. degrees in May to submit unbound theses to departments.
Thursday, 20
Faculty of Arts and Science Council meeting, 11:30 a. m.
Last day for receiving theses in temporary binding from those who expect to receive an LLM degree in the spring.
Friday, 28
Good Friday (University holiday).

April

Thursday, 3
Last day of lectures in Arts and Science.
Faculty of Arts and Science Council meeting, 11:30 a. m.
Wednesday, 9
School of Library Service examinations begin.
Thursday, 10
Last day of classes in Law (2nd and 3rd years).
Last day of lectures in Nursing, Pharmacy and Physical Education.
Saturday, 12
Examination begin in Law (2nd and 3rd years).
Monday, 14
Last day for receiving applications for entrance to 1st year Dental Hygiene (Sept. '75).
Tuesday, 15
Examinations begin in Arts and Science, and in Nursing, Pharmacy and Physical Education.
Last day for those expecting Master's degrees in May to submit unbound theses to departments.
Wednesday, 16
Faculty of Graduate Studies examinations begin.
Friday, 18
Last day of classes and field instructions , School of Social Work (2nd year students).
Last day of classes in 4th year Dentistry and 2nd year Dental Hygiene.
Monday, 21
Final examinations begin in 4th year Dentistry and 2nd year Dental Hygiene.
Tuesday, 22
Faculty of Arts and Science meeting, 10:00 a. m.
Thursday, 24
Faculty of Arts and Science Council meeting, 10:00 a. m.
Friday, 25
Last day of classes and field instruction, School of Social Work (1st year students) .
Mondsy, 28 — Saturday, May 3
Final examination, School of Physiotherapy (2nd year).
Wednesday, 30
Last day for Faculty receiving theses from those expecting a graduate degree in May.
Last day for receiving applications for admission to the School of Library Service (Sept. '75).

May

Thursday, 1
Last day for receiving applications for admission from foreign students (other than Americans).
Last day for receiving applications for entrance to 1st year Dentistry (Sept. '75).
Examinations end in Law (1st year).
Friday, 2
Classes end in Law (1st year).
Saturday, 3
Examinations begin in Law (1st year).
Monday, 5
Senate Council meeting.
Tuesday, 6
Examinations end in Law (2nd year).
Wednesday, 7
Faculty of Dentistry meeting, 8:00 p. m.
Thursday, 8
Faculty of Arts and Science Council meeting, 10:00 a. m.
Friday, 9
Faculty of Arts and Science meeting, 10:00 a. m.
Faculty of Law meeting.
Thursday, 15
Convocations.
Examinations end in Law (1st year).
Friday, 16
Convocations.
Last day of classes in Medicine (1st, 2nd and 3rd years).
Monday, 19
Victoria Day (University holiday).
Tuesday, 20
Summer School Registration (1st session).
Second year, Out post Nursing, begins.
Wednesday, 21
Summer School classes begin (1st session).
Friday, 23
Faculty of Arts and Science Meeting, 10:00 a. m.
Last day in 3rd trimester in Dentistry (1st, 2nd and 3rd years), and in 1st year Dental Hygiene.
Monday, 26 — Saturday, 31
Examinations — School of Physiotherapy (1st year).
Dentistry (1st, 2nd and 3rd years) and in 1st year Dental Hygiene (Examinations).
Thursday, 29
Faculty of Arts and Science Council meeting, 10:00 a. m.
Friday, 30
Last day for receibing applications for addmission to: Bachelor of Nursing for RN's Diploma in Public Health Nursing program College of Pharmacy.

June

Wednesday, 11
Faculty of Medicine Convocation.
Friday, 27
First Summer School session ends.

Dalhousie's 1974-75 late afternoon and evening courses

FOR DETAILED INFORMATION ABOUT THE COURSE DESCRIPTION, PRE-REQUISITES, ETC. CHECK WITH THE DEPARTMENT CONCERNED.

THE LETTER FOLLOWING EACH COURSE NUMBER INDICATES:

A — HALF CRERIT SEPT.-DEC.
B — HALF CREDIT JAN.-APR.
R — ONE CREDIT SEPT.-APR.

THE LETTERS FOLLOWING THE COURSE HOURS INDICATE DAY OF THE WEEK.

HERE (R) STANDS FOR THURSDAY

COURSE & TITLE	DAY & HOURS
Starting Hour—4:00 p.m.	
Education 5011A—Society & Educ-Continental Perspective	T 400 pm 600
Education 5012B—Society & Educ-Continental Perspective	T 400 pm 600
Philosophy 346R—Problems of Mind	MF 400 pm 525
Philosophy 546R—Problems of Mind	MF 400 pm 525
Physical Education—Issues	MF 400 pm 525
Theatre—History of the Theatre	MW 400 pm 530
Starting Hour—4:30 p.m.	
Biology D 1000R—Principles of General Biology	TR 435 pm 525 Lab Hrs to be arranged
Commerce 322A—Interpersonal Dynamics	W 435 pm 625
Commerce —323B—The Personnel Function	W 435 pm 625
Commerce 324A—Labour Relations	T 435 pm 625
Commerce 331B—Security Analysis	T 435 pm 625
Education 4341A—Development Psychology	M 435 pm 625
English 100R (23)—Intro. to Literature	TR 430 pm 525
English 100R (24)—Intro. to Literature	MWF 430 pm 525
English 204R—The European Novel	WF 430 pm 525
English 214R—Shakespeare	WM 430 pm 525
English 216R—The Gothic Novel	T 430 pm 625
English 454R—Literary Criticism	R 430 pm 625
French 434A—Literature of 19th Century	MWF 435 pm 525
French 434B—Literature of 19th Century	MWF 535 pm 525
French 534A—Studies in the 19th Century	MWF 435 pm 525
French 534B—Studies in the 19th Century	MWF 435 pm 525
Physical Education 101B—Fundamental Movement	MWF 430 pm 525
Physical Education 419A—Physiological Basis of Competitive Sports	MF 430 pm 525
Physical Education 436A—Specialization	F 430 pm 525
Physical Education 543A—Perceptual Motor Development	TR 430 pm 600
Political Science 549B—Cem In PPE: Issue Processing	R 430 pm 625
Political Science 574B—Advanced Public Administration	T 430 pm 625
Philosophy 449B—Philosophy, Politics & Economics	R 435 pm 625
Philosophy 549B—Philosophy, Politics & Economics	R 435 pm 625
Starting Hour—5:00 p.m.	
Education 5321A—Psychology of the Pre-School Cld	W 500 pm 700
Education 5322B—Psychology & Educ. of the "Exceptional" Child	W 500 pm 700
Education 5401A—Admin. of Public Educ. in Canada	R 500 pm 700
Education 5402B—Concepts in Educ. Administration	R 500 pm 700
Education 5411A—Admin. of Educational Personnel	M 500 pm 700
Education 5412B—Admin. of Educational Programme	M 500 pm 700
Education 5421A—Educational Finance in Canada	W 500 pm 700
Education 5921A—Programme Planning & Evaluation	M 500 pm 700
Education 5941A—Adult Counselling	W 500 pm 700
Education 5950R—Comparative Adult Educ.	T 500 pm 700
Physical Education 419A—Physiological Basis of Competitive Sports	W 500 pm 600
Theatre 301R—Intro to Film	TR 500 pm 700

COURSE & TITLE	DAY & HOURS
Starting Hour—5:30 p.m.	
Education 4000R (1)—Sociology of Education	T 535 pm 725
Education 4000R (2)—Sociology of Education	R 535 pm 725
History 240R—African History	W 530 pm 730
Mathematics 100A—Differential & Integral Calculus	MW 530 pm 700
Mathematics 101B—Calculus & Integral Calculus	MW 535 pm 700
Mathematics 200R—Intermediate Calculus	TR 530 pm 700
Russian 100R—Elementary Russian	TR 530 pm 700
Starting Hour—6:00 p.m.	
Commerce 101R—Introductory Accounting	TR 600 pm 725
Education 4850R—Methods of Teaching German Jr & Senior High	W 600 pm 800
Education 5201A—Youth As a Social Category	T 600 pm 800
Education 5205B—School-Communications System	T 600 pm 800
German 351R—Theory & Practice of Language Instruction	W 600 pm 800
Physical Ed 550B—History of Phys. Ed. in North America	T 600 pm 900
Physical Ed 551A—Ancient History of Phys Education	T 600 pm 900
Starting Hour—6:30 p.m.	
Business Admin 521R—Finance	M 630 pm 830
Business Admin 551A—Financial Accounting	MW 630 pm 830
Business Admin 552B—Managerial Accounting	MW 630 pm 830
Commerce 207A—Intro to Managerial Finance	W 630 pm 900
Commerce 309B—Production	W 630 pm 900
Commerce 311R—Planning for Profit & Social Responsibility	M 630 pm 900
Economics 336B—Regional Development	W 635 pm 925
Economics 535B—Regional Development	W 635 pm 925
English 507R—The Eighteenth-Century Novel	W 630 pm 825
German 200R—Intermediate German	TR 630 pm 800
German 201R—Scientific German	TR 630 pm 800
Theatre 101R—Intro to Theatre	MW 630 pm 800
Starting Hour—7:00 p.m.	
Economics 100R—Principles of Economics	TR 700 pm 825
Economics 220A—Microeconomic Theory	TR 700 pm 825
Education 5251A—Educ'al Tradition & Change in Regional Context: Soviet Realm	R 700 pm 900
Education 5252B—Comparative Perspectives on Issues in Education	R 700 pm 900
Education 5311A—Foundations of Childhood Education	M 700 pm 900
Education 5312B—Trends & Issues in Childhood Education	M 700 pm 900
Geology 241B—Environmental Geology	R 700 pm 800 Lab. 800 pm 1000
Geology 242A—Geomorphology	R 700 pm 800 Lab. 800 pm 1000
Geology 341B—Environmental Geology	R 700 pm 800 Lab. 800 pm 1000
Geology 432A—Geomorphology	R 700 pm 800 Lab. 800 pm 1000
Geology 140R—Introduction to Geology	W 700 pm 800 Lab. 800 pm 1000

COURSE & TITLE	DAY & HOURS
Starting Hour—7:00 p.m. (cont'd)	
Geology 240R—Marine Geology & Geo Physics	T 700 pm 800 Lab. 800 pm 1000
German—100R—Introduction to German	TR 700 pm 830
History 205R—Modern Europe	M 700 pm 900
History 220R—Canadian Mosaic	W 700 pm 900
History 327R—The Nova Scotian Experience	W 700 pm 900
Music 135R—Understanding Music	R 700 pm 900
Philosophy T100R—An Introduction to Philosophy	T 700 pm 900
Political Science 217A—Politics in Africa South of Sahara	T 700 pm 900
Political Science 311R—Public Administration	R 700 pm 1000
Political Science 327A—Formulation of U.S. Foreign Policy	T 700 pm 900
Political Science 327B—Ideological Foundations of U.S. Foreign Policy	T 700 pm 900
Political Science 334A—Local & Regional Gov't in Canada	W 700 pm 900
Political Science 362R—The Politics of the Sea	T 700 pm 1000
Political Science 511R—Public Administration	R 700 pm 1000
Political Science 527A—Formulation of U.S. Foreign Policy	T 700 pm 900
Political Science 527B—Idelogical Foundations of U.S. Foreign Policy	T 700 pm 900
Political Science 534A—Local & Regional Gov't in Canada	W 700 pm 900
Political Science 562R—The Politics of the Sea	T 700 pm 1000
Sociology 100R—Introductory Sociology	W 700 pm 900
Sociology 212R—Minority Groups	MW 700 pm 835
Sociology 224A—Intro to Sociological Theory	T 700 pm 930
Sociology 303R—Social Problems & Social Policy	R 700 pm 930
Sociology 308A—Social Psychology	W 700 pm 930
Sociology 312B—Social Conflict	
Sociology 326B—Development of Soc. as a Discipline	T 700 pm 930
Starting Hour—7:15 p.m.	
Classics 101R—Ancient History	R 715 pm 915
Starting Hour—7:30 p.m.	
Commerce 204R—Statistics for Econ & Business	TR 730 pm 900
Comparative—Philosophy in Literature	T 730 pm 930
Literature 270R—Philosophy in Literature	
Literature 570B—Philosophy in Literature	T 730 pm 930
Economics 221B—Macroeconomic Theory	TR 735 pm 825
Economics 236A—Recent Econ Development in Sub-Saharan Africa	R 735 pm 925
Economics 562A—Recent Econ Development in Sub-Saharan Africa	R 735 pm 900
English 100R (9)—Intro to Literature	TR 730 pm 900
English 527R—Traditionalism & Expirimentation in Poetry 1880-1920	M 730 pm 925
English 510R—Victorian Novel	T 730 pm 925
Philosophy 217R—Existentialism	M 730 pm 930
Philosophy 270R—Philosophy in Literature	T 730 pm 930
Philosophy 280R—Ethics and Medicine	W 730 pm 930
Philosophy 570R—Philosophy in Literature	T 730 pm 930
Philosophy 580R—Ethics and Medicine	W 730 pm 930
Political Science 319A—Budgetary Process	W 730 pm 930
Political Science 519A—Budgetary Process	W 730 pm 930

NOTE: The above hours and days like all class hours may be subject to change.

New students are those who have not previously taken a course in the fall-winter term at Dalhousie.

Admission requirements: Under normal conditions the minimum requirement for admission of a new student to Dalhousie is completion of the N.S. Grade 12 university preparatory program or its equivalent with an average of 60%.

