

Born in War: Canada's Postwar Engineers and Toronto's Ajax Division

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Résumé de l'article

Au cours de la Seconde Guerre mondiale, la Faculté des sciences appliquées et de génie de l'Université de Toronto a connu un essor sans précédent qui a fini par la mener jusqu'à une ville nouvelle à quarante kilomètres du campus Saint-George au centre-ville. Pendant trois années et demie après la fin de la guerre, des vétérans en grand nombre ont étudié le génie dans les baraques et bâtisses reconverties de l'usine de munitions d'Ajax. L'amorce du boom d'après-guerre en génie, qui a profité à plusieurs universités canadiennes et surtout celle de Toronto, remonte à cette époque et certaines des traditions les mieux enracinées de la Faculté de génie à l'Université de Toronto ont pu être renforcées par l'isolement des ingénieurs d'Ajax ainsi que par le traitement de faveur accordé aux vétérans — pratiquement tous des hommes — par la faculté et le personnel enseignant. À bien des égards, l'histoire du campus d'Ajax jette une lueur cruciale sur la formation des ingénieurs à l'Université de Toronto depuis la Seconde Guerre mondiale.

Born in War: Canada's Postwar Engineers and Toronto's Ajax Division

JEAN-LOUIS TRUDEL

ABSTRACT:

With the start of the Second World War, the University of Toronto's Faculty of Applied Science and Engineering embarked on an unprecedented expansion that would eventually lead it to a wartime boomtown forty kilometers to the east of its downtown campus. For three and a half years after the war, returned men and women studied engineering in the converted barracks and buildings of the Ajax shell-filling plant. The stage for the postwar engineering boom, common to many Canadian universities, and especially Toronto's, was set during this time, and some of engineering's more enduring traditions at the University of Toronto may have been reinforced by the forced seclusion of the Ajax engineers as well as by the special treatment accorded to the overwhelmingly male veterans by the faculty and staff. In many ways, the story of Ajax Division is pivotal to understanding the training of engineers at the University of Toronto since the Second World War.

SOMMAIRE:

Au cours de la Seconde Guerre mondiale, la Faculté des sciences appliquées et de génie de l'Université de Toronto a connu un essor sans précédent qui a fini par la mener jusqu'à une ville nouvelle à quarante kilomètres du campus Saint-George au centre-ville. Pendant trois années et demie après la fin de la guerre, des vétérans en grand nombre ont étudié le génie dans les baraques et bâtisses reconverties de l'usine de munitions d'Ajax. L'amorce du boom d'après-guerre en génie, qui a profité à plusieurs universités canadiennes et surtout celle de Toronto, remonte à cette époque et certaines des traditions les mieux enracinées de la Faculté de génie à l'Université de Toronto ont pu être renforcées par l'isolement des ingénieurs d'Ajax ainsi que par le traitement de faveur accordé aux vétérans — pratiquement tous des hommes — par la faculté et le personnel enseignant. À bien des égards, l'histoire du campus d'Ajax jette une lueur cruciale sur la formation des ingénieurs à l'Université de Toronto depuis la Seconde Guerre mondiale.

For the University of Toronto's Faculty of Applied Science and Engineering, the Second World War signalled the start of an unprecedented expansion that would lead it to occupy a wartime boomtown about forty kilometres east of the venerable St. George campus. For three and a half years after the war, returned men and women would study engineering not in the overcrowded halls downtown but in the converted barracks and buildings of the Ajax shell-filling plant. In many respects, their experience illuminates

the postwar engineering boom as well as the training of engineers at the University of Toronto.

The Canadian government's support of university education for thousands of veterans was a far-reaching social engineering initiative, which both demonstrated that universities could accommodate mass education and afforded many with an opportunity they would not have enjoyed without the war. In particular, it had a huge impact on the profession of engineering, a tremendously popular choice of studies among the demobilized men. In February 1947, ex-servicemen students in engineering numbered 8,093, accounting for 24% of the 33,828 veterans attending Canadian universities.¹ The Canada-wide effort to provide veterans with a university education likely encouraged later federal involvement in university education.² Within the universities themselves, the enrolment patterns gave engineering faculties the needed leverage to justify their expansion. Within the faculties proper, it may have reinforced some of Canadian engineering's existing traditions.

Here, however, beginnings shall take precedence over outcomes. Rather than analyse subsequent effects, we will see what shape the immediate impact of the flood of new students took at the University of Toronto.

