2023 TALE #3 Archives PDF FINAL Knowles July 24 , 2023 Prof. Hugh Knowles landscapes N campus (File name)

ABOUT TALES OF ALES:

TALES of ALES: Celebrating the Past, and Changing the Future - Stories about some University of Alberta Plant Science Professors and their activities from the past

The TALES are a series of stories written in retirement by Keith Briggs in 2021 – 2023 as Emeritus Professor of the Department of Agricultural, Food and Nutritional Science (AFNS), Faculty of Agricultural, Life and Environmental Science (ALES) at the University of Alberta. The TALES place into the record some notable agricultural science events and activities for the Archives, stories not previously told or elaborated that may be of interest to the academic, scientific and public communities. They feature Professors or other staff all found in the history of AFNS. The TALES author of record is Keith G. Briggs (AFNS / ALES, on staff 1969-199), with additional authors in some cases.

ABBREVIATED TITLE:

TALE #3 Professor and Landscape Architect Hugh Knowles transforms original Parkland bush to the elegantly landscaped North campus, University of Alberta, featuring his iconic tree collection

FULL TITLE:

TALE #3 How to landscape a Campus 101, and how it was done at the University of Alberta: A real-time lesson from Hugh Knowles, Professor of Horticulture and Landscape Architecture, transforming Parkland bush to campus serenity using his iconic tree collection

AUTHOR:

Keith G. Briggs (Emeritus Professor, past Chair of Plant Science, and first Chair AFNS/Faculty of ALES)

INDEX:

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The author accepts responsibility for any errors of information that are included. Also acknowledged is the valuable assistance of the numerous individuals listed below who variously assisted in calls and correspondence about the subject matter. They also provided permission to use photos, personal documents and other informational sources throughout the script. A number of them also acted as reviewers of the draft and provided helpful editorial suggestions.

Donna Balzer (Horticulturalist, Speaker and consultant, Calgary); Brenda Briggs (External Relations, University of Alberta); Brittany Hurlburt (Planning and Development, University of Alberta); Zenon Kondra (retired Professor , University of Alberta); Vic Lieffers (Renewable Resources, University of Alberta); Michael McCreary (Media Relations,

University of Alberta); Ed Tyrchniewicz (Professor Emeritus, University of Alberta); William Vanden Born (Professor Emeritus, University of Alberta)

ABSTRACT:

The North Campus land of the University of Alberta was established on 258 acres of land known as River Lot # 5, purchased in 1907 as the site for the University to be developed in south Edmonton. At that time it was 90% uncleared bush with scrubby willow, a few small cropped fields with winding foot trails, one decrepit log barn and 'a profusion of Alberta wild rose bushes'. By 1912 there was a 'grand plan' University design on paper that could create a dramatic campus landscape, and this was partly followed as buildings and a few roads were added until 1945. The campus site was then described as 'muddy fields, scrub, boardwalks and muddy roads '. Other comments indicated 'that there was no or little financial ability (especially during the war years) to address landscaping needs that would make the property more 'people friendly', except for the planting of some rows of elm shelter-belts '. By 1945 some research fields had also been opened where Faculty of Agriculture conducted extensive field-crop research trials to assist local farm settlers with their crop production decisions.

This early pause in attention to campus design ended with Mr. Hugh Knowles arrival in 1948 and was corrected by his career long landscape architectural efforts, following his appointment as University Grounds Manager and Lecturer in Horticulture. The luxuriously landscaped courtyards and pedestrian areas that are now found throughout North Campus, plus the notable collection of mature trees that he identified as being locally adapted, are the result of his landscaping development plan carried out until his retirement in 1984. Some of those trees are now >75 years old, and some are rare species. Professor Knowles' activities are described in detail in this TALE but were dominated by his continual search for plant species, including trees, that could survive the harsh growing conditions of the Northern Alberta ecozone. The campus itself was his outdoor test laboratory for testing trees, woody ornamentals and ground cover species. Many of his findings were published in his iconic W. Canadian horticultural reference 'bible' entitled 'Woody Ornamentals for the Prairies'.

Professor Knowles was an extremely well-liked and effective instructor of Horticulture and Landscape Architecture, and graduates from the Horticulture program during his time went on to occupy many very senior positions in the W. Canadian industry, Government and private sectors. Examples of those graduates are described in this TALE. The author contacted a number of them, and some quotations of theirs highlighted below attest to the high reputation he achieved as an instructor. (In recognition of his excellence in teaching, research and technology transfer Professor Knowles was elected Fellow of the Canadian Society of Landscape Architects in 1984).

> 'Hugh was an inspiring and effective, feet on the ground teacher who made the learning interesting, participatory, and fun too'……'Hugh was a great Professor who made us work hard'….'Hugh challenged his students to analyze, evaluate and create….to develop their research and problem solving skills and their imagination'…….'Students learned to put maximum effort into a project, and thus gained the personal confidence and abilities needed in their future careers, in horticulture and elsewhere'……'Hugh was a profound influencer and all around helpful kind of guy' (a quote from M. Gabor Botar, his technical assistant for many years)

Professor Knowles' most visible legacy of his 'Northerly adaptation research' is found in the tree collection that he established on North Campus. North Campus has over 4,500 trees with an estimated value of $22.5 million. Beyond the additional aesthetic value the Knowles tree collection within it consists of 51 different tree species found in this unique W. Canadian Urban Forest Collection. A self-guided tour of these trees is described in this TALE, and is also used by Professor Vic Leiffers and others for instruction of students in the Forest Science and Natural Resources specialization. Information about the favorite trees of Professor Knowles, this author, and the designated Alberta Provincial and Canadian Federal trees (lodgepole pine and sugar maple, respectively) is also included in this TALE.