Mature students: In individual circumstances the university will admit persons who lack the normal high school preparation including persons who have been away from school for a number of years, provided they can show by letter and through interview with the Admissions Office that they possess qualities fitting them for university studies. These persons are often referred to as mature students.

Admission Forms: Application forms may be obtained from the Registrar, Main Floor, Arts & Administration Bldg. (424-2450). The completed application together with the required documents, letters, etc., should be mailed or taken to the Registrar at the earliest opportunity.

Fees:
Full credit - $150
Half credit - $75

Audit (no assignment or evaluation) 1/ 2 of the above.
Late fee - $5 per day (max. $20)

Summer programs: Approx. one half of the courses offered each year in the May-June and July-August summer sessions are in late afternoon or evening hours. Calendar available from the Director, Summer School, Arts & Administration Building.

REGISTRATION DATES:

New students:
Mon., Sept. 9: 9 - 12; 2 - 4; 5 -7
Tues., Sept.10: 9 - 12; 2 - 4.

Returning students:
Wed., Sept. 11:9 - 12; 2 - 4; 5 - 7.
Thu., Sept. 12: 9 - 12; 2 - 4.

Graduate students:
Fri., Sept. 13: 9 - 12; 2 - 4.

New & returning students:
Sat., Sept. 14: 9 - 1.

Classes begin on September 16.

FOR INFORMATION RE:

Admissions: Dr. W. D. Courrier, 424-2401.

B. Ed. (Part-time and vocational): Secretary, B. Ed. program, 424-6461.

M.A. Education (part-time): Secretary, MA Education program, 424-6460.

B. Comm. (part-time): Prof. G. R. Zinck, 424-3504.

Student problems: Dr. W. D. Courrier, Asst. Registrar, 424-3880.

Summer School programs: Dr. T. Parker, Director, Summer Schools, 424-2375.

DAL IN BRIEF

Continued from Page 14

Transition Year Program
Thsi program was instituted in September, 1970 and provides a 'second chance' for black and Indian Nova Scotians.
Young people between the ages of 17 and 23 who were inadmissable to university are enrolled and given an intensive course designed to enable them to overcome the disabilities which had previously prevented their being admitted to university.

Advanced Management Centre
This is a resource centre for management in the Atlantic Provinces and is one of the special services offered to the community by the Institute of Public Affairs.
Through the Centre a comprehensive and integrated management development program has been set up and offered to individuals and groups in the area, through a series of workshops, seminars, and conferences on specialized topics.

Publications:
In addition to the usual university publications, such as the annual calendars for the various faculties departmental program brochures, and literature concerning cultural and other non-academic activities, a wide range of other publications dealing with the university, its programs and activities, are available, including the following:
Undergraduate Admissions Bulletin.
Scholarships, Awards and Financial Aid.
Student Handbook.

The DALHOUSIE REVIEW, published quarterly by Dalhousie University Press; magazine covering various topics in a comprehensive manner.
The DALHOUSIE ALUMNI NEWS, a quarterly by Dalhousie University the Alumni Office; contains general news and news about and for Dalhousie Graduates.
The DALHOUSIE GAZETTE, Canada's oldest student newspaper, an autonomous publication, sponsored by the Student Union; published weekly during the academic year.
UNIVERSITY NEWS, a biweekly tabloid published throughout the academic year. It offers news, features, cultural events, general notes, opinion pages, sports, people and places and a calendar of events.
In addition several of the student societies have their own publications.

GENERAL NEWS

122 classes in 19 subjects being offered evenings

More than 100 classes in 19 subjects are being offered in Dalhousie University's 1974-75 program of late afternoon and evening courses, it has been announced by Dr. Tom Parker, the university's director of summer school and extension.

Dr. Parker said the courses, at different levels and ranging from biology to theatre, would begin on Sept. 16. Registration for the classes begins on Sept. 9 and ends on Sept. 14.

The 122 classes being offered cover biology, business administration, classics, commerce, economics, education, English, French, German, geology, history, mathematics, music, philosophy, physical education, political science, Russian, sociology and theatre.

60 Quebec students at Dal ecole d'ete

Sixty students from the province of Quebec whose mother language tongue is French got more than a taste of English, language and culture, during the summer.

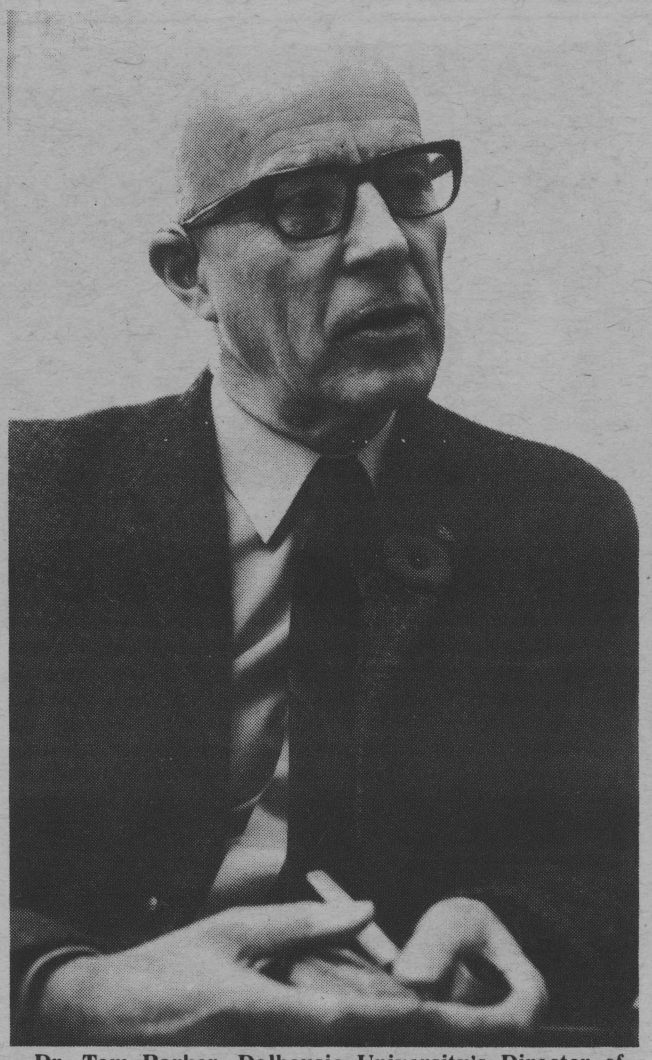
The students were enrolled in a six-week course at Dalhousie University — "Ecole d'ete, l'Anglais parle et ecrit" (Summer school — spoken and written English).

And while it wasn't an immersion course, it was close to it. From 9 until 4 each day, the students took, part in lectures, language laboratory sessions and a full program of social and cultural activities.

The six-week course was part of the 2nd-language bursary program instituted by the Secretary of State's department and administered by the Council of Ministers of Education in Canada. It is supported by federal and provincial governments.

"We hope this aspect of summer school education will develop to the point where Dalhousie will become prominent in teaching of English as a second language," says Dr. Tom Parker, the university's director of summer school and extension.

Six instructors were on hand to teach th Quebec students, and they were assisted by senior students at Dalhousie.



Dr. Tom Parker, Dalhousie University's Director of Summer School and Extension.

Dal-Mount summer enrolment up

Enrolment at Dalhousie-Mount Saint Vincent summer school this year showed a slight increase over 1973, Dr. Tom Parker, director of summer school and extension at Dalhousie, has reported.

Combined enrolment for the two sessions (May-June, July-August) was 2,240. Of this total, 1,472 attended courses at Dalhousie.

The two universities have co-operated in summer school activity since 1972. At that time they combined their resources to offer students a broader selection of credit courses extending over a three-year period.

This co-ordination and three-year projection — the 1975 and 1976 summer programs are already tentatively scheduled — by Dalhousie and Mount Saint Vincent is unique in Canada.

Operation Storefront under way

Metro-Council on Continuing Education has organized "Operation Storefront" in an effort to inform the community about opportunities available in continuing education in the metropolitan area and recreation for the 1974-75 year.

The "storefronts" are set up at Mic Mac Mall and Bayers Road Shopping Centre until Sept. 13. Representatives from agencies offering some form of continuing education in the metro area are available to answer questions and distribute printed material. (There is a window display at the Nova Scotia Information Centre on Barrington Street.

The Metro-Council, comprised of 25 organizations, was formed last year by persons employed by individual agencies, institutions or organizations which provide adult education programs and services in the Halifax-Dartmouth area.

There are now more than 150 programs covering a variety of interests and skills, hobbies, academic studies and vocational programs are now being offered in the metro area.

Chairman of Operation Storefront is Dr. Tom Parker, Director of Summer School and Extension at Dalhousie University.

Year in U.K. for five Dal students

Five Dalhousie arts and science students are off to the University of Lancaster this year under the auspices of a Junior Year Abroad Program.

Jeffrey Koopus (philosophy), Springfield, Massachusetts; Linda Mackie (biology), Etobicoke, Ont; Alison McCallum (bioloby), Buenos Aires, Argentina; Marian McGrath (biology), Fredericton, New Brunswick; and Philip Saunders (political science), St. Andrew's, New Brunswick, were selected to spend the 1974-74 academic year at the British institution.

The university's selection committee made the choices on the basis of the students' previous academic performance. They will live in residence and be responsible for their own costs while abroad.

The program, initiated this year, will be continued next year at which time Lancaster will be sending their students to Dalhousie.

Cookbook, raffles send students abroad

Two Dalhousie students of Spanish spent the summer in a Spanish-speaking environment. Hardly a startling undertaking, but there's much more to it.

The students were the first to benefit from the Dalhousie Spanish Students' Scholarship Fund, the brainchild of Spanish Department chairman Dr. Sonia Jones.

It would be nice, she thought last year, if we could send some students abroad where they could really use the language they are learning, and at the same time gain valuable experience living abroad.

But there was the mundane matter of money.

The university, unfortunately, did not have funds fo that sort of venture.

So Dr. Jones set out to raise it — by producing a Spanish cookbook (which, she was proud to point out, was practical in that all the ingredients used in its recipes could be obtained in local supermarkets and stores).

Then she organized sales of the book, put on raffles, and sponsored one of the Nova Scotia Voyageurs hockey team's home games in the Forum by selling tickets on commission. There were also vegetable sales and other ventures by Dr. Jones and others in her department — faculty and students.

The end result: More than $1,000, which should have sent three students abroad.

Two students, Julie West of Dartmouth and Nora Wilson of Charlottetown made the trip. Martha Ellis of Dartmouth had to cancel her plans because of illness.

Miss West went to Spain on her own — she should have gone with Miss Ellis — and Miss Wilson went to Colombia.

"This was really a pilot year," Dr. Jones explained, "next year we hope to extend the fund-raising period, increase the fund and send nine or ten students."

The prime purpose behind sending the students abroad is, of course, for them to gain expertise in the language. This they will do be speaking, living and working with Spanish speaking people.

"We hope for nothing more than an increased capacity to speak the language ... we are not really worried about academic gain," Dr. Jones explained.

One immediate result she expects, however, is that the students will gain a great deal more from the Spanish literature courses upon their return to classes.

Spanish Department faculty members Dr. A. Ruiz Salvador, Dr. I. R. Lauraschi and Dr. Sonia Jones with the three recipients of the Spanish Students Scholarships, Julie West, Martha Ellis and Norma Wilson.

CHEMISTRY: TARC II CONFERENCE

Trace analysis moves into automation

Chemical trace analysis, which deals with the detection and measurement of minute quantities of impurities in substances, has become exceedingly important in today's world.

The science involves the separation of a sample into its components, the identification of these components, and the determination of the quantity of each component.

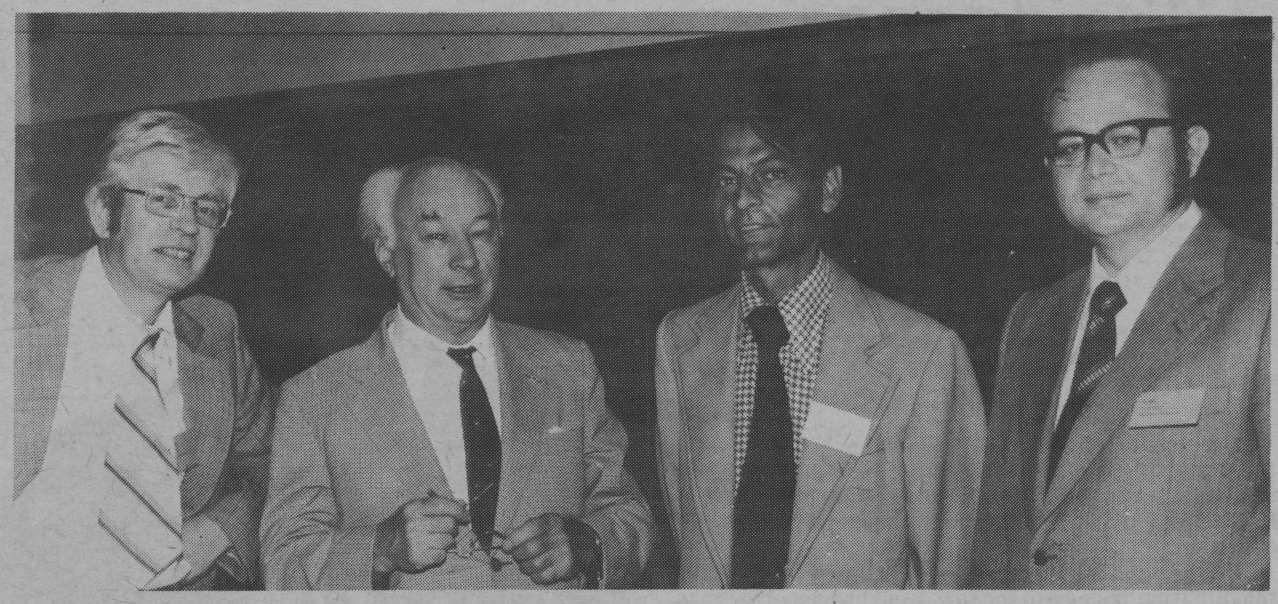
Major developments in the field in recent years can be seen in improved methodology and in highly sophisticated techniques. To illustrate, chemists have been successful in analyzing substances that contain less than a billionth of a gram of a metal in a sample which is smaller than the size of a drop of water.