While the war lasted, enrolment in engineering at the university had climbed steadily with the encouragement of the federal government. The manpower mobilization program deferred service for all those pursuing successfully their academic training in engineering, including those in pre-engineering courses.³ According to W. G. Richardson, "in the Second World War the government realized that fully trained engineers were vital to the new mechanized armed services and for the production of war matériel."⁴ The effect is clearly seen at the University of Toronto, where undergraduate registration in engineering starts climbing around 1936, picks up after 1939, surpassing 1,000 for the first time ever in 1941, peaks in 1947, with more than 4,000 students, and will never again fall below 1,000 thereafter. In 1957, enrolment hit 2,000, declined again, and stabilized above this level after 1967.⁵

After the Second World War, the financial support of the Department of Veterans' Affairs (DVA) allowed veterans to pursue university studies. In August 1945, 35,000 to 70,000 ex-servicemen were expected to take advantage of this opportunity.⁶ Yet, as late as November 1944, Principal Sidney Smith had been told by Group Captain Chant, Director General of Demobilization in the DVA, that the government expected only 30,000 ex-service men and

women to attend university.⁷ In fact, the final number turned out to be 54,000.⁸

By 1951, it was estimated that a total of 10,000 veterans had chosen to train in engineering, with 7,400 of them graduating by Spring 1951. Even in 1950–1951, freshman enrolment was 40% higher in Canadian engineering faculties than in 1940, while the total registration was still 200% of prewar figures. Even more significantly, graduation of students with civilian backgrounds reached about 1100, which was 50% higher than before the war.⁹ At the University of Toronto, most of the veterans who chose engineering wound up spending their first and second years in Ajax, where the Faculty of Applied Science and Engineering had set up a second campus on the site of one of the largest wartime munitions plant in the Commonwealth. The graduating class of 1156 engineers in 1949 was at the time (and may still be) the largest class of engineers to ever graduate from a British Commonwealth University.¹⁰

Similarly, at McGill University, the May 1949 Convocation hosted the largest engineering class to graduate from the Montreal institution up to that time; the majority were veterans, congratulated by the Dean for having “carried on despite heavy handicaps”.¹¹

Engineering had become an attractive career choice for more Canadians than ever before, its mystique fueled by the war’s engineering wonders: radar, missiles, jet aircraft, and even the atomic bomb. Some of these were thought to have peacetime applications as grandiose as their use had been fearsome in conflict. The war undoubtedly inspired vocations in other ways: one McGill engineering student drew on personal experience to write an essay on the art of tunnelling out from a German P.O.W. camp.¹²

This sudden influx of ex-servicemen, accustomed to regimented lives, into the Canadian engineering profession deserves more study. The ex-servicemen provided the impetus for the move by the Faculty of Applied Science and Engineering at the University of Toronto into new buildings on the St. George campus. However, in moving from one man’s world to what seemed like another, the veterans may have set back by years the acceptance of women into engineering. Though the initial postwar backlash against working women has given way to feminism, engineering faculties have proven more resistant than most to the entry of women in any numbers, and the specific cultural mindset of engineering faculties probably still plays a part in discouraging female applicants. Did the returning veterans, who accepted as rightfully theirs the jobs vacated by their wives, reinforce this mindset? The veterans also

contributed to a multiplication of engineers in Canada and their mean income as engineers increased steadily for the next two decades. The children of the veterans did not disdain engineering: at the University of Toronto, the late sixties enrolment in engineering courses surpassed 2,000 for the first time since the heady days of the Ajax Division, as the baby-boomers started to register in increasing numbers.¹³

A COMPARATIVE OVERVIEW

The situation had been different after the First World War. To start with, many engineering students in English-speaking Canada had volunteered and joined the forces. At Queen's, an engineering company was formed, many of the professors left to serve overseas, and the freshman class was down to nine students for 1916–1917.¹⁴ At the University of Toronto, in 1920, “demobilization did no more than restore undergraduate strength to what it had been in 1911; by 1925, registration had fallen to its lowest point since 1903.”¹⁵ Overall, out of 43,000 returned soldiers supported in retraining by government funds after the First World War, only 3,200 went to universities, while 54,000 out of 134,000 ex-servicemen chose to go to university after the Second World War through the help provided by the DVA.¹⁶ By comparison, the Khaki University organized in England and France by Henry Marshall Tory in 1918–1919 for Canadian soldiers overseas numbered, in May 1918, 1,503 men taking engineering topics out of a total of 8,006 registered students, many of whom went on to study at universities in Canada, “some on scholarships from unexpended funds” in the Khaki University programme.¹⁷ After the Armistice, a more formal version of the Khaki University numbered about 2,000 registered students, who went home with certificates recognized by Canadian universities, no doubt accounting for the bulk of university students among the returned men.¹⁸ During World War II, Tory was called upon for advice in the setting up of educational services for Canadian soldiers overseas and he served on the sub-committee planning the resumption of interrupted education for servicemen, with the government's backing.¹⁹

Going by the World War I figures, it is clearly inexact to speak of “a pent-up demand” for engineering education among veterans, and it seems excessive to chide the University of Toronto Faculty for failing to foresee the extent of the demand.²⁰ This demand had never been manifest until the war and, though there may have

been a potential leaning towards engineering among many servicemen, interest was probably fostered in part by the circumstances of the war and of demobilization.