Professor Knowles had a wide range of research interest during his lengthy campus career, but became especially well-known for the following: 1. Development of 'Banff' Kentucky Bluegrass variety (widely used for many

years, earning seed sale Royalties enough for a student scholarship); 2. Best management practices for lawn grasses, golf greens and fairways; 3. Use of artificial hills and berms in flat landscape areas, and choice of suitable plant species for integration into hilly landscape designs.

Please scroll down to read Part 1! Thank you.

TITLE: TALES of ALES #2 How to landscape a Campus 101, and how it was done at the University of Alberta: A real-time lesson from Hugh Knowles, Professor of Horticulture and Landscape Architecture, transforming Parkland bush to campus serenity using his iconic tree collection

PART 1: Development of the University of Alberta Campus and its Buildings: A Brief Overview

In 1907 Alberta's Premier Rutherford set many wheels in motion that even he could not have foreseen when he announced his forward-looking vision to establish a University on the top of the bank on the South side of the North Saskatchewan river in what was then Strathcona. For that purpose he negotiated the purchase of 258 acres of land designated as River Lot 5, previously held as farmland by the Simpson family, for the sum of $150,000. At that time the property was about 90% uncleared poplar bush with scrubby willows, a few winding foot trails, one 'much decayed log barn', and a profusion of Alberta wild roses, according to reports of the time. The original maps and several archived photographs indicated that some of the smaller areas of cleared land were cropped, probably for forage and feed use by farm livestock, but most of the area was as yet 'untamed bush'.

The new University President Henry Marshall Tory wasted little time in commissioning a long-term development plan for the institution, a schematic to which future building programs could conform to create a 'grand' campus. The two figures below show the site location and the visualized concept. There would be a major development of River Lot 5, this piece of 'forest with a few cleared acres', as Tory himself described it (Schoeck, 2008).

1907 Driscoll and Knight's Map of Edmonton and Environs


Nobbs & Hyde (1912 plan): UofA Archive UAA 73-124

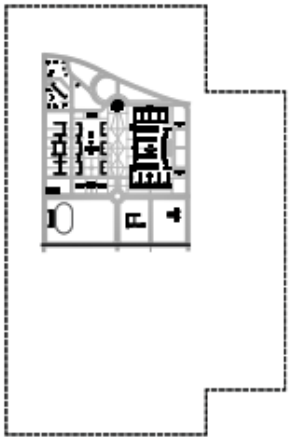
Enrollments at the University have always reflected a very significant Alberta demand for higher education as they increased from just 16 students in 1908, using rental space in Old Scona, to over 40,000 by 2022. These increases were steady over the entire period, interrupted only by lower numbers during the depression and two world wars, followed by large surges in numbers after each war, especially for returning soldiers after WW II. Between 1929 and 1945 no new buildings at all were added. The Nobbs and Hyde 'grand plan' was also pretty much abandoned as a campus space development guide by 1945, although major building programs did then resume to accommodate escalating post-war campus needs. Many different facilities (and Faculties) were added in those first 40 years including student and staff residences, Faculty buildings for teaching and research, various colleges, the Strathcona hospital, outdoor sports and other recreational facilities were added, and the first few roads for cars. In most of the accounts by staff who were working on campus up until the mid-1940's the general campus surroundings were described as 'muddy fields, scrub, boardwalks and muddy roads.' Their comments confirm that up till then there had been little to no financial ability to address campus landscaping needs that would make the property more 'people friendly', except for the planting of some 'war dead personnel' commemorative rows of elm shelterbelts at the N end of campus.

By 1945 there was very little original bush remaining on the property, and most of that was on the North end on the steep hill down to the river, the only remaining place on the property where any original bush area still exists in 2023. The historical maps and photos that follow are intended to give the reader some sense of how the campus developed prior to when campus planners fully addressed the issue of appropriate landscaping, with the appointment of Hugh Knowles as Grounds Superintendent in 1948, also appointed to teach Horticulture. The 1942 aerial photo (see next

page) clearly shows much open space on campus, expanses of which were cropped by the Faculty of Agriculture to generate grains and fodder for its live animals, and grain crops to generate revenue to cover Faculty operating expenses. Numerous orderly rectangular areas can be seen in that photo at the middle left, top right corner by the river road and in other areas. They were crop research plot areas still at that time used on the North Campus by the Plant Science Department, for field crop research that also included the evaluation of new crop varieties for use by newly settled local farmers. All Faculty of Agriculture use of North Campus land was later moved off-campus to the newly purchased Parkland Farm not very far south from campus, later renamed the Edmonton Research Station, and eventually renamed South Campus. This also created opportunity on North Campus to create new and imaginative landscaping to be developed in concert with the addition of the many new buildings that would be added during the years that followed.

North campus maps and photos: The early years, transforming bush / farmland into a modern, landscaped University

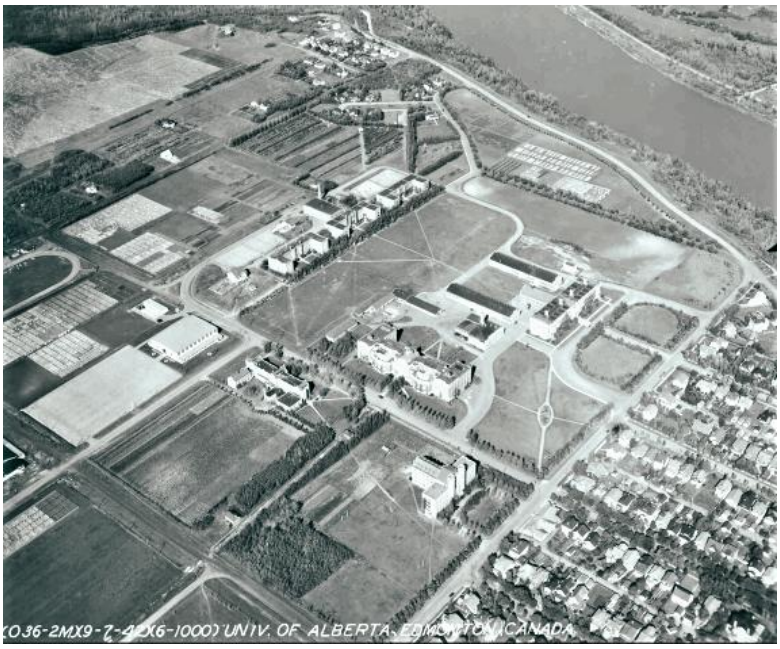
1912 River Lot 5
Mostly poplar bush + some crops
From: UA Archives: UAA 82-155-92-5