They have not only developed methods for the separation of a petroleum mixture into its more than 200 components, but have been able to carry out chemical analysis on each component. In addition, instruments are now available for analyzing the first layer of atoms on a surface.

To increase speed and minimize effort, complex analyses are now becoming automated so that large numbers of samples can be examined routinely.

Such advances have proved of invaluable assistance in all areas of science and technology. The study of the effect of trace impurities on the operation of transistors, the elucidation of the mode of operation of a drug, or the monitoring of the level of mercury in a river all depend markedly on the ability to do trace analysis.

As a result of the pressing needs for trace analysis in a wide variety of areas there is a demand for researchers trained in this field and such people are highly sought after by industry, private and government laboratories and universities.



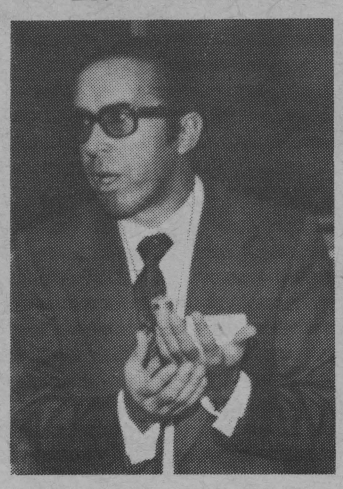
Dr. D. E. Ryan, Dr. Henry D. Hicks, Dr. K. Fritze and Dr. W. Aue at the opening of the TARC II conference.

Dr. K. Fritze during his plenary lecture

Dr. W. F. Pickering

Dr. M. Beroza

Dr. S. R. Koirtyohann



Dr. W. Simon

Dr. F. W. Karasek

TARC II focus on biological materials

Trace analysis in biological materials was the theme of an August scientific program arranged by Dalhousie University's Trace Analysis Research Centre.

The three-day meeting —TARC II— brought recognized scholars together for in-depth discussions on a wide range of subjects. Papers which dealt with the analysis of such diverse materials as metals, pesticides and hormones served as indicators of the variety of subjects and techniques in use at the present time.

The distinguished roster of speakers included Dr. K.S. Fritze, nuclear chemist from McMaster University, who gave the plenary lecture on the first day of the conference. One of his interests is the determination of trace metallic elements in body fluids. He has recently found that these substances vary in amounts according to race, time of sampling, and other factors. He stressed the need for higher accuracy in analysis and suggested that people submit samples for analysis on a regular basis, to establish a "logbook" of trace metals. Any change in the analyses might indicate the onset of disease.

Some of the other papers read at this session dealt with various applications of radiochemistry (determining the amount of nickel in human hair) and new analytical methods for pesticide and drug determination.

One message was brought out frequently — that highly sensitive instruments have shown simple samples to be very complex where traces of impurities are concerned. So complex in fact, that several different methods of analysis are often required to confirm that the substance being analyzed is in fact present.

The diversity of interests in trace analysis was evident in papers presented on the second day of the meeting. Swiss Professor W. Simon discussed the design and use of electrodes for making measurements on metal ions directly in a single living cell.

Simon's paper was followed by one given by Professor G.G. Guilbault from the University of New Orleans. He has pioneered th use of enzyme electrode probes. These probes can provide speed and reliability in testing for glucose, amino acids, cholesterol, etc. in fluid or urine. He also touched on trace analytical methods in the study of environmental pollutants.

Environment Canada's Fisheries Research and Marine Service branch at St. Andrew's, New Brunswick, was represented at the conference by Dr. V. Zitko. He sounded a note of caution in his lecture. He suggested that thallium, a toxic material to humans and one that is accumulated in certain kinds of fish, is not at present being trapped in mining effluents. Although the material has not appeared in large quantities, the situation warrants watching.

Responsibility of the analytical chemist was the theme of a talk by Dr. W.F. Pickering, a distinguished scientist from the University of New castle, N.S.W., Australia. He suggested that his colleagues should not only be producing facts and figures for agencies and institutions, but should broaden the base of their responsibility by making every effort to interpret the full extent of these findings.

A look at some of the prospects on the horizon was the substance of the plenary lecture on the final day of the trace analysis conference. Dr. F. Karasek from the University of Waterloo envisions a wide range of new and improved instruments. He predicts that present instruments will soon have built-in computers, and generally there will be greater use of computersfor data manipulation. In yet another area, methods for surface analysis will be improved to aid in the development of new catalysts and better electronic components.

Throughout the conference, papers gave evidence of the breadth of the field, varied interests and approaches of the specialists.

The commoncality was seen in a desire to discuss and seek solutions to contemporary issues.

CHEMISTRY: TARC II CONFERENCE

About TARC at Dalhousie

The Trace Analysis Research Centre (TARC) at Dalhousie was made possible by a negotiated development grant from the National Research Council. The basic objectives of the centre are to train specialist analytical chemists and to contribute, through research, to the advancement of analytical chemistry. The long-range roal is a centre of research and training excellence in analytical chemistry.

Sensitive methods depend upon instrumental techniques, and research therefore involves the creation of new instruments, modification of existing instrumentation, or innovative ways of applying known instrumentation to problems in trace analysis. In using these approaches, TARC enjoys a particular advantage because it has proved possible to maintain a number of autonomous interests within a single group. The general areas of present research interest include atomic spectroscopy, automated instruments, chromatography, clinical chemistry, electrochemistry, molecular fluorescence, neutron and photon activation analysis.

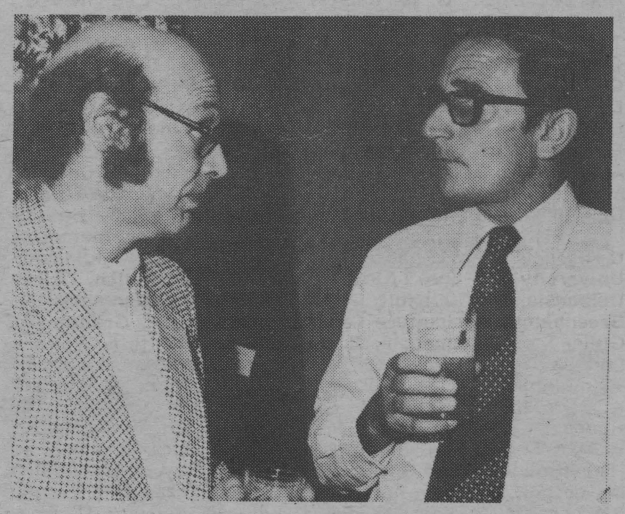
This interplay between the different research areas is a particularly valuable and stimulating environment both for research supervisors and graduate students or post-doctoral fellows. New ideas are promoted and insight into a variety of techniques is obtained. Largely because of the interplay of idea it is felt that the creation of TARC is worthwhile both for the training of graduate students and postdoctoral fellows as analytical chemists and for the promotion of basic research in analytical chemistry. These values are reinforced by the present demands made on analytical chemists, in this country and abroad, in terms of supplying both manpower and new methods.

Two main purposes are thus envisaged for TARC — training and research. Sixteen people who have left TARC in the past two years, after graduate or postdoctoral study, are now working as analytical chemists in teaching, in government or industrial laboratories (Atomic Energy of Canada, CEGEP, federal department of agriculture and environment, Ontario Hydro). In terms of research the group has contributed a number of new analytical methods for metals, anions, and pesticides. New instumentation has also been developed.

Present fulltime staff at the Centre are: W.A. Aue (Ph-D, Vienna); A. Chattopadhyay (PhD, Toronto); P.M. Froehlich (PhD, Purdue); L. Ramaley (PhD, Princeton); D.E. Ryan (PhD, DSc, London); R. Stephens (PhD, London). In addition, distinguished analytical chemists spend sabbatical or study leaves at TARC. Dr. W.E. Pickering, head of the chemistry department and Dean of the Faculty of Arts and Science, University of Newcastle, N.S.W., Australia has recently completed such a study leave and Dr. T.S. West, professor of analytical chemistry at Imperial College, London will be a distinguished visitor in the fall of 1974.

M. Daniewski, M. Granda, S. Papila, A. Held, and C. Flinn.

Dr. G. Wood and Dr. M. B. Hocking



Dr. S. A. Katz and Dr. G. Scattergood

Dr. and Mrs. D. E. Ryan and Mrs. K. Chakrebarti

M. Granda, Dr. Pickering and Gail Ross

CHEMISTRY: TARC II CONFERENCE

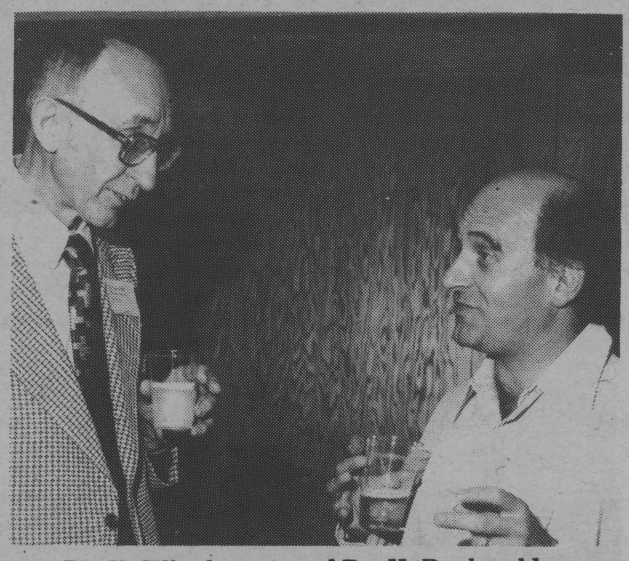
Dr. and Mrs. F. W. Karasek and Dr. W. Simon

Dr. and Mrs. R. Stephens and Mrs. L. Ramaley

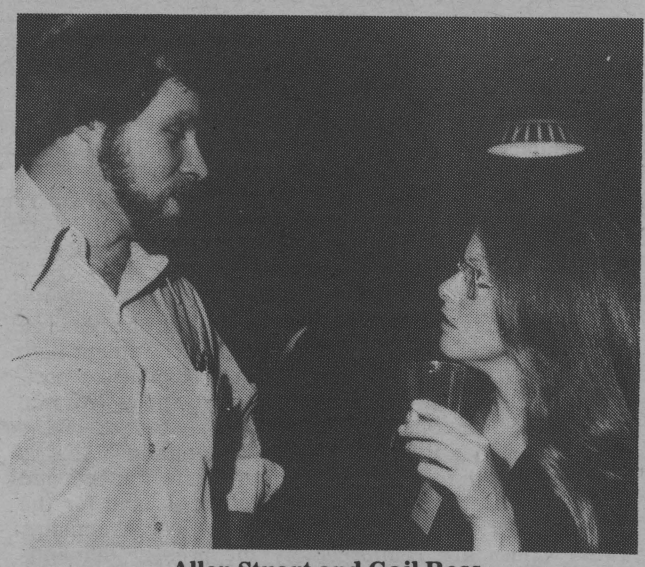
CONFERENCE DELEGATES

Following is a list of TARC II conference delegates:

W. Aue, and M. Arsenault, TARC, Dalhousie University; M. Brooks, Hoffman-La Roche, Nutley, N.J.; M. Beroza, U.S. Dept. Agriculture, Beltsville, Md; Roger Butterworth, Clinical Research Institute, Montreal; S. S. Berman, N.R.C., (Chemistry) Ottawa; H. Buchwald, Alberta Environment Protestion Services; L. Brooks, General Foods, Coburg, Ont.; R. Bailey, G. Buckler, Health Protection Branch, N.H.W. Halifax; H. Butterfield, McMaster University, Hamilton; C. K. Chakrebarti, Carleton University, M. Case, Dalhousie University; V. Carson, Department of Environment, St. Andrews, N.B.; G. W. Caines, Atlantic Reg. Lab., N.R.C., Halifax; P. Chan, McMaster University; A. Chattopadhyay, TARC, Dalhousie; J. Cooley, University of Alberta; A. Cheung, Stanford Res. Institute, Calif.; J. A. Driy, Colorado College; D. A. Dineen, General Foods, White Plains, N.Y.; J. Dube, N.H.W., Halifax; M. Daniewski, TARC, Dalhousie; W. Dunholke, Ministry of Environment, Rexdale, Ont.; H. Ellenberger, Pathology Institute, Halifax; D. Embree, Atlantic Reg. Lab., N.R.C., Halifax; H. S. Funnell, Ontario, Ministry of Agriculture & Food; V. A. Fassel, Ames Lab.-USAEC., Iowa State University; H. C. Freeman, Halifax Lab., Fisheries & Marine Service; L. L. Fletcher, Memorial University of St. John's, Nfld.; K. Fritze, McMaster University; C. Flinn, TARC., Dalhousie; P. Froehlich, TARC, Dalhousie; G. Guilbault, Tech. University of Denmark; R. Greenhalgh, Agriculture Canada, Ottawa; M. Granda, A. Gillis, TARC, Dalhousie; E. J. Hamilton, Health & Welfare Canada, Ottawa; R. F. Holt, E. I. Dupont de Nemours & Co., Wilmington; R. Hunt, Freshwater Inst., Winnipeg, Manitoba; K. H. Hu, Inst. of Pathology, Case Res. Univ. Cleveland; B. J. Huebert, Colorado College; M. B. Hocking, Chemistry Dept., U.B.C.; S. Hartling, Bedford Institute of Oceanography; J. Holzbecher, A. Held, TARC, Dalhousie; R. Isaac, University of Georgia; M. Ihnat, Agriculture Canada, Ottawa; R. Jacob, Biochemistry, University of N. Dakota; B. C. Julin, Dupont, Wilmington; A. Jackson, Beak Consultants Ltd., Rexdale, Ont.; W. Jamieson, Atlantic Reg. Lab., N.R.C., Halifax; F. W. Karasek, University of Waterloo; S. R. Koirtyohann, University of Missouri; P. J. Ke, Fisheries & Marine Service, Halifax; S. A. Katz, Chemistry Dept., Rutgers University, N.J.; R. Kapila, TARC, Dalhousie; W. E. Kortsch, Pollution Control Lab., Alberta; P. Kelly, Research Centre, Canada Packers, Toronto; G. Lutwick, N.S. Research Foundation; J. Lendvai, Jewish Medical Centre, Floral Park, N.Y.; P. Leblanc, Eco Research Ltd., Point Claire, Quebec; E. Lorah, Dept. of Horticulture, University of Missouri; G. Lebel, Health Protection Branch, N.H.W., Halifax; J. Lund, Oak Ridge, Tennessee; J. Lee, Health Protection Branch, Ottawa; J. F. Lawrence, Health Protection Branch, Ottawa; A. A. Mylroie; Chicago State University; N. R. McQuaker, B. C. Water Resrouces; Vancouver; J. A. McKirdy, University of Manitoba; J. May, Bureau of Biologics, D.H.E.W., Bethesda; J. C. Meranger, Health Protection Branch, Ottawa; W. D. Marshall, Agriculture Canada, Ottawa; P. Millington, National Health & Welfare, Halifax; V. Mallet, University of Moncton; G. Nixon, Health Protection Branch, Halifax; K. Narayan, Dept. of Physics, Dalhousie; P. S. Ong, Cancer Centre, University of Texas; W. F. Pickering, University of Newcastle, N.S.W., Australia; J. Penciner, Dept. of Chemistry, University of Tel-Aviv; W. R. Penrose, Environment Canada, St. John's, Nfld; T. L. Pollock, Environment Protection Service, Halifax; E. T. Peters, Acorn Park, Mass.; J. Purdham, Edmonton, Alberta; R. Rhodes, Dupont, Wilmington; J. J. Ryan, Health Protection Branch, Ottawa; N. Renzi, McNeil Lab., Camp Hill, Ft. Washington, Penn.; R. Rantala, Bedford Institute of Oceanography; S. Ray, Environment Canada, Halifax; L. Rogers, Anacon Inc., Mass.; D. E. Ryan, L. Ramaley, G. Ross, TARC, Dalhousie; W. Simon, Zurich, Switzerland; D. A. Shearer, Chemistry & Biology Res. Inst., Ottawa; S. Schulman, University of Florida, Gainesville; E. Sandi, Health Protection Branch, Ottawa; P. W. Saschenbrecker, Agriculture Canada, Guelph, Ont.; H. Samant, Environmental Protection, Halifax; G. Shum, R. Sinclair, G. Sims, Inspection Branch, Fisheries Service, Hfx.; G. Scattergood, Sask. Dept. of Labour, Regina; M. Sanders, College Park, N.O.A.A., Maryland; A. W. Stuart, Chemistry Dept., U.N.B.; D. A. Stiles, Acadia University; R. Stephens, S. Sobol, TARC, Dalhousie; J. F. Uthe, Fisheries & Marine Service Lab., Halifax; J. R. Vogt, University of Missouri; G. Wood, University of New Brunswic; P. Y. Wong, Toronto General Hospital; J. B. Willis, C.S.I.R.O., Australia; G. Wood, University of Windsor; J. C. C. Wang, Environment Canada, Halifax; C. Young, Agriculture Canada, Ottawa; R. Young, TARC, Dalhousie; V. Zitko, Environment Canada, Fisheries, N.B.; C. Cosham, Inspection Branch, Fisheries Service, Hfx.; G. Caissie, Y. Francoeur, Y. Volpe, J. G. Zakrevsky, University of Moncton, N.B.



Dr. H. Ellenberger and Dr. H. Buchwald



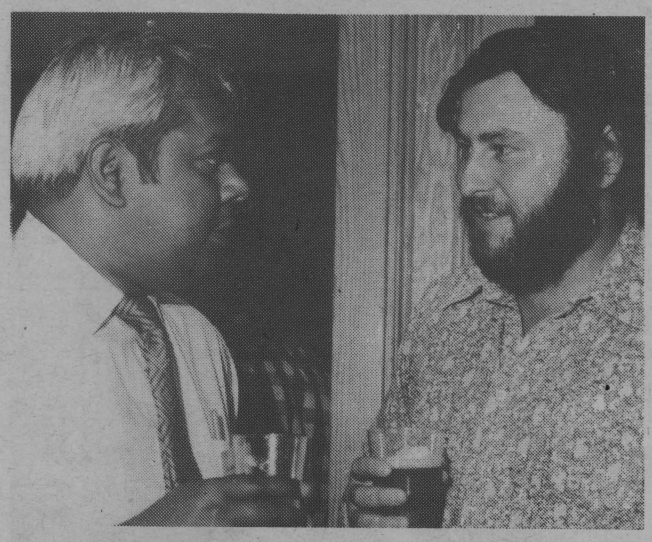
Allen Stuart and Gail Ross

Drs. J. Lund, W. Jamieson, G. Wood and J. B. Willis

Dr. and Mrs. J. Lund

Dr. M. Ihnat and M. Sanders

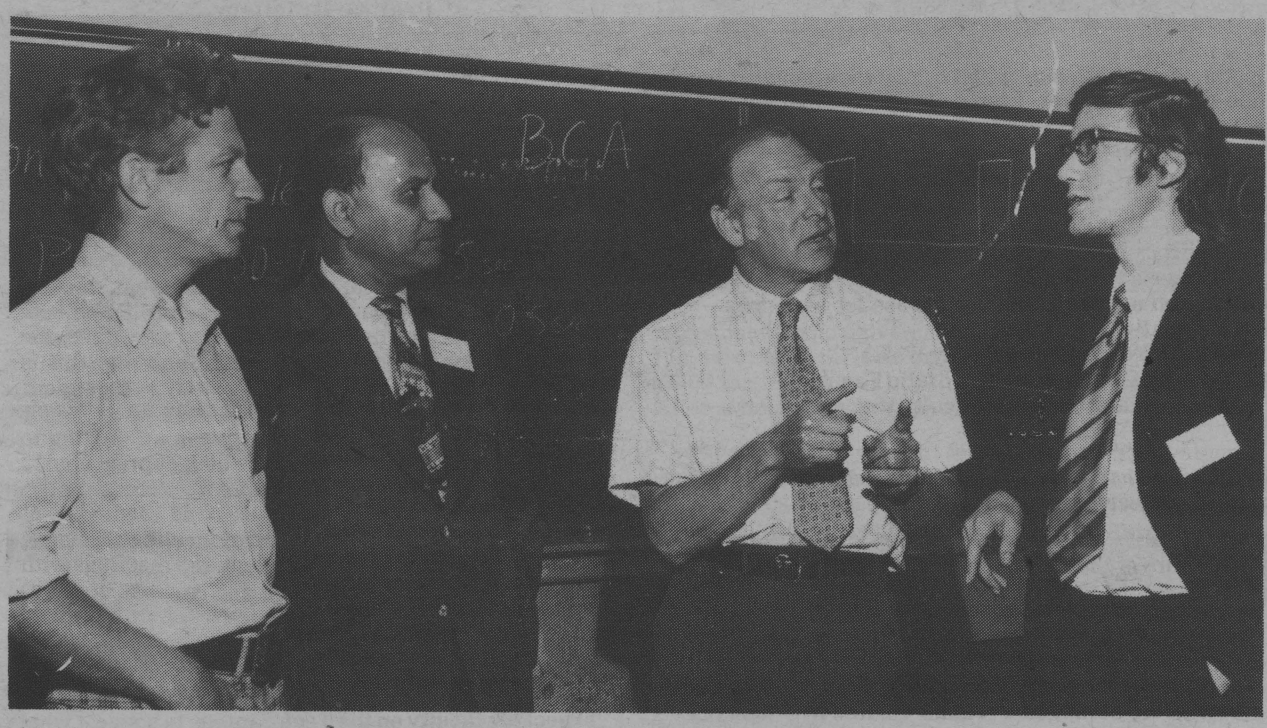
CHEMISTRY: TARC II CONFERENCE



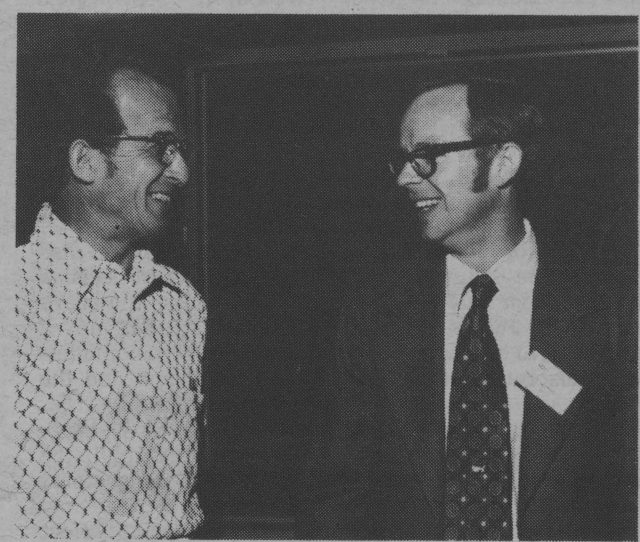
S. Ray and R. Surette

Dr. V. Mallet and Dr. and Mrs. K. T. Leffek

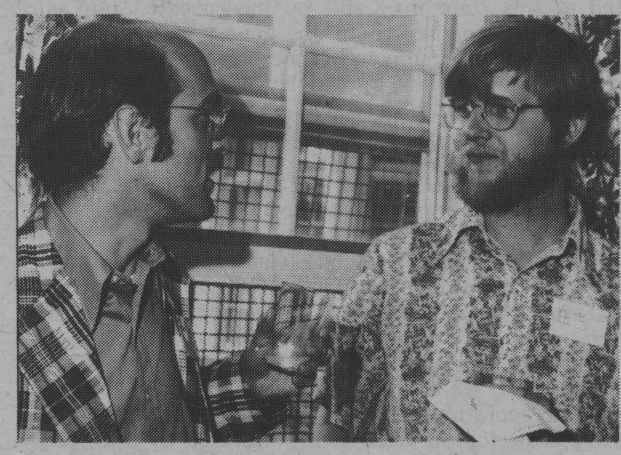
Dr. G. Guilbault



R. Greenhalgh, C. K. Chakrebarti, J. B. Willis and R. Stephens.



Dr. W. A. Fassel and Dr. L. Ramaley.



M. Brooks and B. J. Huebert

The photographs appearing on this page and Pages 18, 19 and 20, were taken during the scientific and social sessions of the T.A.R.C. II conference, by Wamboldt-Waterfield.

Dr. S. R. Koirtyohann and H. Hill

Dr. and Mrs. W. A. Fassel and Dr. and Mrs. R. Isaac

REPORTS

Busy year forecast for D.F.A.

Salaries, appointment and tenure regulations, a Halifax office for the Canadian Association of University Teachers, and the university and the community, are mentioned in a letter to all members of the Dalhousie Faculty Association from Dr. Hubert W. King, 1974-75 president of the association.

Dr. King's letter, which was circulated, with a copy of the annual report of last year's president, Professor Gordon B. Jeffery, was sent to DFA members in June.

Following are edited versions of Dr. King's letter and Prof. Jeffery's 1973-74 report:

Annual general meeting: Held on April 30. Elected to serve as the executive for 1974-75 were: D. King, (Engineering-Physics), president; 1st vice-president, Dr. T. Ghose (Pathology); 2nd vice-president, J.R.T. Ettlinger (Library Service); secretary, Miss Kate MacDonald (Dental Hygiene); treasurer, S.B. Singh (Anatomy). Members-at-large: A.R. Bevan (English), P.E. Darby, (Law), J.B. Faught (Chemistry), J.C. Pooley (Physical Education), R. Puccetti (Philosophy).

Dr. King expressed the association's thanks to Prof. Jeffery "for the tremendous effort he put into DFA as our president last year".

Fee increase: It was agreed at the annual meeting that the membership fee be raised to $7.50 to allow for the provision of part-time secretarial assistance.

Salaries for 1974-75: The President (Dr. Hicks) has informed the Salary Committee that an interim decision on salaries for 1974-5 is composed of an across the board increase of 9% (to offset the present inflation) plus a further 2% to be given for merit, or to correct anomolies, at the discretion of the Department Chairmen and the Deans.

Dr. King expressed the association's thanks to Prof. President had informed him that, regrettably, the university was not able to increase the discretionary part of the increase.