However this attraction was created or released, it had immense consequences for the universities which had to deal with it. At Queen's, the classrooms and labs were overcrowded and the faculty was forced to operate on a twelve-month basis, so that one freshman group could enter in October and another in April. Drafting and tutorial work were moved to the evenings. Basements and attics were used for lectures. Students were housed in a variety of prefabricated and army huts. The teaching staff required only a small boost in numbers, but professors had to forgo research. The enrolment pattern for these years is given in Table I.²¹ However drastic the increase, it is easily rivalled by the enrolment growth of other universities — and it pales in comparison with the jump at the University of Toronto.

TABLE I:
Engineering Enrolment at Queen's

	44-45	45-46	46-47	47-48	48-49	49-50	50-51	51-52
Total Enrolment:	573	918	1133	1180	1132	997	807	674

Source: Richardson, *Queen's Engineers*, 1992, pp. 19-21.

In Montréal, McGill ended up with most of the veterans, as compared to the École Polytechnique de Montréal (EPM). McGill's four year diploma, shorter by one year than that of the EPM, and its array of specialties probably played a part in attracting both francophones and anglophones. It may also be that fewer francophones had completed the necessary schooling — not always easily available in Québec at the time — to qualify for immediate entry into an undergraduate programme. Francophones without the required credentials were no doubt among the 13,400 veterans in the province of Québec who went into practical and professional schools after the war, with the help of federal support.²²

Still, the EPM data for first year students, number of veterans among them, total undergraduate enrolment, and teaching staff, as shown in Table II, reflect the impact of a small influx of veterans. Nevertheless, on the whole, the École Polytechnique de Montréal played host to a comparative trickle of new engineering students.

TABLE II:
The War and Postwar Periods at EPM

School Year	First Year Students	Veterans	Total Enrolment	Teaching Staff
1939-40	108	—	296	46
1940-41	107	—	322	45
1941-42	121	—	330	44
1942-43	125	—	318	46
1943-44	82	—	330	65
1944-45	92	—	383	59
1945-46	126	4	456	57
1946-47	172	32	465	56
1947-48	145	16	465	68
1948-49	131	3	459	66
1949-50	113	1	473	66
1950-51	118	—	497	62

Sources: Massue, *Premier supplément à l'étude de la contribution de Polytechnique au Génie Canadien*, 1952, pp. 18-19, 77; Gagnon, *Histoire de l'École Polytechnique*, 1991, pp. 485-491.

In fact, during the postwar years, a high proportion of new engineering students all across Canada were ex-servicemen. In 1945, 43.5% of new students were veterans. In 1946, this fraction climbed to 63.8%, which became 62.8% in 1947 and was still as high as 56.4% in 1948.²³ McGill University transformed an air observer school into Dawson College, in nearby St. Johns, and it quickly became home to more than 700 first year students.²⁴ In 1947, the number of students enrolled in the McGill University Faculty of Engineering was equal to more than half the total number of graduates from that Faculty from 1926 to 1946 inclusive.²⁵

At the other end of the country, the University of British Columbia doubled in size and even surpassed McGill in 1946, hitting a total enrolment of 7,000 students, including 3,400 veterans whom the university had to house in army huts.²⁶ This included a first-year engineering class of 1,113, of whom 859 were veterans.²⁷

The University of Toronto had to deal with even higher numbers, and the official account of its effort to cope with the new students makes for an impressive success story.

THE OFFICIAL STORY

Under an innocuous guise, the Demobilization and Rehabilitation Order in Council P.C. 7633 marks the beginning of the official story in October 1941. Spurred by memories of the Winnipeg general strike and the Depression, the Canadian Government decided to encourage financially every qualified veteran to attend university upon return to civilian life; similar programmes were adopted shortly afterwards in the United Kingdom and the United States.²⁸ As the war progressed, universities everywhere in Canada were forced to come to grips with the problem of an imminent flood of new students and the University of Toronto began to prepare for a commensurate wave of new engineering students.

The seed of the Ajax concept is first identified in a November 16, 1944, letter by Clarence Richard Young, Dean of the Faculty of Applied Science and Engineering, writing to Sidney Smith, principal of University College and president-designate of the university. It was accompanied by a brief prepared by W. J. T. Wright, the future director of studies at Ajax Division, who was already looking ahead to the large numbers of new students to be expected upon demobilization of the forces. According to P. B. Hughes, between "that date and January 1946, the enormous task of providing the organization and facilities of Ajax was accomplished."²⁹ The shell-filling plant of Defense Industries, Ltd., in Ajax was taken over. One hundred and eleven buildings were converted into lecture halls and residences. Hart House set up an annex in Ajax and *The Globe and Mail* echoed Sidney Smith when the new president praised the "splendid arrangements" planned for the new campus.³⁰

In recognition of these accomplishments, the crest of H.M.S. *Ajax* was given to the Faculty of Applied Science and Engineering on Remembrance Day in 1948.³¹ The British warship *Ajax* had distinguished itself at the Rio de la Plata battle. It had given its name to the Defense Industries Ltd plant, and by extension to the village that had grown up around it. The University of Toronto kept the name for its campus and for the village of 600 homes it was committed to maintain. If the University of Toronto had not come to Ajax, the village might not have survived the disbandment of the D.I.L. workforce after the war.