1912 Map: Nobbs & Hyde 'Grand Plan'
Shows what could be built and where
(Maps provided by: A Century of Campus Maps - University of Alberta)

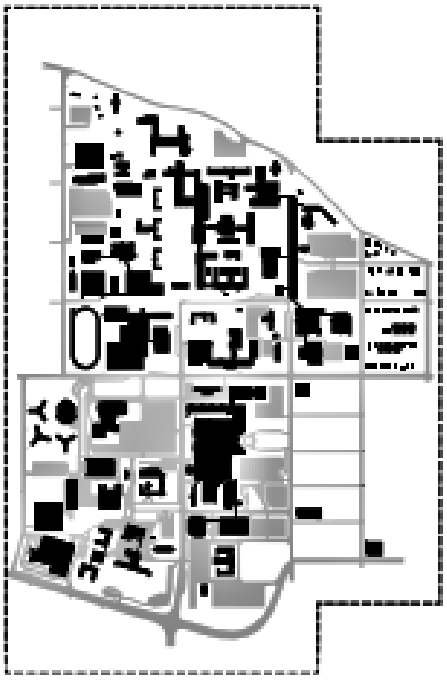
1945 Campus Buildings Map
Completed buildings, roads + paths

Visitors to the University of Alberta North Campus today might easily gain the impression that this campus is much older than its history tells, as they walk amongst the many mature trees, luxuriously landscaped courtyards and pedestrian areas that are found throughout the property. This came about because of the arrival and efforts of Hugh Knowles, the main player in the landscaping story told here. His arrival in 1948 triggered a significant change from the stark landscaping features of the 1942 campus, into what it looks like today. The following two photos (and the 1966 campus map) are presented to give the reader a better sense of that contrast. Part 2 of this article then follows, which tells more about the man Hugh Knowles himself, and his interests and activities between 1948 and his retirement in 1984. He passed away in 2004 but has left Albertans a very significant legacy with his 'open spaces' which all campus users enjoy on a daily basis.



1942 Aerial view of North campus (Source: UofA Archives155-92-5 UAA 82)
Shows some residual original bush, plus buildings, research plots and open areas, some cropped

A few spaces still left for buildings
1996 North Campus map



Near maximum for buildings, but filled with green spaces and mature trees
2022 Aerial view of North campus from the NW

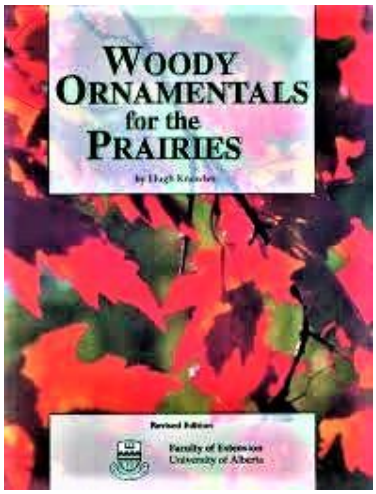
(Map provided by: A Century of Campus Maps - University of Alberta)
(Photo used with permission: External Relations, University of Alberta)

PART 2: All about Hugh Knowles and his influence on the University of Alberta North Campus Landscape

Reflecting in 2001 on his appointment in 1948 as the University Grounds Superintendent and Lecturer in Horticulture, Hugh Knowles remembered the grounds as being 'a grain field with a row of elms' (Balzer, 2001), which is certainly consistent with the earlier 1942 aerial photo shown in Part 1. Donna Balzer, a former horticulture student of Knowles, had interviewed him in 2001 about his career-long landscaping work at the University. (Author Note 1: Balzer's excellent article about that was published by Alberta Views but has recently been permanently lost due to Web Archive deletion at that source. Much from that interview is retold here with Balzer's kind permission, to recapture the record, sourced from a rare paper copy now located in this author's personal files. Note 2: The author of the present article was personally a Faculty colleague of Knowles between 1969 and 1984 (when Knowles retired). One spinoff of that association was the benefit from Knowles advice about how to best landscape the newly acquired Briggs family residence. Because of that long-time personal association Knowles is referred to as Hugh in the remainder of this script).

Hugh had obtained his first degree in agricultural science, followed by a teaching certificate from the University of Toronto, and on arrival set to work reorganizing the landscape structure of the campus, working with or around what little remained of the 1912 Nobbs and Hyde concept. Along the way he also taught many students who later became important players in the practice, development and teaching of Horticultural Landscaping in Alberta. Hugh was particularly excited about identifying which trees, woody ornamentals and ground cover species from other locations would be sufficiently hardy for use in Alberta conditions. He brought in many specimens of trees and woody ornamentals in that never-ending search for northern hardiness. Many of those specimens from elsewhere (collected, cloned, begged or bought from nurseries throughout Canada and N. America, and also some privately donated) might have been only modestly sized when acquired, but the campus property itself then became his test laboratory for planting them and testing their local adaptability over time. Many of those introduced species were not suitable and did not survive, but many of them did and can today be viewed around campus where they were planted many years ago by Hugh and his team of mostly volunteer workers. Some of the introduced trees have now been there for over 70 years, and some are rare specimens. They all provide shade, local color and delightful framing and ambience to a multitude of different campus areas and pedestrian walkways. More is written in Part 3 about a few of those trees that Hugh collected.