While comments on these decisions are too late to affect the outcome of salaries for 1974/ 5 we do nevertheless invite them, since constructive suggestions which come to mind at this time may still be incorporated into our proposals for another year. The general approach to a salary structure for universities across the Province is at present under review by the Nova Scotia Council of University Faculty Associations.

Revision of Regulations concerning Appointments and Tenure: During the next week or so, every member of faculty will receive draft No. 4 of the revised Regulations concerning Appointments and Tenure. These have been drawn up by a sub-committee of the Senate. The Executive of the Faculty Association have been given ample opportunity to read preliminary drafts and make proposals for improvement. After many meetings of the Executive, and more meetings between the officers and the drafting committee, most, if not all, of our proposals have been adopted. We shall therefore not make any further formal presentations on behalf of the DFA. If, however, a glaring omission or distortion is detected by individual members of faculty, the correct procedure at this stage is to have this rectified by a motion of amendment when the document comes before the Senate. Any members who detect such, are asked to get in touch with a member of the Executive.

Halifax Office of the CAUT

At the Annual CAUT meeting in Toronto in May the Halifax office of the CAUT was established as a budgeted item for 1974/ 5. The office is located at 1568 Robie Street, (Ph. 422-1370) and will provide all the services of CAUT with the exception of matters concerning Academic Freedom and Tenure, which will still be handled out of the Ottawa office. For an experimental period of a year, the Executive have agreed to pay for secretarial services available at this office, rather than appoint a part-time secretary. Since we are bound to run into teething problems, please let us know of any breakdowns in the chain of communications.

The University and the Community

The Students Union have proposed to Senate and the Board that a university-community committee be established to develop effective lines of communications between Dalhousie and the surrounding community. In addition to acting as a Liason between the University and City Governments, it is intended that the committee should also be concerned with the effects of the internal operations of Dalhousie. The Faculty Association has been requested to appoint two members to this committee for two year staggered terms. Two other members will be appointed by the President and two by the students Union, while six more will be chosen from interested members of the community.

Dr. H. W. King

Prof. G. B. Jeffery

Program for 1974/ 5

The program for the coming year is in the planning stage and will include a number of general meetings on themes which are of general interest at the present time, but which may become critical at some time in the future. Some proposed titles are given below. If you care to comment on or extend the list, please let us know — its your Association.

"What's Your Pension Really Worth?"
"Life in a University with a Static Faculty"
"The Pros and Cons of a Faculty Union".

***

In his 1973-74 report, Prof. Jeffery touched on a wide variety of subjects:

1. The affairs of the Association kept the Executive busy throughout the year. The load on the officers is heavy and, therefore, I recommend that in furture the Association provides part-time secretarial assistance.

2. Communication with members continues to be a problem. We arranged a regular column in University News but more often than not, it failed to appear and the service we received was less than satisfactory. Dalhousie Gazette carried our material promptly. We have tentatively arranged to run a regular column in the Dalhousie Gazette next year and to organize distribution to all our members.
We have maintained and updated the computerized address list using data obtained from the administration and information returned by members. It needs constant attention.

3. Members of the Executive acted as joint hosts with the President, Mr. Donald McInnes, the Board of Governors and Chairman at a reception for new faculty in September.

4. The Executive held a reception for the Board of Governors following their regular meeting in February. Personal contact with members of the Board is valuable; it allows us to recognize their service and to inform them about our work.

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6. N.S.C.U.F.A: Dr. H. W. King was elected secretary of the Nova Scotia Council of University Faculty Associations. University finances and salaries are a major concern. An informal meeting with the Minister, Dr. Gillis, has been held and a joint meeting with New Brunswick Faculty Associations held to prepare a brief.

7. Appointments and Tenure. Many inquiries are received and most of them require only one meeting or telephone discussion. Those that involve mediation are time consuming. We have had four cases this year which have involved us over a period of time. One formal grievance hearing was held. We provided a colleague to help our member present the case and had two observers present, one of whom had no contact with the case beforehand.
The Executive took the initiative on two occasions and sent statements on initial contracts and review of tenure decisions to the groups handling the matters in question.

8. C.A.U.T. The Association has continued to receive support assistance from the officers of C.A.U.T. A Halifax office has been opened.

9. Salary negotiations. No member of last year's salary committee was prepared to serve again. Some considered the progress being made too slow and the representations made ineffective. I think that this is too pessimistic a view. Unfortunately, discussions with the committee members took time and we were unable to take our intended initiative of attempting to put in a claim to be included in the budget presented to the Grants Committee.
A Committee was established and its recommendations were taken to a general meeting. The brief has been presented to the President and meetings with him and the budget committee are due.

10. Nova Scotia Technical College. A member of N.S.T.C.F.A. has been invited to meetings of the Executive in preparation for the Dal-Tech merger. We expect the faculty on the Tech campus to suggest what form their organization should take after amalgamation.

11. University Teaching. Dr. Bruce Shore of McGill and Dr. Ruth Beard of Bradford Univeesity gave talks and worked with special interest groups. This was a successful return to the consideration of academic matters within the Association.
The Executive recommended to Dr. Hicks that further action be taken within the University and the matter is to be discussed at Senate Council.

12. The Fringe Benefits Committee has prepared a statement listing items of concern and has asked for the Pension Committee to meet and take action. Dr. Welch and I worked on the review of the L.T.D. contributions to ensure that benefits are not taxable.

13. The Re-zoning Matter. The Executive considered the proposal to re-zone university land south of South Street and recommended that the Association oppose it. This was circulated to the membership as a recommendation before the decision was finalized. We reaffirm our position recently.

14. Our social affairs were handled by ad-hoc groups this year. A Christmas Dance was held at Fort Scenic and was a social success. Our joint venture with Dalhousie Women's Club in February was very successful; we had too many in fact, a contingency we had not provided for on the basis of past experience.

15. The Executive sent a message of good wishes and flowers to Mrs. Hicks when she returned home from hospital.

16. Other items of business dealt with include Chile, the 10-year report, the J. Stewart Reid Memorial Fellowship, the A.U.C.C. meeting, the Parking Committee, the Faculty Cluo and the Status of Women Academics.
I take this opportunity to express my gratitude to the members of the committees and the executive who undertook to work for the Association and for the way in which they have discharged their duties.
I hope that the Association will receive the support of both senior and junior faculty in its endeavours next year. There are many matters to attend to.

REPORTS

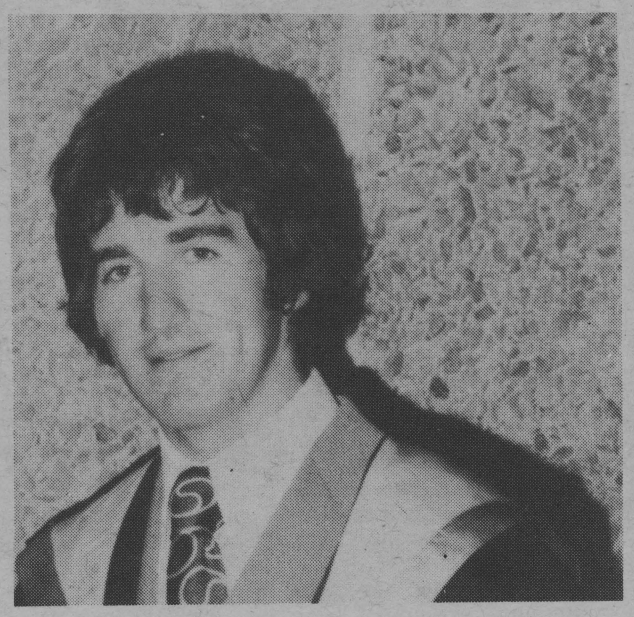
Ombudsman's office completes three years

The office of the Ombudsman has served the university community in particular and the Halifax community in general as a useful tool towards the better functioning of both spheres, the Ombudsman, Terence M. Burke, says in his 1973-74 report to the Senate of the university and the Student Council.

The report marks the completion of a third experimental year for the office.

Predictably, says Mr. Burke, many of the queries and problems handled by the office required merely a brief explanation or a phone call to settle the matter. This aspect was inherent in the role of the office as a 'traffic cop' for the confused; this trend would undoubtedly continue in the future. Problems dealing with parking on campus, some student loan refusals, simple registration problems were examples of this type of situation.

As the office became more established and integrated in the university community, more and more references were made to the office by previous "clients" or by persons directed to the office by those people were given assistance from the office in the past.



ASSESSMENT OF THE YEAR'S WORK

"This report covers the period between September 1973 and June 1974. During that period, the Office of Ombudsman has dealt with some fifty cases. These cases are classified and recorded as such having required the assistance of the office considerably above and beyond a mere phone call or explanation. In this latter category, no detailed record is kept; however, the number of such appointments, phone calls, etc., would greatly outnumber the total of 'files' during the period referred to. In addition to the caseload, the office was consulted in an advisory capacity on numerous occasions by various university agencies who deal with student problems on a daily basis, such as the Awards Office, the Chaplain's Office and several of the departments within the university.

"As far as actual cases on file are concerned, fourteen were of an academic nature concerning marks, course content, method of evaluation and so on; five were concerned with student loans (many more queries were dealt with summarily by phone as indicated); ten involved problems with living accommodations, i.e., landlord and tenant issues; three were involved in extensive inquiry relating to tenure of individual faculty members; three involved employer-employee conflicts within the university community; four concerned scholarship applications; eleven were miscellaneous issues including complaints against Campus Police, parking problems, possible assault by student assistants, noise in the library by high school students, and failures and re-admission. Some problems involved negotiation with agencies outside the university such as Pinkerton's of Canada (underpaid student employee) and various credit agencies. In addition, the office handled complaints from St. Mary's University and individuals not members of the Dalhousie University community per se.

"Once again, our work at the office ranged from relatively minor issues such as noise in the library to extremely delicate issues such as tenure of professors and employer-employee relations. This range of problems is, of course, inevitable and provides the office with a good overall view of the workings of the university machinery and any unnecessary friction therefrom.

"It remains difficult to assess exactly the position or status of the office within the university community. Internally, as one might expect, the office is viewed with different degrees of merit and/or credibility. Some university officials and administrators have come to regard the office as an integral part of the community and will readily plug-in or accept input from the office. Others, whether from lack of direct involvement with the office or from failure to regard it as a viable mechanism, do not appear to treat the office with, if I may, any "seriosity". This latter group might include boards or groups of decision makers within the university moreso than individuals. Externally, the office has had unqualified recognition; whether through sheer ignorance of what an ombudsman purports to do, or through a rare knowledge of the history of such an office, the office has generally gotten quick determination of problems when dealing with forces outside the university community. (You will agree, I'm sure, that the person who, upon calling the office, asked for "Mr. Leon Budsman" was not included in the latter of the two groups above!)

"Our relationship with the Awards Office, Student Counselling, and the Chaplain's Office — not to mention the Student's Union — has been increasingly useful and positive, and cooperation was the order of the day.

"A summary of the year's work, therefore would indicate a reasonably "successful" state of affairs within the university in so far as sphere of operation is concerned and qualified by the general comments concerning recognition, an extension or modification of the scope of operation of the office is, in our opinion, not necessary at this time.

"As to the total number of so-called "files" started this past 'year', it is not in any way the true picture with respect to the overall activity of the office; however, it is still felt that perhaps many of the problems of the university which could satisfactorily be treated through the office do not reach the office in large part due to lack of publicity and awareness on the part of those aggrieved. Attempts have been made through the university media to fill this void, yet it appears to continue. Hopefully, through increased exposure and recognition, this problem will dissipate.

"The office owes much to individuals within the university community and while not forgetting the overall cooperation received a special thanks is extended to Professors A. L. Foote and W. H. Charles, Mr. Gordon Steedman, Mrs. Pauline Dempsey and Don Trivett, all of whose interest and advice served to be a constant source of encouragement and support."

RECOMMENDATIONS

"The several matters referred to in the previous two reports which were put forward as items requiring consideration may still merit some attention. Included in these matters are:

1) **The Office of the Registrar:**
The enormous difficulties occasioned by this body due to volume of work, time limitations and technical nature of the work itself is indeed appreciated and recognized. Yet constant effort must be made to direct rather than discourage much of the student inquiry which may properly be the concern of another committee. Change of officers within this office has occasioned policy changes which are not always known by personnel internal to the office, much less the outsider. The discretionary freedom of many university officials undoubtedly is a notable plus in attaining personalized treatment of the many unique situations which arise, yet it still carries with it the 'black cloud' of uncertainty and invulnerability against logical attack.

As in the past, the office often bears the brunt of unnecessary criticism and in that regard may be comforted in being similar to almost every such university arm in the country. Be that as it may, the recommendation offered two years ago that "those members of the Registrar's staff dealing directly with the students could be made aware of what avenues are open to accommodate the rules to individual cases and pass this information along to students" is still worthy of attention in light of this past year.

2) **Strict Aherence to Procedures**
Serious attention, it seems, must be paid to the various internal appeal systems which purport to process grievances of one sort or another. Over the past few years, dealings with several of these decision making bodies would indicate that perhaps not enough attention is devoted to either strictly following existing procedure where such exists, or in laying out procedures where no such procedures operate at present. Members of such appeal bodies should endeavour to be fully acquainted with the actual role of their composite body and the procedures, if any, laid down to guide the particular body. While avoidance of technicality can in large part be quite practical, often, such bodies are empowered to seriously affect the rights of individuals, and to protect both themselves, the university, and the individuals involved, it is extremely important that procedures set out should be followed strictly and where not set out, some semblance of the same should be adopted.

3) **Notice of University Regulations**
The recommendation made in the last report from this office to the effect that some effort should be made to inform the university community generally of changes in university regulations merits repetition. Again this measure may serve as much to protect the university administration as the students and staff.