Between January 14, 1946, and May 31, 1949, 5,500 engineering students spent their first year and, in some cases, their second year too at Ajax Division; of these, about 3,500 were veterans. The teaching staff increased to handle the enlarged classes, and their numbers in this period are given in Table III.³² It was an "instant

TABLE III: Teaching Staff			
	Average 1935-1945	At peak 1947-1948	1949-1950
Professors — all grades	41.3	49	54
Lecturers	12.5	59	36
Instructors and demonstrators (Full-time equivalents)	45.6	137	100
Total (Full-time)	99.4	245	190
Part-time lecturers	13.7	33	55

Source: Hughes, "The Faculty", in *Cold Iron and Lady Godiva*, 1973, pp. 10-11.

engineering school". In fact, the modern Ajax installations arguably provided better facilities than the old St. George campus. Also, according to Heisey, "Ajax life was more informal and friend-creating than any fraternity could ever be, and free of the Greeks' self-estimation."³³ Thus, another bright page is added to the annals of the School, as the Faculty of Applied Science and Engineering styles itself, harking back to its previous incarnations as the School of Technology and the School of Practical Science.

In January 1949, Ajax residents who were third and fourth year students were allowed to write their annual examination in Ajax.³⁴ In April 1951, the Committee on Policy did not allow thirty-five students who still lived in Ajax or nearby to write their final examination in Ajax.³⁵ The page was turned, and Ajax was quietly left to find its place in history. Like McGill's Dawson College which closed its doors in the spring of 1950, Ajax Division did not become a permanent installation.³⁶ Twenty years later, a modern town and Ajax High School covered the grounds of the erstwhile campus.³⁷

It is an exhilarating story, but let us submit it to the scrutiny afforded by the available documents. A slightly different account emerges, in which the foresight of all involved is less obvious and the delays that resulted in the main body of returned servicemen waiting until January 1946 cannot be overlooked as easily as in the official story. In fact, the five year lease from Dominion authorities was only finalized on August 14, 1945, with financial help from Ontario premier George Drew.³⁸ A last minute snag had developed when the R.C.A.F. tried to turn the Ajax site into a depot, and minister C. D. Howe personally called Eric Phillips, chair of the Board of Governors, to say that the deal had gone "haywire". The

intervention of Prime Minister Mackenzie King, a University of Toronto alumnus, was apparently required to save the deal.³⁹

Therefore, opening the doors to Ajax in January 1946 was as much a matter of policy — to maximize the number of demobilized servicemen taken in the first year⁴⁰ — as a matter of necessity. The work that needed to be done could not have happened in the two or three weeks available before a September 1945 start.

How was Ajax itself found? And just what role did Colonel W. E. Phillips play as chairman of the University of Toronto's Board of Governors, but also as leader until 1946 of Research Enterprises Limited, a Canadian wartime industry which afforded him access to Ottawa policy-planners?⁴¹ Some of the answers, but not all, can be read in the available records.

THE DISTINCTION BETWEEN FORESIGHT AND PREPAREDNESS

In 1943, the Council of the Faculty of Applied Science and Engineering was still concerned mainly with small groups of returning students released by the Canadian forces. On February 1st, 1943, the Faculty of Applied Science and Engineering's Committee on War Adjustments recommended that entrance requirements not be lowered below matriculation standards and that small groups continue to be dealt with on the individual merits of each case.⁴²

The same committee also seemed untroubled, ten months later, when it pondered a special war matriculation programme for returned men and women who, during the period between the armistice and demobilization, might wish to qualify for admission to English-speaking universities and normal schools. Without expressing any reservations, the committee endorsed the draft of this programme, which started off by underlining its goal of access "to all returned men and women".⁴³

The first intimation that trouble might be in the offing came in April 1944 when the Committee on Development concluded that present accommodation was adequate for 350 first-year students, but that 500 might be expected at some point in the future. The committee recommended that, if postwar registration in the first year exceeded 350, first year as a whole should be taught elsewhere — "space in discontinued war industries would probably be available at relatively low cost".⁴⁴

The next step was only taken towards the end of the year, when Dean Clarence Richard Young came to realize the potential extent of postwar registration.

In his November 16 letter to President Sidney E. Smith, Young tells him that "we should prepare for a possible enrolment of 1500 First Year students in Applied Science and Engineering for the session commencing in September, 1945."

Young envisioned "a regular session commencing in September 1945, in which a first-year enrolment of as many as 1500 students may have to be accommodated in premises off the campus, and 1000 students of the other years accommodated in our present quarters." He wanted funds for the full equipping of off-campus buildings, funds to hire new personnel, funds to secure departmental equipment and stores, federal grants to purchase war surplus, and release of potential instructors from the forces or from training.⁴⁵ In the amended version of its December report, the Committee on Development endorsed Young's requests and recommended that, "with the present facilities, no more than a total of 400 first-year students be admitted for the session 1945-1946, and no more than 1400 in the Faculty as a whole".⁴⁶ This was one way of applying pressure to obtain more money and instructors.