Hugh was particularly successful at collecting adapted specimens of woody ornamentals suited to the University campus and to Alberta conditions, and literally wrote the book on the subject, entitled 'Woody Ornamentals for the Prairies', the W. Canadian 'bible' on the subject for many years, both for amateur and professional gardeners. It was based on his notes originally prepared for the students in his classes. He is shown below with one of his introduced campus trees. The courtyard in the right-hand photo was originally named after him in recognition of his landscaping contributions.



Knowles Book (UofA Press)

Hugh Knowles with a bristle-cone pine tree

Hugh Knowles Courtyard
(Now the Arts/Business Courtyard)

(All 3 photos from Balzer, 2001)

When Hugh Knowles was honored in 1984 by his election as a Fellow of the Canadian Society of Landscape Architects it was as much in recognition of his effectiveness in inspiring future horticulturalists as it was for his achievements in landscaping architecture innovation, creative ideas and practical outcomes. At the memorial service for Hugh, who passed away in 2008 at age eighty, horticulturalist Jim Hole, of the well-known Hole Greenhouse, St. Albert, also drew attention to Hugh's instructional influence in preparing many significant practitioners for leading roles in the Canadian horticultural industry. This author highlights here just a few of Knowles past students/associates who used their training/advice from him to gain significant careers working with plants. Some of the stories they relayed about Hugh have a common thread that would read something like....."he was an inspiring and effective, feet on the ground teacher who made the learning interesting, participatory and fun too!' 'Hugh was just a great Professor who made us work hard'.

Much of this article is based on an out-of-print article based on an interview that Donna Balzer had with Hugh Knowles in 2001. Donna won an award in 2021 for her book 'The Prairie Rock Garden', wrote another book with co-author Steven Biggs, called 'No Guff Vegetable Gardening' writes, and spent time as the Horticulturalist at the Calgary Zoo Botanical Garden as well as instructing at Olds Agricultural College. Donna was a graduate from Hugh's program and with her own consulting company keeps up her lifelong passion for horticulture. Donna also gained an award for her program 'Bugs and Blooms' on HGTV. She also had a call-in radio program on CBC, presents talks about plants, and writes columns for the Calgary Herald. Donna attributes much of her career path success to that inspiration about plants encouraged by Hugh as her Professor.

Another example of a Hugh 'alumnus' was Anita Schill who was a longtime instructor of horticulture at Olds College, and later a professional arboricultural consultant and also owner of her own company, Tree and Leaf Inc.. Anita told a story how a student celebration held at Hugh's house soon became a live lab analyzing the interesting diseases on his lawn, and of another time pruning trees to perfection at a client's property. Anita wrote to me that 'Hugh challenged his students to analyze, evaluate and create……to develop their research and problem-solving skills and their imagination'. Most of all, Anita wrote, students learned to put maximum effort into a project, and thus gain the personal confidence and abilities needed in their future careers, in horticulture or elsewhere.

Other beneficiaries of Hugh's teaching of whom this author is aware include one who became Director of Calgary Parks, another who became Director of the Brooks Horticultural Station and then of Plant Industry for the Alberta Government….and that kind of list could continue at great length as the graduated Horticulture Majors flowed out through the industry. Another person who regularly looked to Hugh Knowles for horticultural information, that was very hard to find for the Prairies in the 1960's, was Gail Rankin. Gail has worked for Alberta Agriculture as a research scientist and in 1976 also became the Horticulture information Officer for the newly completed Edmonton Muttart Conservatory. She remembers Hugh as being a vital contact and always having good local answers for the many questions that the Edmonton public was asking about their plants, trees and gardens. Gail was also a horticulture and Plant Sciences instructor for some time at the University of Alberta, ran a CHQT radio talk-back show for 7 years, and finally ran her own horticultural consulting business for 25 years.

For many years the Horticulture Major was the highest enrollment program in the Department of Plant Science, where Knowles' Landscape Architecture specialty was complemented by Professors Ed Toop (Herbaceous Ornamentals and Greenhouse Crops Specialist), Professor Bill Andrew (Horticultural Vegetable Sciences specialist), and Chris Beck (Horticulture Field Adviser at the time), who were all also excellent instructors in their own right.

As Department Chair this author also had a lengthy career association with Gabor (Gabe) Botar who joined the staff of the Plant Science Department in 1978 after taking courses from Hugh as part of his Horticulture Major at the University of Alberta. He then taught many horticulture courses and practical labs during his long University career, conducted research, fieldwork, some greenhouse management, and was the accredited pesticide applicator for most of the needs in the Department. Gabe spent much time working with Hugh and the other horticulture staff and students over that time. He also remembers that group as being something of a learning-oriented powerhouse, with many graduates who went on to very sound horticultural careers. When asked about Hugh and his career contributions this

author recalls Gabe's words coming up something like…."a profound influencer and all around helpful kind of guy", and that was from someone who had worked with him and learned from him on a daily basis for very many years.

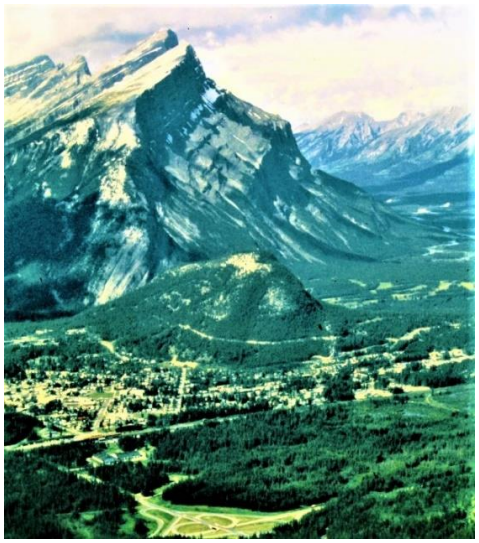
Hugh was always an advocate of his students engaging in 'life-long learning' and took some time out for himself for that purpose. In this mode he completed an MSc in plant physiology in 1957 at the University of Alberta and a further degree in Landscape Architecture from the University of Michigan in 1965. This resulted in his appointment to the Professoriate at the University as well as his gaining professional accreditation from the Canadian Society of Landscape Architects where he became a well-known and respected W. Canadian member for his ongoing activities. 'Landscape Architecture' as a profession is an extremely multi-disciplinary discipline, very much more than the 'arranging of plants in attractive visual formats', a simple kind of description that a lay person might envisage. This author located a very informative description worth sharing, that names all the knowledge areas that a professional landscaper must accommodate in their work, as follows.