4) **The Ombudsman's Office**
We recommend (predictably) that the office be continued with substantially the same format as it has followed in the past. It may be more functional to appoint the Assistant Ombudsman in the spring of the year in which he/ she is to take office to ensure continuity through the "summer gap" and to enable the office to deal effectively with the early rush of queries in the initial weeks of the fall semester.

The physical premises of the office are quite satisfactory and it is recommended that the office in the Student Union Building be retained".

3 from IPA on study team

Continued from Page 14

Three members of Dalhousie University's Institute of Public Affairs have been selected to serve on a national study team to evaluate the problems and potential of urban studies institutes and programs in Canada.

Guy Henson, Director of the Institute, Kell Antoft, Assistant Director, and K. Scott Wood, co-ordinator of the Institute's Regional and Urban Studies Centre, met in Toronto in August for the first formal working session of the study team.

The project arose out of a recognized need for an evaluation and coordination of the efforts of Canadian institutions and teaching programs engaged in the study of urban growth and its accompanying problems. The study team, in this connection, recognizes that, along with the increased level of living standards resulting from urban growth, Canadians face new difficulties in urban transportation congestion, housing shortages, an abused physical environment, and an array of political, socio-economic and administrative problems. Moreover, they feel that, only by increasing the capability of urban research institutes to conduct applied and action-oriented research and to coordinate these efforts, can effective urban policies be developed in Canada.

The necessity for establishing better communication and information exchange, and for a reassessment of funding guidelines and regulations are of primary concern to the investigative team.

PHYSICAL EDUCATION & ATHLETICS

Phys. Ed. No. 3 in Russia's schools

Professor Valentin Maslov, Rector of the Institute for Physical Sport and Culture receives a Dalhousie plaque from Dr. Pooley. Standing with Dr. Pooley are other Dalhousie representatives attending the course.

Physical education as a subject in the Russian school system is ranked third in importance after mathematics and Russian.

Russian youth who demonstrate ability in athletics and have potential in the field of international competition receive the state's undivided consideration and attention.

The physical education facilities in Soviet schools and clubs are functional, well-used but not attractive aesthetically and designed for participation, not spectators.

These are some of the general impressions and limited observations made by Dalhousie University professor John Pooley who participated in a summer course at Moscow's Institute of Physical Sport and Culture.

Dr. Pooley, serving as leader of the Atlantic-Canada group of 23, joined with other Canadian professional coaches and teachers to form a 100-man Moscow-bound contingent taking the course.

Organized by Loyola College, Montreal, the purpose of the three-week visit was to study physical education and sport as taught and coached at centres in the Soviet capital.

"Dialogue with our Russian hosts was difficult to begin with," commented Pooley, basically because they seemed to be suspicious of our motives. "But, once this initial barrier was overcome we had a fruitful scientific exchange on the teaching and coaching of exceptional athletes".

Dr. Pooley was interested in how the athletes responded psychologically and socially to their training programs; what the implications were of becoming an elite Russian athlete; and what restrictions were imposed on these young professionals.

The Dalhousie physical education professor observed that sport is a tool of the state. . .it's a way of demonstrating to the world that communism works. He was very conscious of the rigid chain of command that exists in the administrative structure. For example, said Pooley, a young athlete would never question or challenge his teacher's training or coaching directives.

Asked what Canadian sports and physical education teachers could learn from the Russians, Pooley replied that his foreign counterparts have a superior centralized process which facilitated co-ordination of effort and the distribution of information. The best example of this was the manner in which hockey is systematically organized.

The Soviet method of training qualified personnel is exceptional. There are two kinds of instruction and two streams. One group enters institutes which provide a scientific program for coaches who will then go out in the field and train elite athletes. Another stream enrols in pedagogical centres designed to train physical education teachers for the school system.

The Russians were eager to learn about our superior sports equipment; thirsty for knowledge about our university system; curious about Canadian academic programs that offered students individual choice of courses; and intrigued when they discovered that students here pay tuition fees to attend university.

These were Dal's top athletes last year

Bob Book

Bob Book, a senior Commerce student, and Joan Selig, third year physical education, were the major athletic award winners for 1973-74.

Book, an outstanding track and field and cross-country performer, received the Climo Award given traditionally to the Dalhousie student who best embodies the qualities of athletic ability, sportsmanship and team spirit.

In addition he received awards as the most valuable performer in both track and field and cross-country.

Miss Selig, one of Nova Scotia's top young athletes, received the Class of '55 Trophy as the outstanding woman athlete. She was also named the most valuable player in field hockey.

Book competed in both track and cross-country for four consecutive years. In track he holds the 1,500 and 5,000 metre AIAA records. In addition he has dominated the road racing and distance running scene in the Maritimes and has set records on most of the courses he has run.

Miss Selig played both varsity basketball and field hockey for the past three years. She has also represented Dalhousie in badminton and is proficient in volleyball and tennis.

In basketball she has been named to numerous all-star teams including the national junior team and the AWIAA team. In field hockey she has represented Nova Scotia in national tournaments for three consecutive years and this past season made her biggest impression at the Canada Games when she was selected as a potential national team member by several of the country's top coaches.

Other individuals honored were:

Bob Blount, New York, most valuable player, men's basketball. Blount has just completed his third year with the Tigers having gained a reputation as an outstanding defensive player and one of the best penetrating drivers in the league.

Judi Rice, Halifax, most valuable, women's basketball. A top flight ball handler, rebounder and shooter, Judi has been a starter on the varsity team for the past three seasons.

Kevan Pipe, Montreal, most valuable, soccer. An outstanding team leader, he was captain of the 1973 team.

Eric Cameron, Campbellton, N.B., most valuable, hockey. Captain of the Tigers for the past two seasons, he was Atlantic intercollegiate all-star left winger for the 1973-74 season.

Mal Patterson, Ottawa, most valuable, football. Fourth year with the Tigers, last three as a starting offensive back. He was the team's top ball carrier and was named to the Atlantic Conference's first all-star team this past season.

Debbie Reardon, Halifax, most valuable, women's badminton. She won four major singles and doubles championships during the 1973-74 season, including an undefeated record in the AWIAA tournament. She will represent Nova Scotia in the Canadian championships.

Larry Brinen, Lower Sackville, most valuable, wrestling. A third year team member, he has an amazing record, having won all 18 conference matches, 17 by pin.

Chuck Hanlon, Dartmouth, most valuable, men's gymnastics. This freshman was the undisputed Atlantic intercollegiate champion, taking first place in five of six events. He was a member of the Atlantic team at the nationals.

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Joan Selig

PHYSICAL EDUCATION & ATHLETICS

Dal Studies for Hockey Night

By RICHARD RUSSELL
(from The Chronicle-Herald, Aug. 16)

Dalhousie University's school of physical education is internationally recognized as one of the top institutions of its kind in Canada, if not in North America.

For a relatively small institution the school has pioneered several research projects in related fields.

This prowess in athletic research and study has reached the eyes and ears of the producers of Hockey Night in Canada who will do a series of four programs during the next hockey season on the studies being conducted at Dal.

Dr. Larry Holt, co-ordinator of the bio-mechanics lab at Dal said the producer of Hockey Night in Canada has just visited the facilities at Dal and viewed the type of work being done.

"Ralph Mellenby was impressed with the work and shot some preliminary footage which will be used on the season's opening program. The full film crew will visit Dal in early January to shoot the four five-minute segments which will be aired in late January and February," Holt said.

Working on the project were several persons including Holt, Ron Naud, Pierre Page and Doug Farquhar. Naud played hockey for Dalhousie and with progessional teams. He was the National coach of the Dutch team for two years and has completed his Master degree at Dal.

Naud did special studies on aspects of skating and shooting.

Page is the coach of the Dal varsity team and is just completing his master's degree at Dal as well. Page worked on skating speed and studies of it that show what to look for in a player's style and how to train for speed.

Farquhar handled the studies on goaltending. A holder of a bachelor's degree he will be continuing his studies at Toronto this next year.

In addition to the studies of shooting, skating and goaltending by the bio-mechanics lab they also did some research on conditioning of athletes with special emphasis on hockey training.

Dr. Brent Rushall, co-ordinator of Dalhousie's applied psychology lab will also be featured on the programs for his research in psychological testing of athletes and the aspects connected with coaching.

We covered the whole ball game," Holt says. "Not only did we do research at the top with the Nova Scotia Voyageurs on the professional level we followed it right down through the collegiate, junior, midget and bantam ranks."

Efforts like this can only help to improve the calibre of Canada's national sport and it is being done right here in Nova Scotia.

MEMBERS of Dalhousie University's school of physical education have been involved in the scientific study of hockey. Their efforts have received national attention and will be aired on Hockey Night in Canada broadcasts next season. Shown with some of the equipment used in the study are, from left to right, Ralph Mellenby, executive-producer of Hockey Night in Canada, Alan Alexander, Larry Holt, co-ordinator of Dalhousie's bio-mechanics lab; and Pierre Page. (Wamboldt-Waterfield)

Top athletes

Continued from Page 24

Jeannie Collins, Moncton, most valuable, women's gymnastics. Individual runner-up in the Atlantic championships, she led her team to the AWIAA title. She was also a member of the Atlantic team in the nationals.

Anne Nugent, Halifax, most valuable, women's track. She won the 200 and 400 metre events in the AWIAA championships, was third in the 100 metres and was a key member of the winning relay team.

Ken Johnston, Halifax, most valuable, men's volleyball. In one season he developed into a reliable spiker and one of the most improved players in all aspects of the game.

Cindi Rice, Halifax, most valuable women's volleyball. An outstanding team player, higher rated throughout the conference.

Gail McFall, Lachine, Que., most valuable female swimmer. A winner of the award for the past two seasons, she is the AWIAA record holder in the 200 yard breast-stroke.

Peter Guildford, Halifax, and John March, Halifax, most valuable male swimmers. Peter was named to the CIAU all-Canadian team, was a consolation finalist in the CASA championships, a triple finalist in the 1973 Canada Games and a 1973 Commonwealth Games trialist. John, also a member of the CIAU national team, was a triple finalist at the CIAU championships and has produced national class times in backstroke, butterfly, free-style and individual medley.

Gail Bates, most valuable, women's curling. A dedicated and talented curler, she is one of the finest shot makers in the conference.

Tish Pertus, Halifax, most valuable, JV field hockey. An outstanding team performer, she was captain of this year's team.

Susan Brenton, most valuable, women's intermediate basketball. One of the top performers of the league for the past three years. She was captain of the 1973-74 edition.

Dalhousie teams won no fewer than 11 conference championships this past season. AIAA championship awards were presented to Dalhousie's golf, judo, tennis, track & field, volleyball, badminton, swimming and cross-country teams.

The Dalhousie Memorial Rink last week got an internal face-lift for the second time in its 24 years when a new concrete floor was poured.

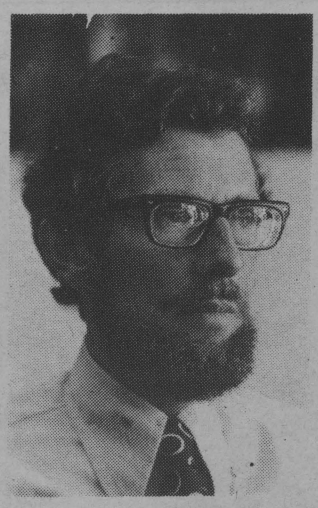
But this time it was different. In the mid-fifties, when the first concrete floor was laid — and earth and sand floor was used initially — the job took about 24 hours, with gangs of workmen literally running back and forth with two-wheeled buggies full of concrete.

Last week's operation took less than half a day, and the concrete — 350 cubic yards — was pumped in by pipeline continuously for about seven hours, after which packing and smoothing was done.

The new floor was needed because the brine pipes — as old as the rink — had corroded and last year made the ice surface uneven.

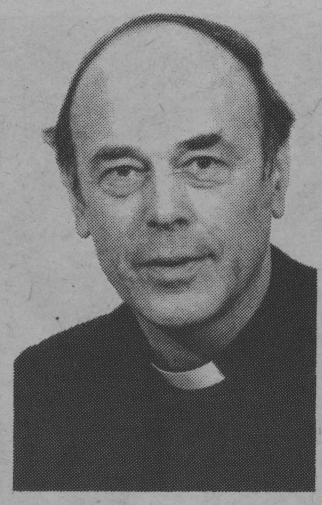
Charles Roberts, civil engineer with the Department of Physical Plant, organized the work for the university, and L. Scaravelli, general manager of the placing and finishing department of Atlantic Concrete supervised the pouring. When the first concrete floor was laid 20 years ago, Mr. Scaravelli was the foreman.

CANADA COUNCIL AWARDS



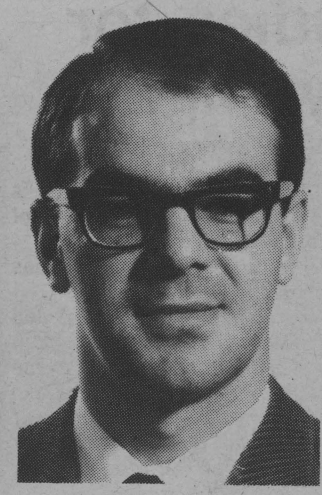
Dr. E.L. Mills

Dr. L.D. Stokes

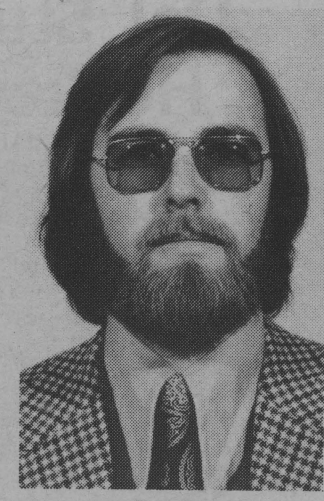


Dr. Eric Segelberg

Dr. J.G. Head



Dr. H. Brunner



Dr. R.R. Larsen

LEAVE AND RESEARCH FELLOWSHIPS

Canada Council leave and research fellowships were awarded earlier this year to 14 Dalhousie professors.