At the same time, the committee provided estimates of the Faculty's needs. Based on a first year of 1500 students, it estimated that twelve lecture rooms with a capacity of 125 persons plus two or three lecture rooms with a capacity of 500 or 750 persons would be required to handle their education.⁴⁷

Yet, nothing more happened until June 1945. In response to a letter requesting financial assistance from the Federal government to take care of discharged personnel, the minister of Veterans' Affairs answered dilatorily in a letter dated April 9 that "Close attention is being given to this matter."

This was noted at an April 12 meeting of the Board of Governors. The absence of any further word from the Honourable Ian MacKenzie, minister of Veterans' Affairs, was noted at a May 10 meeting of the Board of Governors.⁴⁸ On June 11, at a meeting of the Committee on Policy convened to hear of the Dean's consultations with Principal Smith and the Superintendent's staff, Young reported that the Board of Governors thought impracticable any registration restriction and that negotiations were underway for part of the Defense Industries, Ltd plant at Ajax. The Dean's report is contained in a June 26 letter, which estimates that an additional 122 instructors (up to and including lecturer grade) will be needed.⁴⁹

Finally, at a June 27 meeting of the Board of Governors, Young submitted the draft of a letter to C. D. Howe proposing that the University of Toronto acquire the premises at Ajax, with a lease at \$1.00 per annum for five years, with termination on six months' notice.⁵⁰ By that point, the chair of the Board of Governors, W. E. Phillips, believed a firm agreement was in hand and had left for England.⁵¹

On June 28, the Committee on Policy envisioned 1500 students at Ajax and recommended that only 400 first year students be allowed to register in September for the 1945–46 session, in which case active service men should be considered ahead of non-active service men and that service men who had not “volunteered for general service” not be given any preference.⁵² This last echo of the conscription crisis never reappears in later reports, though Neary suggests the DVA itself may have later performed such a triage.⁵³

At a special meeting of the Faculty council on June 28, the committee's report was adopted unanimously and Principal Smith outlined efforts made by the Board of Governors to secure quarters for the new students, culminating in the negotiations for the Ajax plant.⁵⁴

Between December and June, we find the Faculty forsaking the idea of a start for everyone in September, reserving the St. George campus to an elect few while the Ajax site was remodelled in time for a January opening. The delayed clinching of the Ajax deal no doubt played a part in this postponement, but were four and a half months really required to adapt a munitions plant to its new function? Even if powder-contaminated buildings had to be torn down, since “a spark could throw the whole place sky high” in the words of D.I.L.'s director,⁵⁵ it seems the Faculty purposefully determined not to rush.

Still, after a spring wasted on waiting and searching, the Faculty finally had a campus, only to have it almost slip away over the summer when the R.C.A.F. got involved. With the final deal only signed in mid-August, planning for a September start was definitively out of the question. In November, the new Ajax Committee set dates for two terms: January 14 to April 13, and April 23 to July 20, 1946. On July 29, the examinations would begin.⁵⁶

Indubitably, the war with Japan was concluded much faster than expected, taking by surprise Toronto's counterparts in Montreal. By November, the minds of the Ajax Committee members were surely eased if they noticed the chaotic beginnings of Dawson College. There, the Number 9 Air Observer School was handed over on

September 26, with students expected to arrive on September 28 and classes scheduled to begin on October 1st. When blankets and sheets, as well as food and cutlery, were discovered to be in short supply, McGill University had to appeal to the Minister of National Defence for immediate help from the Army and its surplus stores: it was not until many months later that operation of the dining room was taken over by a professional concern, to the great relief of students and staff alike. Simultaneously, buildings were reconstructed and while the ramshackle College was revealingly nicknamed Dawson City, it was also cursed at times as Lower Slobbovia.⁵⁷

No doubt the Toronto authorities were happy in the end to have extra time to prepare the new Ajax Division for the incoming students.

How well did reality agree with all the pronostications? Dean Young produced in 1945 a forecast of first year enrolment for the next seven years, which is reproduced in Table IV, with some adaptations for purposes of comparison.⁵⁸

	45-46	46 Spec.	46-47	47-48	48-49	49-50
Civ. enrolment:	300	—	300	400	450	500
Vet. enrolment:	400	1500	1700	200	50	0

Source: University of Toronto Archives, Dean Young's Correspondence, 1945, A74-0008 / 001

This forecast can be compared to the numbers tabulated for Ajax in W. J. T. Wright's last annual report.⁵⁹ For the 1945-46 regular session, the number is the registration on December 31st, as published in the Engineering Institute of Canada's *Journal*.⁶⁰ For the 1949-1950 session, the number of candidates at the final examinations was taken — this amounts to a slight underestimate of the actual number because of withdrawals during the year. The results are given in Table V.

	45-46	46 Spec.	46-47	47-48	48-49	49-50
Civ. enrolment:	—	356	395	360	360	377
Vet. enrolment:	392	1067	1399	857	172	34

For the first three sessions, the aggregate numbers are roughly in agreement, but the sharp drop-off visualized by Young for 1947–48 never occurred and the proportion of veterans in the 1948–49 session was also higher than predicted. Nevertheless, Young's forecast was close enough to be useful.