> Landscape Architecture: A discipline that recognizes and caters to human needs, scale, slopes and form, sightlines, ambience, beauty, functionality, material availability and local adaptation, longevity and environmental constraints and sustainability, maintenance, utility access, accessibility, budgets, timeframes, drainage, construction aspects, soft landscape materials (plants, vegetation, trees, shrubbery), and hard landscape items (paths, walls, plazas, courtyards, benches and water features etc.)

It takes the right kind of person to bring all of that together in a successful landscape project, and Hugh's effective work setting up and executing a plan for the University North Campus clearly demonstrated that he was one of those people, as well as being that very effective instructor for students. Any visitor wandering on campus will find winding paths, ever changing vistas, hidden courtyards, quiet areas for relaxation, mature trees everywhere, open areas for activities, and hills where it used to be flat (Hugh's at that time novel introduction of landscape berms, adding another dimension to the landscape). Although Hugh was quickly known for his work and publications about woody ornamentals and trees he also conducted research work on turf grasses with great success, another main interest of his. This author was Farm Director for the Plant Science Department for much of Hugh's tenure and remembers well the long-term research land allocation that Hugh used for his turf grass management studies at the Edmonton Research Station (now named South Campus). Those very labor-intensive studies involved much hand excavation to create different soil foundations under a series of replicated golf putting greens. Their purpose was to determine which deep seedbed would result in the best grass establishment and survival, and the optimal management systems to sustain that grass in good health and vigor. Hugh's interest in grasses extended widely, from residential lawns to their use in golf fairways.

(Photos Source: Keith Briggs 2022)

Residential grass lawn, Edmonton



Banff golf course fairways (center far right)

Hugh's biggest impact with grasses was his involvement with the development and release of the dwarf variety of Kentucky Bluegrass (*Poa pratensis* L.) licensed in Canada in 1974 as the variety Banff. The original source of this variety was identified and selected in 1968 from an invasive form of Kentucky Bluegrass that had evolved subjected to 20 years of natural survival and selection under conditions of intensive management, heavy fertilization, flooding and disease attack (particularly snow mold) in the greens at the Banff Springs Golf Course, Alberta. Lebau and Hanna (1975) further developed this selection at the Agriculture Canada (AC) Research Station at Lethbridge and licensed it as the new variety Banff after field trials in Agassiz, BC and the University of Guelph, Ontario. It later proved to be very well adapted for use in Alberta, British Columbia, Ontario, Washington and Ohio. Sales of seed were major for many years, and there is still some use of Banff Kentucky Bluegrass variety. With the passage of nearly 30 years since Banff was registered a number of improved varieties have since been bred which have replaced its earlier dominance.

In order to develop the market for this excellent new variety in the 1970's Hugh developed a novel approach in the area of public, University and private cooperative seed marketing, something completely new to W. Canada at the time. He negotiated with Agriculture Canada to have Banff released to Tib Szego Seeds, Ontario, with them gaining exclusive rights to production and marketing, but with an agreement from the University of Alberta that all royalties from seed sales would be directed to the University to support scholarships for horticulture students. This arrangement proved very successful over the years, and royalties still continue to come in for those horticultural scholarships.

It was with considerable regret and profound disappointment that the Department of Plant Science was forced to completely close out Hugh Knowles long-term grass research and his woody ornamentals program after he retired, as his position was lost to massive budget cuts forced at that time onto the University by decisions of the Alberta Premier Klein's Provincial Government. (The Department actually lost all three of its' horticulture Professorships at that same time due to retirements and those forced budget cuts. This in turn forced the cancellation of the Horticulture Major for Faculty undergraduates which had been Plant Science's biggest demand and enrollment center for many years. The consequence was a very serious loss of teaching and research capacity in Horticulture in the Faculty, and discontinuation of any Alberta University program of instruction about Landscape Architecture until 2015, when one was started at the University of Calgary).

On the positive side since then it was gratifying to see that over the years the University Administration recognized the fine campus landscaping legacy that Hugh left them on his retirement, and in 1966 they did in fact introduce a new North Campus Landscape Plan developed by Diamond and Myers of Toronto. Planning and Development has continued to build on the University landscaping asset as they added more buildings and other facilities for staff and student use since then. A major Planning and Development review was completed more recently in 2014 entitled the 'North Campus Open Space Plan', now actively in use going forward. It sets out agreed principles for future development opportunities, concepts and specific proposals that can improve the on-site experiences of all the students, staff and visitors who use the North Campus. This is a very large number of individuals, with over 42,000 alone normally using the LRT station on a daily basis in 2019, the busiest LRT transit hub in the city before the Covid 19 disruption arrived. The very thorough and informative 'Spaces' document (180pp) recognizes the landscaping culture and model developed by Hugh Knowles, builds on it, and addresses all aspects of his legacy that should be conserved. The document contains one particular paragraph in the 'Guiding Principles' section that succinctly captures the intent of that legacy and its purpose, to ensure awareness of the spatial variability found by its users throughout the North Campus. That paragraph is quoted verbatim here.