Leave fellowships have been awarded to: Hermann Brunner, Mathematics; R.M. Campbell, philosophy; D.H. Elliott, sociology; Jean Elliott, sociology; J.G. Head, economics; Christian Marfels, economics; E.L. Mills, oceanography; P.D. Pillay, history; T.E.W. Segelberg, religious studies; R.J. Smith, English; L.D. Stokes, history; and P.B. Waite, history.

Recipients of research fellowships are: J.E. Crowley, history; and R.R. Larsen, anthropology.

HERMANN BRUNNER, Associate Professor of mathematics, began his sabbatical leave in July.

He is spending a year working at the University of Dundee, Scotland. His projects include: (1) work on the approximate solution of ordinary differential equations and of integral equations of Volterra type, and (2) continuation of joint work with Professor J.D. Lambert, University of Dundee, concerning the numerical solution of systems of nonlinear ordinary differential equations.

Professor Brunner is a native of Switzerland and holds M.A. and Ph.D degrees from Zurich.

Assistant professor **RICHARD CAMPBELL,** during his leave from teaching duties in the department of philosophy/ research and writing on a book dealing with ethical egoism. A portion of the book is now in papers published or accepted for publication.

The study will focus on the concepts of pleasure, self-interest, self-esteem, integrity and rational desire. Dr. Campbell will draw on work by psychiatrists and clinical psychologists such as Erik Erikson, Erich Fromm, R.D. Laing, Carl Rogers and Abraham Maslow.

Campbell's university studies were undertaken at Harvard and Cornell. He has been at Dalhousie since 1968 where he teaches moral philosophy, philosophy of mind, and logic.

He is active in philosophical associations, has read papers at professional meetings and publishes articles and critical reviews. Work in progress, in addition to his fellowship project, is editorial work on a book called Borderline Cases and is comprised of papers given at philosophy seminars at Dalhousie in 1970, 71, and 72.

JOHN EDWARD CROWLEY, assistant professor of history, has been awarded a Canada Council research fellowship. His special field is American history.

His current project deals with theories of social change in 18th century America and much of his research while on leave will be done in Washington and London.

Dr. Crowley studied at Princeton, University of Michigan and Johns Hopkins University. He held a Fullbright Fellowship at Churchill College, Cambridge, and a John Carter Brown Fellowship at Brown University.

His book entitled This Sheba Self: The Conceptualization of Economic Life in Eighteenth-Century America, published by Johns Hopkins University Press, will appear this year.

JOHN GRAEME HEAD, professor of economics, will travel to Australia to continue research and writing in his field of specialization — the theory of public goods.

Dr. Head's collected papers, which date back to 1962, will be published in book form by Duke University Press this fall.

Dr. Head is a native of Melbourne, Australia, and a graduate of Oxford University. He was a Visiting Fullbright Scholar at Columbia University and a visiting lecturer at Princeton.

Before coming to Dalhousie as a Senior Killam Fellow in 1968 he was on staff of the economics department at the Australian National University. Dr. Head has served as a full professor in the Dalhousie department of economics for six years.

He is a regular contributor to scholarly journals and writes on such topics as public expenditure theory, tax theory, tax policy and fiscal federalism.

Associate professor **DAVID H. ELLIOTT** is based in Wellington, New Zealand, during his 1974-75 leave from Dalhousie department of sociology.

A graduate of Yale University and the University of Pittsburgh, his research will deal with a study of social policies associated with time allocation in New Zealand and will cover both archival and survey aspects.

An earlier project which has relevance to the present study was a 1971 time budget study undertaken in the Halifax-Dartmouth metropolitan area. As part of the budget study, Elliott and two other investigators measured aspects of time, movement and space in terms of travel, work and other activities.

The New Zealand study is a continuation of Professor Elliott's interest in the comparative sociological aspects of human time allocation. New Zealand, he says, was chosen to facilitate comparisons with previously collected data from Eastern Canada where social policies regarding time use are quite different.

Professor Elliott's wife, sociologist **JEAN LEONARD ELLIOTT** received a Canada Council Fellowship to study urbanization in New Zealand, primarily in Auckland. She holds the rank of associate professor at Dalhousie and was educated at Wells College, the University of Kansas and the University of Pittsburgh.

The study is concerned with the adjustment of newly arrived urban migrants from the South Pacific Islands; and the islanders and Maoris from rural areas of New Zealand.

The research, which will consider whether or not urban society can accommodate these newcomers, is a continuation of Dr. Elliott's interest in structural inequality, particularly as it affects urban minorities.

ROGER R. LARSEN, assistant professor in the department of sociology and anthropology, has taken up a research fellowship at the University of California, San Diego, where he is conducting research in non-verbal communication.

This study is a new project and will focus on sex differences in non-verbal communications, specifically those aspects of non-verbal communication which indicate status differences.

Professor Larsen teaches introductory anthropology, biosocial anthropology and cultural ecology. His major research interests are in biological basis of human social behaviour and acculturation.

He holds the B.A. from the University of British Columbia and the Ph.D. from Rutgers.

The Theory and Practice of Concentration Measurement is the subject of a monograph to be written be **CHRISTIAN MARFELS** while on leave from the department of economics.

His research, made possible by a Canada Council Leave Fellowship, is being done in the Federal Republic of Germany.

Dr. Marfels graduated with a Ph.D degree from the Free University of Berlin where he served as research associate before coming to Dalhousie in 1967 as a Killam Visiting Fellow. He was appointed associate professor in the department two years ago.

In addition to his book reviews, he has had 19 papers published in professional journals.

DR. ERIC MILLS, professor of biology and oceanography, will transform a hobby into a scholarly undertaking with the support of his Canada Council fellowship.

He is spending a year at Cambridge University working on the history of marine biology in 19th century Britain. Much of the research will focus on the life and work of Canon Alfred Merle Norman, an invertebrate zoologist, who, among other activities, was involved in the work of H.M.S. Challenger expedition (an 1873 British expedition which signalled the beginning of oceanography as a scientific discipline).

During his years as a graduate student he received a number of scholarships. He was named a Woodrow Wilson Fellow and a NATO Science Scholar at Yale University and a Ford Foundation Predoctoral Fellow at Woods Hole Oceanographic Institute.

He has broad research and teaching experience. His papers have appeared in major scientific journals and three of his articles on the subject of the Challenger are now in press.

DR. P.D. PILLAY, whose major interest is imperial history, is spending part of his sabbatical leave at London and Oxford universities.

He will also travel to the Commonwealth countries of Kenya, Malawi, Mauritus, Figi, India and islands in the Carribean and deliver two lectures at the Australian National University in Canberra.

While on leave he will be collecting material for a study entitled The Administration of Empire: The India Office, the Colonial Office and Indians in the British Empire, 1834-1945.

In addition to this study, Professor Pillay will be putting together a collection of documents on the indentured labour system. The reports, commentaries, criticisms and contracts, etc., gathered will be related to administration of the system.

Indentured Labour as Imperial Pawns will be the subject of his lectures in Canberra.

Dr. Pillay is a graduate of the London School of Economics and is an associate professor in the Dalhousie department of history.

He recently served as conference chairman for the 4th annual meeting of the Canadian Association of African Studies and is presently charged with developing proposals for a permanent Commonwealth exhibition in Canada. He is also preparing a background paper for the Royal Commonwealth Society of London on how commonwealth history should be taught in high schools.

REV. DR. ERIC SEGELBERG has a Canada Council fellowship to support research during his year in Upsala, Sweden.

A professor of classics at Dalhousie since 1968, Dr. Segelberg's studies will consist of an analysis of texts in the area of the growing gnosticism of the first to the 4th centuries.

This is a continuation of research already underway and will focus on the Nag Hammadi coptic texts now being published. Research in this area is significant since it helps to clarify ancient world religious-cultural development and influence on the growing Christian world.

Dr. Segelberg is a frequent contributor of papers to international conferences. His articles have appeared in learned journals and in the proceedings of conferences. He has also served as editor of proceedings of six eucharistic conferences held in Upsala.

DR. ROLAND SMITH, associate professor of English and assistant dean of the Faculty of Arts and Science, has received a leave fellowship to carry out research on political attitudes of British writers in the late 1930's and 40's.

He we be working on a critical study of these attitudes, in particular the crises of conscience among British writers before and during the second world war.

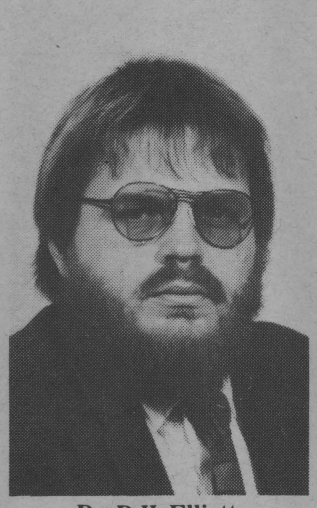
Dr. Smith will conduct his research in the United Kingdom during the tenure of his fellowship.

A Transvaal Rhodes Scholar, he studied at Oxford and the University of Natal. His special fields are 20th century British literature and African English literature.

He is the author of numerous articles and reviews and his book, Lyric and Polemic; The Literary Personality of Roy Campbell, was published in 1972.

Dr. Smith has done considerable television work. He has organized several program series for CTV's University of the Air. In addition he has presented lectures and served

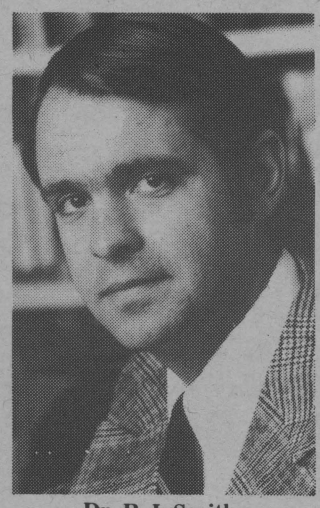
CANADA COUNCIL AWARDS



Dr. D.H. Elliott

Dr. Jean Elliott

Prof. C. Marfels



Dr. R.J. Smith

FOR 14

as discussant for the television series.

LAWRENCE D. STOKES, associate professor in the department of history, is preparing a study of the political and social development of a town in northern Germany (Eutin, Schleswig-Holstein), between 1918 and 1939. The study will concentrate on the rise of the Nazi party to power in the town and the experience of the town folk under Nazi rule.

The research will be undertaken in several archives in West Germany: Eutin, Schleswig, Berlin, Oldenburg, Bremen, Hamburg, Lubeck, Bonn, Koblenz and Osnabruck.

Dr. Stokes holds the B.A. from the University of Toronto and the Ph.D from Johns Hopkins University. His major interest is modern German history and he publishes in this field.

An article on the Nazi Security Service and public opinion in Hitler's Germany will appear this year in a series entitled Studies in 20th Century History. This series is published under the auspices of the Institute of Contemporary History, London.

Professor Stokes is currently preparing two articles on Canadian government policy and public opinion towards refugees from Nazism during the period 1933-1945.

PETER B. WAITE, Canadian historian and author, will undertake two projects during his sabbatical year.

The first will be the gathering of material for a future biography of Sir John Thompson, prime minister of Canada from 1892 until his death in 1894. This work will be done at the Public Archives of Canada in Ottawa where the Thompson papers are housed.

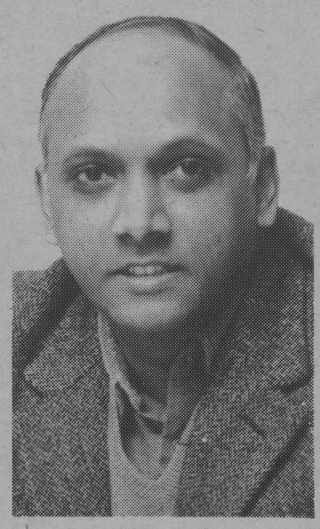
During the year, Professor Waite will also begin work on a social history of Canada at the time of Sir John A. Macdonald. This book has been contracted for by McGraw-Hill-Ryerson of Toronto as part of a general series of books on prime ministers of Canada. Dr. Waite's work will be the first of five books in the series. The others will cover the Laurier, Borden and King periods, in addition to one other.

Professor Waite has published primarily on the Confederation period in Canada together with the events leading up to and following 1867. Within the last 12 years he has written six books (two of which have had several reprints) and edited three others.

His published articles (37 to date) on people and events in Canadian history have appeared in both English and French.

Professor Waite is a past president of the Canadian Historical Society and a former chairman of the Humanities Research Council of Canada. In 1972 he was elected a Fellow of the Royal Society of Canada. He is a professor in the history department of which he was head from 1961 to 1968.

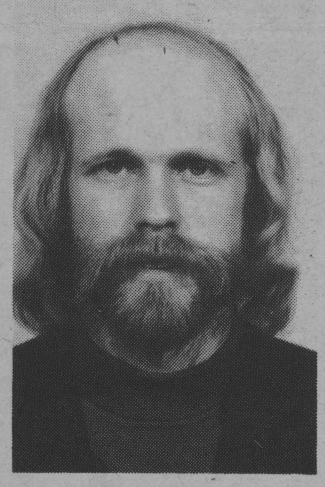
He sits as the Nova Scotia member on the Historic Sites and Monuments Board of Canada and serves as vice-chairman, Halifax Landmarks Commission, and board member of the Champlain Society of Canada and the Public Archives of Nova Scotia. He is also a member of the editorial board of the Dalhousie Review and Acadiensis.