Unanswered questions remain as to the choice of the Ajax D.I.L. plant *in extremis*. Inertia and inaction at the University of Toronto during the spring of 1945 seem to have played a role in delaying the first full postwar session to 1946, thereby subjecting the first students to almost two years of continuous, unremitting study. On the other hand, it becomes clear that all the transformations at Ajax were accomplished in less than six months, and did not take more than a year, as implied by Hughes. Veterans who would have returned too late to take advantage of a regular 1945–46 session probably benefited from the delay that allowed them to gain a year, but the crowding together of two academic years may not have been advantageous to others. Nevertheless, though the preparedness of the Faculty of Applied Science and Engineering lagged somewhat behind the foresight of Dean Young, Ajax Division was there to fulfill the task that it was set up to perform.

"NO FIRST-YEAR VETERAN STUDENT
EVER FAILED HIS YEAR"

Alan M. Heisey's recollections of life at Ajax Division, where he studied Engineering and Business in 1947–48 and 1948–49, include a somewhat flippant summary of university leniency towards ex-servicemen students: "He [Morley Callaghan, when he visited] probably didn't hear what was an unwritten policy at Ajax: no first-year veteran student ever failed his year, and he was given some benefit of the doubt in his second. In his third year, he was on his own."⁶¹ Before considering the truth of this assertion, let us note that fees and grants from the DVA accounted for \$237,149.00 out of total receipts of \$481,803.37 in June 1946, and for \$181,394.50 out of total receipts of \$425,649.70 in July 1946.⁶² It was in the interest of everybody concerned not to be overly harsh with the veterans.

It must also be kept in mind that Heisey's evaluation of the veterans as students "a little more serious" than the others is corroborated by other sources.⁶³ In 1946, James S. Thomson of the University of Saskatchewan judged "that the male veterans had developed in the service qualities that were not evident in the

general undergraduate body", including an unmatched maturity of social outlook and sense of responsibility.⁶⁴ About the postwar students at McGill University, David L. Thompson states: "From the point of view of the teacher, the second crop of veteran students was a delight; they were mature, thoughtful, industrious, almost frighteningly earnest." The veterans of the First World War had been rowdier, often impatient, uninterested, and apparently embittered by the lost years.⁶⁵ Certainly, with the added incentive of DVA funding to motivate them, it would not be surprising if the veterans were studious overachievers. Nevertheless, the existing documents clearly show that the Faculty was quite ready to make special allowances.

The first lineaments of this attitude towards service men can be discerned in a November 11, 1945, report of the Committee on Examinations, which stated that "The results of the examinations and the recommendation of the committee are shown on the accompanying examination sheets. The committee dealt with the results from the academic viewpoint only, without regard to any possible effect a man's failure might have on his standing with the Department of Veterans' Affairs. The committee felt that that was a matter of policy for the consideration of the Council."⁶⁶

Did the Council make its will understood? In April 1946, the Ajax Committee proposed to hold term tests for Courses 4, 5, and 10, and some other courses as long as "these examinations be purely term tests and without significance so far as any outside body is concerned."⁶⁷ More concrete evidence of officialized leniency was provided by the May 1946 decision of the Committee on Policy to allow ex-service students to repeat the first or second year, upon application, without the lapse of at least one academic year.⁶⁸ Even clearer is the Committee on Examination's recognition at another May meeting that "In the deliberations of the Committee every consideration was given to those students who had served in His Majesty's Forces. In a number of cases noted on the sheets, it is recommended that where the Committee believes the circumstances warrant, three supplementals be allowed ex-service students." In addition, the committee recommended "a number of students in the First Year for Honours who obtained between 74% and 74.5% on account of their long service in the Forces."⁶⁹ The same language was used in the September report of the Committee on Examinations, once it had finally processed all of the Ajax examinations.⁷⁰

By the following year, the patriotic enthusiasm of the professors had cooled slightly. In its June 1947 report, the Committee on Examination renewed the recommendation for allowing veterans three supplementals, but also explained that "the committee was guided by two main principles: (1) that special consideration was given only to ex-service men, and (2) that this special consideration should not be given where there was clear evidence that it would be highly improbable that the student could take advantage of it." The committee did report on its investigation of the result of veterans with three or more years of service (up to eighty-one months in an Honours case). These students accounted for 700 out of the 1778 students in first year, and 11.6% of them had qualified for Honours while 20.6% had failed. This compared to the final Honours rate of 12% and failure rate of 22% overall. Nevertheless, a decision was made to tighten up since it was found that veterans failing in third year had been helped in first and second year by granting them special consideration.⁷¹ It may also be noted that a failure rate of 8–15 % was forecast for the incoming veterans in 1946–1947.⁷²