'Guiding Principles: A Sense of Place and History'
(Source: North Campus Open Space Plan June 2014, University of Alberta pdf)

> 'The North Campus represents a significant component of the historical evolution of the surrounding communities and the wider city'…… 'This historical connection, coupled with the century-long evolution of the campus, provides much of the sense of place of the University. The spatial characteristics and the quality of the campus, such as the mature tree canopy and the use of brick as a building material, are defined by the physical

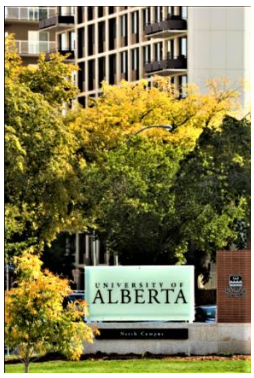
and social interaction between building architecture and the open space features and plantings. The North Campus landscape will continue to inspire and engage, building on its historical sense of space.'

This 2014 document made well over thirty specific recommendations about the future management and development of all open spaces throughout the campus. They include the important budgetary request that 5% of the capital value of all future facilities and buildings projects be levied to support the maintenance of the landscaping legacy into the future and to improve its long-term sustainability. Some of the excellent projects recommended for improving the campus for its users are listed here, that could be incorporated over time as budgets and priorities permit.

- Create a Celebrations Plaza in the main Quad
- Add a treed Alumnus walkway
- Create more outdoor gathering areas, with seating
- Eliminate asphalt use for walkways; Improve biking facilities
- Major visual upgrades to all 'Arrival' points on North Campus
- Introduce more native plant species of all types
- Use courtyards for outdoor displays of art and sculpture
- More plant use to create seasonal outdoor color contrasts
- Assign an outdoor campus area for use by child-care programs
- Use ground cover species to replace sod where appropriate
- Establish 'Grand, treed, canopied, campus edges' (W and N)
- Create an outdoor Amphitheatre in the main Quad
- Add Cafe Promenade/Plazas in high student use areas
- More water features, including a winter skating area
- Replace all surface parking with underground parking
- More treed boulevards along main student walkways
- Preservation of the campus 'Urban Forest' Collection
- Add hard and soft barriers to reduce wind funneling
- Add a central, outdoor, pop-up campus marketplace
- Create a Campus Vegetation Inventory, for daily use
- Ensure Grounds Staff all receive landscaping training
- Annual Vegetation Review, with professional oversight

With this high level of Administrative praise of the existing asset, and support for ensuring the landscaping future of North Campus, the prospects for some of these projects being completed looks very favorable. Also, in consideration of all the ink thus far used in this article, any diligent reader that got this far needs to be rewarded with some campus pictures that actually illustrate this campus asset. Students, staff, recent visitors and Alumni will recognize some of the areas illustrated in the following photo pictorial. Access to these photos is gratefully acknowledged here and they are all 'Used with Permission: External Relations, University of Alberta'.

A brief Photo Tour of North Campus, highlighting some Views and Landscaping



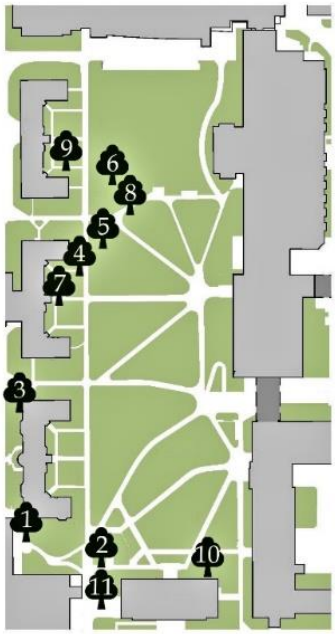
Please scroll down for PART 3…thank you!

PART 3: Have you seen all those Trees on the University of Alberta North Campus?

There are over 4,500 trees growing on North Campus with a total University estimated value of $22.5 million, based on a conservative value of $500 per tree. With the value of shrubs, ground cover plants and hard landscaping features added this figure would be as much as 25% higher. Additionally, the aesthetic value of the trees and their use as a living outdoor laboratory for students of Forest Science and Natural Resources in the Faculty of Agricultural, Life and Environmental Sciences (ALES) and for others, is very real but hard to calculate. Students in those programs not only learn how to identify the 51 different species of tree found in this Urban Forest Collection, but also learn about the details of their biology, and even how to identify by their songs the many bird species that live in the canopy. The most diligent students will also learn about the 32 other species of grasses, forbs and shrubs found there, as well as the 38 native species also present. (If their interest in this subject becomes obsessive they might then even visit the University Botanical Garden, an independent facility near Devon under the jurisdiction of ALES, which has a very much larger collection of wild and domesticated plant species that are well adapted to the harsh climatic and seasonal conditions found in Northern Alberta).

Vic Lieffers, ALES Professor of Silviculture, published a map of the Main Campus Quad which showed the location of 40 different tree species near the Main Quad, that forestry students all needed to learn to identify (Lieffers UofA, 2021). It became an updated learning resource for student and public tree tours on campus. Based on Lieffers' guide, McCreary (UofA, 2019) also published a guide, a simpler one designed for self-touring of only 11 trees, also with very nice photos. The maps for those tours are shown here, and the references can be acquired online at the sources shown in the end-notes, for those who might wish to check out some of these trees on a warm spring or summer's day.

(Source: McCreary, UofA 2022)



Map for McCreary's Eleven Trees North Campus Tour:

The Main Quad, North Campus, UoA
(Photo: External Relations, University of Alberta)

What's where on McCreary's Tree Tour Map? (* Read more about these trees later)

1) Amur Cork Tree
2) Mugo Pine
3) Eastern White Cedar
4) Common Sea Buckthorn*
5) Butternut*
6) Scots Pine
7) Gingko*
8) Lodgepole Pine*
9) Sugar Maple*
10) Dahurian Birch*
11) Siberian Larch

The oldest trees growing on North Campus are very likely the mature elms growing along Saskatchewan Drive, thinned out by Hugh Knowles as one of his first landscaping activities as a new employee on campus in 1948, trees that are now over 100 years old. Hugh would have discovered that they were much more than a 'row of elms' when he learned that they were planted (circa 1919?) in commemoration of the Canadian soldiers who did not return from the first World War, a memorial that commands much respect. It is of interest to note that the oldest living tree in the world thus far discovered is a Great Basin Bristlecone Pine tree (*Pinus longaeva*) located in the White Mountains of California, a very creditable 5,062+ years old. Hard to compete with that, but Hugh managed to find and plant a bristlecone pine tree specimen on North Campus and is shown standing by it in the photograph of him earlier in this article.