Dr. P.D. Pillay

Dr. P.B. Waite

Dr. J.E. Crowley



Dr. R.M. Campbell

NEWS IN BRIEF

No vacancy

After a rumor that Opposition Leader Robert L. Stanfield might be offered the presidency of Dalhousie University was published and broadcast by news media in the Halifax area, the following statement was issued by the university:

"Dalhousie University has no vacancy for a president.

"A three-point statement from the university today said:

"1 - The university has a distinguished president (Dr. Henry D. Hicks) and therefore has no vacancy;

"2 - Absolutely no consideration has been given to Mr. Robert L. Stanfield or anyone else for the presidency of the university; and

"3 - The university has appropriate and established procedures to follow when a vacancy at the senior acadmeic or administrative level arises. These procedures involve the appointment of a committee on which there may be representatives of the university Senate (the internal and academic governing body), the Board of Governors (the supreme governing body) and the Student Union. This committee engages in extensive consultation and consideration before filling senior academic and administrative posts."

A week after the rumor, an article commenting on the Senate and university presidencies by Robert Coates, PC member for Cumberland, appeared in The Chronicle-Herald.

Liaison with CIDA

Dr. Guy R. MacLean, Dean of the Faculty of Arts and Science at Dalhousie, has been appointed the university's liaison officer with the Canadian International Development Agency.

Dr. MacLean's role will be in helping to build up a roster of potential advisors who would be available to assist in satisfying the increasingly sophisticated requests from developing countries, fitting programs at Dalhousie to the needs of students from developing countries, and in seeking ways in which Dalhousie research expertise can be used to develop research capacity in universities in a developing country.

The Canadian International Development Agency and the Association of Universities and Colleges of Canada have a joint policy liaison committee, and the research expertise aspect of the liaison role is part of the committee's program.

To re-apply for grant

It was learned two weeks ago that the offer of a grant of $500,000 towards the physical education centre from the Windsor Foundation had been withdrawn because of the expiry of the offer's deadline.

According to university president Dr. Henry D. Hicks, the university will re-apply for the grant.

Major holdup was a government moratorium on university capital construction.

Dal-Tech for cabinet

Nova Scotia Education Minister William Gillis reported in June that he would put a resolution for the amalgamation of Nova Scotia Technical College and Dalhousie University before the profincial cabinet "in the near future."

Both institutions' board of governors have approved the amalgamation proposal.

Funds for research

Friends of the late David Clark of Damouth, a Master of Science graduate of Dalhousie University, have donated funds to the Departmment of Microbiology in the Faculty of Medicine, to be used to pursue research on Herpesvirus infestions.

Dr. K.R. Rozee, professor and head of the microbiology department, said the department was grateful to the donors and to Mrs. Clarke for their generosity.

Research on various aspects of Herpesvirus is being carried on in all three laboratories of the department — in the Sir Charles Tupper Medical Building, the Izaak Walton Killam Hospital for Children, and the Pathology Institute — and the fund will be dispersed among them.

D.F.A.'s executive 1974-75

Following are the members of the Dalhousie Faculty Association Executive for 1974-75, their university locations and telephone numbers:

President — Dr. H.W. King, Eng. & Eng. Phys., Room 329, Dunn; 2345. (2344 will give and take recorded messages if no one is in the office). **1st Vice-President — Dr. T. Ghose,** Path. Dept., Tupper; 2368. **2nd Vice-President — Prof J.R.T. Ettlinger,** Sch. Lib. Serv., Killam Library; 3656. **Secretary — Prof. Kate MacDonald,** Dent. Hyg., 209 Forrest, 2281. **Treasurer — Dr. S.B. Singh,** Anat., Tupper; 3560. **Members-at-large: Prof. A.R. Bevan,** English, Killam Library, 3412. **Prof. P.E. Darby,** Law, 317 Weldon; 3789. **Dr. J.B. Faught,** Chem., 3758. **Dr. J.C. Pooley,** Phys. Ed., 2152. **Dr. Roland Puccette,** Phil., 1400 Henry; 6570. **Prof. D. Wiswall,** Nurse., 5963 College; 2535.

D.F.A. reception for new faculty

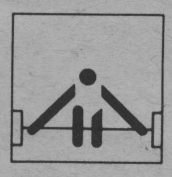
Dalhousie Faculty Association will host a reception for new members of the faculty next week, association president Dr. H. W. King has announced.

The reception will begin at 3:30 on Thursday, Sept. 12 in the Dalhousie Faculty Club (in the old Law Building), and the event is intended to provide new faculty with the opportunity to meet the association executive and members and to chat about the university and about Halifax.

During the reception there will be a special display of literature on teaching techniques and methods.

Dal's 1974-75 Sports Schedules






Football

Sept. 14	Dal at RMC, Kingston, Ont.	2:00 p.m.
Sept. 21	Dal at UPEI, Charlottetown	1:30 p.m.
Sept. 28	Acadia at Dal	1:30 p.m.
Oct. 6	SMU at Dal (Annual Lobster Trap game. Celebration of Canadian College Football).	1:30 p.m.
Oct. 12	Dal at St. F.X.	1:30 p.m.
Oct. 19	York University at Dal (to be confirmed)	1:30 p.m.
Oct. 26	Dal at Mt. A.	1:30 p.m.
Nov. 2	UNB at Dal	1:30 p.m.
Nov. 9	Playoff 1 vs. 2	1:00 p.m.
Nov. 16	Atlantic Bowl	1:00 p.m.
Nov. 23	College Bowl at Toronto	1:00 p.m.

Varsity Basketball

Men

Nov. 2	RMC at Dal	8:00 p.m.
Nov. 22	Dal at UNB	8:00 p.m.
Nov. 29	Lakehead at Dal	8:00 p.m.
Nov. 30	Dal at St. F.X.	8:00 p.m.
Dec. 3	Dal at Acadia	8:00 p.m.
Dec. 5	SMU at Dal	8:00 p.m.
Dec. 7&8	Wandlyn Tournament (Hfx)	
Jan. 5&6	N.S. Invitational at Acadia	
Jan. 13	SMU at Dal	8:00 p.m.
Jan. 21	St. F.X. at Dal (Forum)	7:00 p.m.
Jan. 24	Dal at SMU	8:00 p.m.
Jan. 29	Acadia at Dal	8:00 p.m.
Feb. 5	Dal at Acadia	8:00 p.m.
Feb. 8	Dal at St. F.X.	8:00 p.m.
Feb. 9	Loyola at Dal	8:00 p.m.
Feb. 18	Dal at SMU	8:00 p.m.
Feb. 22	St. F.X. at Dal	8:00 p.m.
Feb. 24	Acadia at Dal	8:00 p.m.

Women

Dec. 5	SMU at Dalhousie	6:00 p.m.
Dec. 7	Dalhousie at Mt. A.	3:00 p.m.
Dec. 8	Dalhousie at UPEI	3:00 p.m.
Jan. 3, 4	Mt. Allision Invitational	
Jan. 9	Mt. A. at Dalhousie	6:00 p.m.
Jan. 11	Dalhousie at St. F.X.	2:00 p.m.
Jan. 17	U.N.B. at Dalhousie	6:00 p.m.
Jan. 19	U.P.E.I. at Dalhousie	2:00 p.m.
Jan. 21	St. F.X. at Dalhousie	5:00 p.m.
Jan. 27	Dalhousie at SMU	7:00 p.m.
Jan. 29	Acadia at Dalhousie	6:00 p.m.
Feb. 1	Dalhousie at U.N.B.	2:00 p.m.
Feb. 5	Dalhousie at Acadia	6:00 p.m.
Feb. 21, 22	A.W.I.A.A. Play-offs	

Varsity Soccer

Sept. 15	Tournament hosted by Dal and SMU	
Sept. 21	MUN at Dal	2:00 p.m.
Sept. 22	MUN at Dal	2:00 p.m.
Sept. 28	Dal at St. F.X.	3:00 p.m.
Oct. 5	Acadia at Dal	3:00 p.m.
Oct. 9	Dal at Acadia	4:00 p.m.
Oct. 19	Dal at SMU	3:00 p.m.
Oct. 23	St. F.X. at Dal	4:00 p.m.
Oct. 26	SMU at Dal	3:00 p.m.
Nov. 2	Championship Tournament 1 West vs 2 East 1 East vs. 2 West	
Nov. 3	Consolation Final Championship Game	

'B' Soccer

Sept. 28	Dal at St. F.X.	1:00 p.m.
Oct. 5	Acadia at Dal	1:00 p.m.
Oct. 9	Dal at Acadia	1:00 p.m.
Oct. 19	SMU at Dal	3:00 p.m.
Oct. 23	St. F.X. at Dal	5:30 p.m.
Oct. 26	Dal at SMU	3:00 p.m.

Varsity Hockey

Nov. 1/ 2	Tournament at St. F.X.	
Nov. 10	St. F.X. at Dal	8:00 p.m.
Nov. 22	U.P.E.I. at Dal	8:00 p.m.
Nov. 23	UNB at Dal	2:00 p.m.
Nov. 29	Dal at Acadia	8:00 p.m.
Nov. 30	Mt. A. at Dal	8:00 p.m.
Jan. 10	SMU at Dal	8:00 p.m.
Jan. 12	U de M at Dal	2:00 p.m.
Jan. 18	Dal at Mt. A.	7:30 p.m.
Jan. 19	Dal at U de M	2:00 p.m.
Jan. 26	Dal at UPEI	1:30 p.m.
Feb. 5	Acadia at Dal	8:00 p.m.
Feb. 8	MUN at Dal	8:00 p.m.
Feb. 9	MUN at Dal	2:00 p.m.
Feb. 15	STU at Dal	8:00 p.m.
Feb. 16	Dal at St. F.X.	8:00 p.m.
Feb. 21	Dal at STU	9:00 p.m.
Feb. 22	Dal at UNB	2:00 p.m.
Feb. 28	AIAA Playoff at home of western winner	
March 1/ 2	CIAU	
March 8/ 9	CIAU vs. NCAA	
March 15/ 16		

Varsity Field Hockey

Sept. 21	Dal at MUN	11:00 p.m.
Sept. 22	Dal at MUN	1:00 p.m.
Spet. 28	Dal at St. F.X.	1:00 p.m.
Oct. 5	Dal at SMU	2:00 p.m.
Oct. 9	Dal at Acadia	4:00 p.m.
Oct. 19	St. F.X. at Dal	1:00 p.m.
Oct. 25	SMU at Dal	4:00 p.m.
Oct. 26	Acadia at Dal	11:00 a.m.
Nov. 1 & 2	A.W.I.A.A. Play-offs at home of West Section Winner	

Wrestling

Jan. 11	at Dalhousie	(Times to be announced later).
Jan. 18	at Acadia	
Jan. 25	at U de M	
Feb. 1	at St. F.X.	
Feb. 8	at SMU	

Swimming & Diving

	(Men and Women)	
Nov. 22	Mt. A., MUN at Dal	7:00 p.m.
Nov. 23	Mt. A., MUN at Acadia	1:00 p.m.
Nov. 30	Acadia at Dal	
	UNB at Mt. A.	1:00 p.m.
Jan. 17	UNB, MUN at Dal	7:00 p.m.
Jan. 18	UNB, MUN at Acadia	1:00 p.m.
Jan. 24	Dal at Mt. A.	4:00 p.m.
	Acadia at UNB	7:00 p.m.
Jan. 25	Dal at UNB	
	Acadia at Mt. A.	1:00 p.m.
Feb. 1	Dal at Acadia	1:00 p.m.
Feb. 2	Mt. A. at U.N.B.	1:00 p.m.

Tournament Sports

Women

		VENUE
Oct. 4-5	Tennis	U.N.B.
Oct. 18 & 19	Intermediate Field Hockey — Section	NSAC (TC, AC, X) (UNB, STU)
Oct. 18.19	Intermediate Field Hockey — Section	Acadia (AC, Dal) Kings MSV)
Oct. 25-26	Intermediate Field Hockey — Final	Kings
Oct. 19	Track and Field	Dalhousie
Feb. 15	Gymnastics	U.N.B.
Feb. 13, 14, 15	Swimming	U.N.B.
Feb. 21-22	Badminton	St. F.X.
March 7 & 8	Curling	U.P.E.I.
Feb. 21-22	(Int. Basketball Sec.)	U de M
	(Int. Basketball Sec.)	Dal (Provisional) (That they can get Kings)
Feb. 29-Mar. 1	Int. Basketball (Final)	N.S.T.C.
Jan. 24-25	"A" Volleyball 1st Tournament	St. F.X.
Feb. 21-22	"A" Volleyball Final	Mt. A.
Nov. 22 & 23	"B" Volleyball	S.T.U.

Men

		VENUE
Feb. 21/ 22	Badminton	St. F.X.
Oct. 18	Cross Country	Dal
Feb. 20/ 21/ 22	Curlin	U de M
Sept. 28/ 29	Golf (Men & Women)	UPEI
Feb. 15	Gymnastics	UNB
Feb. 15	Judo	Dal
Oct. 4/ 5	Tennis	UNB
Oct. 19	Track & Field	Dal
Feb. 7/ 8	Volleyball	STU
Feb. 8	Wrestling	SMU
TBA	Skiing	Dal