Further reflection emerges in the May 28, 1948, report of the Committee on Examinations, which includes a gingerly worded passage: "Though no doubt many factors are responsible for this increase [in failures], one that deserves mention seemed apparent to the Committee, and that is the leniency shown to service men in the lower years. Whereas many profited by this leniency, and were able to re-establish themselves in academic life, thereby abundantly justifying the action taken, many others were unable to do so. It appeared to be evident from their records that the struggle was becoming more and more difficult for them and that the III Year was definitely beyond their capabilities."⁷³ Yet, one year later, the Committee on Examinations still asserted that for the first and second years, "All service personnel failures were reviewed" as a matter of course, while, for the third year, "All service failures of 36 months service or over were reconsidered".⁷⁴ In fact, examples of leniency can still be found in 1950.⁷⁵

In Table VI, the results of the yearly examinations of first-year students, before the taking of supplementals, are given. They were tabulated and culled from the committee reports of the Faculty.⁷⁶ With respect to Heisey's implication of first-year veteran students, it is clear that the 12.3% failure rate of veteran students who attended Ajax in its first year of operation was distinctly lower than the average failure rate (25%) of the four years preceding — which

TABLE VI: Results of Yearly Examinations											
Year 1 – Relative Numbers (%)											
		(50)	(49)	(48)	(47)	(46)†	(46)‡	(45)	(44)	(43)	(42)
Passed	C	75.6	89.7	87.9	84.0	90.9	84.1	76.5	70.0	73.2	79.2
	E	55.9	73.7	71.6	76.1	—	87.7	—	—	—	—
Failed	C	24.4	12.6	12.1	16.0	10.1	15.9	23.5	30.0	26.8	20.8
	E	44.1	25.8	28.4	23.8	—	12.3	—	—	—	—
Honours	C	21.2	25.6	27.3	15.4	17.0	22.7	13.2	7.3	8.8	14.7
	E	2.9	14.0	13.2	11.0	—	16.3	—	—	—	—
Clear	C	29.2	34.3	31.5	38.6	36.1	37.5	29.6	30.4	31.2	34.8
	E	17.7	37.8	22.5	30.8	—	41.4	—	—	—	—
1 Supp.	C	13.5	19.2	20.0	20.5	17.3	13.9	17.1	11.3	15.6	18.5
	E	17.7	13.2	18.7	17.1	—	14.5	—	—	—	—
2 Supp.	C	11.7	9.68	9.1	9.5	12.6	10.0	16.6	15.0	17.6	11.2
	E	17.7	8.44	17.2	9.6	—	9.5	—	—	—	—
3 Supp.	C	—	—	—	—	7.9	—	—	—	—	—
	E	—	—	—	7.6	—	6.0	—	—	—	—

† Numbers for combined ex-servicemen (E) and civilians (C) at St. George campus in 1945–46; sample size of 394

‡ Numbers for Ajax campus in 1946

Notes: The year in brackets corresponds to the calendar year of the second half of the school year. In the first Ajax year of operation, the entire term took place in 1946. "Supp." stands for "Supplemental Examination". "Clear" stands for the obtaining by students of passing grades in all subjects without requiring any supplemental examinations.

Source: UTA, Committee reports of the Faculty of Applied Science and Engineering, A71-0008/009; UTA, Committee reports of the Faculty of Applied Science and Engineering, A71-0008/010

also included demobilized soldiers, though in smaller proportions.⁷⁷ Even factoring in the fraction of veterans allowed three supplementals, either leniency or a good academic performances — or both — is needed to explain this. The fact that veterans were significantly less likely to obtain Honours standing while they matched civilians in terms of supplementals suggests that hard work played a large part in their relative success, with the DVA financial incentive and a helping hand from the faculty combining to raise them above the needed threshold. Nevertheless, not all made it, which disposes of Heisey's claim.

Intriguingly, until 1949–1950, the failure rate of the civilians was also below average. There are hints in the correspondence of Dean Young that the preference accorded to veterans reduced the openings for civilians and allowed the Faculty of Applied Science and Engineering to select an elite group of students from Ontario schools.⁷⁸ However, this is not clear from the numbers for civilian enrolment given in Table IV, as the number of incoming civilians is not significantly smaller than the capacity of the old St. George campus during these years.

The good results of veterans in the 1946 session may have induced a false sense of complacency among incoming ex-service-men and given rise to the myth propagated by Alan Heisey. In 1946–47, the results of the veterans took a distinct turn for the worse, which prompted the Faculty to eliminate the third supplemental for veterans. Overall, it seems apparent that veterans, except in that first 1946 session, never actually outstripped in Year I their civilian counterparts in scholastic achievement. Fewer civilians failed and more of them garnered Honours standing. The 1949–1950 session, which marks the end of an era, featured some drastic downturns, partly explainable by the statistics of low numbers for the veterans, but no reversals of the established trends.

In the ensuing years, with some deviations, the gap between veterans and civilians narrowed. By the final year, results were statistically comparable, which is probably explained by a successful readaptation of veterans to academic life and by their high attrition rate. There were no doubt graduates who could not have made it without the special consideration shown them. Thus, the Faculty could feel justified for the extra leniency showed at the start. Whether it made a real difference for more than a handful could only be settled by studying individual careers.