Observers of any tree should always remember that its very presence reflects two different kinds of history. The first is the cumulated historical influences of all the environmental, biotic and anthropogenic factors which that tree has experienced over time, and the resulting effects on its physiology, growth and actual appearance. The present appearance of that tree results from whatever biological adaptations were necessary and possible in that singular location where it grew. (Notwithstanding the case that if it was one of the many mature trees that Hugh moved about on North Campus with his then novel 'large tree' moving equipment, to suit his landscaping intents, the tree would have to undertake a major physiological 'site adaptation' reset! It is fitting that in the Faculties of ALES and Science on North Campus, many graduate students and Professors carry out plant research designed to better understand the physiological processes by which these many plant adaptations actually occur). The second kind of history that is reflected in any tree is the one where the observer is interested in two different historical questions: 1. 'What actually did this tree physically experience over time'? 2. 'If this tree had eyes and could speak what would it tell me about what it had seen'?, or less mythically, 'What human and other history occurred at this location?' In this vein, any reader who later chooses to take the North Campus tour of the trees is also urged to reflect philosophically about the different kinds of histories which the specimens in this North Campus Urban Forest Arboretum might have experienced. Have some 'out of the box' fun doing that! The author concludes this article with some information about a select few of the trees to be found during the McCreary North Campus tour, with photo illustrations. After all, much of the campus landscape is all about those trees!

Two of Hugh Knowles Favorite Trees

1. Dahurian birch (*Betula dahurica*): There is one specimen tree of Dahurian birch on campus, but Hugh was always surprised that there was not more use of this tree in W. Canada as, according to him, it seemed very well adapted to the Parkland Region. It was a tree that he liked both for its form and for its interesting curly bark structure.

(Source: McCreary, 2022 University of Alberta)

This species, rare in Canada, is also commonly known as Asian black birch and is native to China, Japan, Korea, Eastern Mongolia and the Russian Far East. It is well adapted to dry, gravelly and infertile soils, but needs full sunlight.

2. Butternut tree (*Juglans cinerea*): This is another species for which there is only one specimen on campus and it was referred to often in archival records as the 'Tuck Shop Tree'. It was also a favorite of Hugh's. It had been located by the 'Tuck Shop' for many years prior to its relocation NW of the Faculty Club on the Northern end of campus, where it cannot be missed with its very splashy yellow leaf color in the fall.

(Source: McCreary, 2022 University of Alberta)



Butternut is also known as White walnut and used to be very common in Eastern Canada where it is a well-adapted native species. In Northern Alberta it is rare and is growing on the limits of its Northern adaptation. It is the faster growing of the two walnut species that survive in Canada, is a very attractive leafy tree, and does best in well drained, deep, rich soils in bright sunlight, protected from the wind. Nursery descriptions of this species warn that it can severely inhibit the growth of a large number and wide range of other tree species, shrubs, ornamentals and vegetables.

Two Trees of Personal Interest to the Author

1. Gingko (*Gingko biloba*): The author gained an interest in this species, also known as Maidenhair, from daily walking by a specimen on the Downing Street science site (the same place where Crick and Watson cracked the DNA code) during his Cambridge University days in the UK, as a student of botany and genetics. It is often described as a living fossil, as it was originally growing on planet Earth over 29 million years ago, with little changed descendants surviving to the present day. It is deep-rooted and resistant to wind and snow damage and grows well in disturbed areas.

(Source: unsplash.com 2022)

(Source: McCreary, 2022 University of Alberta)

North China appears to be the primary 'modern' area of origin for Gingko, and several sub-species have evolved from there, despite a very sparse presence in the fossil record. There is a single specimen tree on the University of Alberta North Campus. Some uses for Gingko have developed in China. The wood is hard and fire resistant and is used for furniture and *sake* drink caskets in Japan. The leaves are also used in some Japanese traditional tea ceremonies. Most herbal uses of plant parts have been discredited by modern medical studies, although one European Medical Agency has

indicated that gingko leaf-based medicines may be useful for treating mild dementia and some peripheral vascular diseases.

2. Common sea buckthorn (*Hippophae rhamnoides*): This species is sometimes called sandthorn, sallowthorn, Siberian pineapple or seaberry. It is not to be confused with the completely unrelated true buckthorns which are common in the wild in N. America. It was used in ancient times as a preferred horse fodder that gave horses a shiny coat, leading to the Latin name which means 'horse with shiny coat'. It is a widely adapted species found native in coastal NW Europe, in dry areas of Central Asia, in the Altai Mountains, in Northern China and in the Northern Himalayas, as well as in Canada. The author's interest in this species first developed in 1995 when he was toured through the extensive Outer Mongolia/ Steppes Regional Genetic Collection of wild and cultivated specimens of sea buckthorn, near Darkhan, Outer Mongolia. (The author was in that location to review the Outer Mongolian National wheat breeding program on behalf of the International Atomic Energy Authority, Vienna, who were funding their program. He had also become interested in the nutraceutical properties of sea buckthorn, related both to new Prairie interests for its' possible commercialization and also to the author's new role as Chair of the Department of Agricultural, Food and Nutritional Science.). Wikipedia (2022) reports that 'more than 1.5m hectares of the world's natural sea buckthorn habitat occurs in China, India, Outer Mongolia, N. Europe, Ukraine and Canada', and much of that is harvested for consumer use, especially in China. It is very thorny and makes a good hedge or shelterbelt that can minimize undesired wildlife access. The silvery leaves plus the orange berries in the fall provide special decorative scope for use in low maintenance landscaping. Thornless varieties have been bred which makes berry harvesting much less hazardous.

(Source: McCreary 2022)

(Source: unsplash.com 2022)

(Source: McCreary 2022)

This species is extremely hardy with a deep root system that fixes nitrogen and it is very tolerant of salt spray (such as in coastal regions or alongside salt treated roadways). It is often grown in marginal areas for soil erosion control, for land reclamation, to improve soil water retention in and around riverbeds, and for anti-desertification, especially in China. It prospers under sunny conditions.

The berries are very rich in multi-vitamins and anti-oxidants and are produced extensively in China and Asia, for use in foods and drinks, as well as for making an oil extract. Some commercial production occurs in Manitoba and the Eastern provinces of Canada for use in a variety of products including desserts, jams, syrups, beverages, wines and as fruit, where the unique and astringent flavor offers a unique culinary experience. It is reported that Russian cosmonauts have used a skin cream derived for the oil extract, for protection against cosmic radiation. Another reported use is by the Indian army who have used a herbal beverage from sea buckthorn juice to better adapt their troops to low temperatures.

Author Notes :

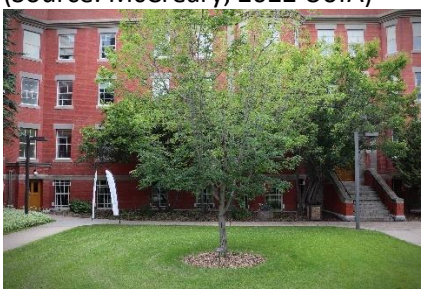
1. If the Indian army application actually works, why can that product not be found in Canada, where the demand would be huge for seven months of the year?
2. Apologies for so much about this species here, but it is one of the author's favorite multi-use species after wheat and barley!

Two Symbolic Canadian Trees

It would be unpatriotic if the Author did not include some reference to Canada's Federal and Alberta's Provincial official trees, specimens of which you can also find on North Campus.

1. Sugar maple (*Acer saccharum*): This species is native to the hardwood forests of Eastern Canada and the Eastern United States and has a host of alternative common names including 'rock maple', 'sugar tree', 'birds-eye maple', 'sweet maple', 'curly maple', or 'hard maple', the last in reference to the extreme hardness of maple wood. It is, of course, Canada's national tree, well known both for its production of maple syrup from the sap, and for its brilliant leaf colors in the fall. The oldest known specimen of this species is the 'Comfort' maple found in Pelham, Ontario, 400 – 500 years old and named after the previous owners of the land where it stands 100' tall and 20' around. Limitations in winter hardiness limit the use of the Sugar maple in Western Prairie regions, even for its horticultural 'showiness', unless it is grown in a sheltered location that is well protected from the wind.

(Source: McCreary, 2022 UofA)



(Source: unsplash.com 2022)

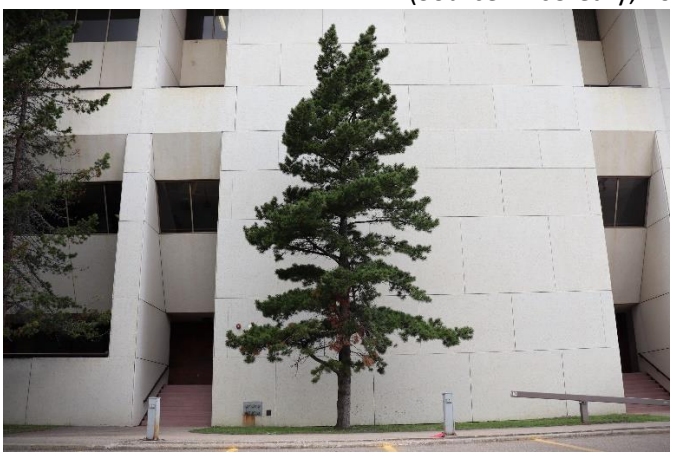
(Source: McCreary, 2022 UofA)

The symbol and colors that Canadians love!

The red maple leaf symbol has been used in Canada since the 1800's in many different applications and Provinces, but reached its pinnacle of acceptance with its incorporation into the Canadian flag in 1965 (auspiciously the same year the Author arrived in Canada for his post-graduate studies at the University of Manitoba).

2. Lodgepole Pine (*Pinus contorta 'var. latifolia'*): Not to be outdone by a Federal tree, the Province of Alberta adopted the Lodgepole pine as its provincial tree in 1984, keeping the common name that it had acquired from its' historical aboriginal use for building lodges (tepees) in the Rocky Mountains area.

(Source: McCreary, 2022 University of Alberta)



This species is widely distributed throughout western North America and is the most abundant tree in the Rocky Mountains and foothills of Alberta. Although not widely used for landscaping it is often used to create small areas of urban forest in the context of small settlements in British Columbia and in some forested small communities in Alberta. The largest trees can grow as high as 130'. Lumber from these tall straight trees is still one of the preferred sources for

building log cabins, and for poles and posts, and is also used for pulp and plywood. During the earlier history of Canada Lodgepole pine timber was also used for railway ties.

Corbett Hall, a North Campus View

(Photo provided by: North Campus Open Spaces Plan, University of Alberta)

CONCLUDING COMMENT:

Present and future visitors to the University of Alberta North Campus will always enjoy the well landscaped amenity for which Professor Hugh Knowles provided much of the vision and groundwork. The spaces and the trees in particular will continue to remind the entire University of Alberta community of this very fitting Knowles legacy. This document was written to ensure that his accomplishments as a horticulturalist remain highlighted in the historical record.

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