NO PLACE FOR WOMEN

By its nature, Ajax Division was not welcoming for women. Nevertheless, new laws were set there for the presence of women in engineering. In Applied Science and Engineering, women constituted 1.15% of the faculty in 1939–40 and 1.52% of the faculty in 1944–45.⁷⁹ At Ajax, in the 1946 session, there were 9 women out of 1423 students (0.6%); in 1946–47, their number increased to 13, but out of 3312 students (0.4%); in 1947–48, they numbered 8 out of 2595 students (0.3%).⁸⁰ In the final Ajax session, in 1948–49, there were 6 women out of 1507 students (0.4%).⁸¹ These data can

be compared to the numbers in Table VII, tabulated by Nancy Kiefer for the registration and distribution of women in the “masculine” professions at the University of Toronto.⁸² The “masculine” professions comprise Applied Science and Engineering, Law, Dentistry, Forestry, and Medicine. Though there is an increase during the war years, both in absolute and relative terms, it is mostly due to the increase in Medicine, where 7.83% of the students were women in 1939–40 and 14.27% in 1944–45.⁸³ From Table VII, it is evident that the interest of women for university, if not the so-called “masculine” professions, increased throughout this period, but that, in engineering proper, they were swamped after the return of the service men.

TABLE VII: Women in “Masculine” Professions

Year	Number	Fraction of all Women at U. at T.	Fraction of all students in “masculine” professions
1939–40	78	2.86%	3.79%
1940–41	81	2.74%	3.89%
1941–42	88	3.53%	3.77%
1942–43	85	3.44%	3.30%
1943–44	103	3.66%	4.67%
1944–45	127	3.91%	5.64%
1945–46	152	3.88%	3.29%
1946–47	159	3.95%	2.61%
1947–48	149	3.53%	2.31%
1948–49	144	3.54%	2.34%

Source: University of Toronto Archives, Nancy Kiefer, *The Impact of the Second World War on female students at The University of Toronto, 1939–1949*, p. 128, T84–2006 (06)

Nevertheless, the women in engineering were among the most active in trying to establish their rights at the University of Toronto. In the postwar era, they even challenged the clause that barred women from Hart House on the grounds that it prevented them from attending departmental club meetings and important lectures of professional import even though they were academically qualified to do so. In February of 1946, the 17 women in engineering petitioned the members of Hart House to allow them to attend

guest lectures. The petition received the support of 900 students out of 2664 in the old "School", as well as the support of the Students' Administrative Council. However, it did not have the support of the Dean of the Engineering Faculty, the senior student executives or the chairman of the Engineering clubs, who all voted unanimously against applying for a change in policy.⁸⁴

Engineering's traditional marginalization of women may well have been reinforced by the forced seclusion of the overwhelmingly male Ajax engineers as well as by the special treatment accorded to the mostly male veterans by the staff. Indeed, the veterans benefited from what amounts to an ambitious affirmative action program, and one that set the stage for the dominance of men in Canadian engineering for decades. This pattern had been set even before the founding of Ajax, during the war years, when the Faculty of Applied Science and Engineering helped men to complete their courses in order to enter either the Armed Forces or industry. Various measures were introduced, such as the cancelling of engineering examinations for third and fourth year male students in 1941, to achieve this end.⁸⁵ The allowances extended to returned servicemen after 1945 only demonstrate the persistence of this mindset.

CONCLUSION

The Ajax Division was the biggest off-campus facility ever for the University of Toronto when it was founded. At its peak, Ajax Division numbered 3312 students, thirty-five lecture rooms, nineteen drafting rooms, twelve chemistry laboratories, six physics laboratories, two electrical engineering laboratories, two geological science laboratories, and one mechanics of materials laboratory. The evolution of student registration at Ajax, with the percentage of veterans for each year, is given in Table VIII.⁸⁶

Decades later, when the enrolment of baby-boomers at the University of Toronto zoomed upwards, the example of Ajax may have been at the back of some minds as the plans for the satellite campuses of Scarborough and Erindale were drawn up. One successful example of suburban expansion could justify others.

In the wake of the war's end and the astounding surge in new students, the Faculty of Applied Science and Engineering invested in the new Mechanical Building and the Wallberg Building to be occupied in the 1949-50 session by the students who came back from Ajax, boosting the St. George campus attendance to an unprece-

TABLE VIII: Ajax Student Registration								
	1946	E.	1946-47	E.	1947-48	E.	1948-49	E.
Year I:	1423	75.0%	1794	78.0%	1217	70.4%	532	32.3%
Year II:	—	—	1518	80.7%	1378	75.2%	975	68.1%

Source: University of Toronto Archives, Report on Ajax, June 1949, A75-0026/003(44)

dented 2,904 undergraduates.⁸⁷ From Table III, it is also clear the Ajax interlude led to a permanent increase in faculty positions.

At the University of Toronto, the postwar period was characterized by the vast efforts undertaken for the good of the ex-servicemen and by the concomitant marginalization of women. The significance of the Ajax story may be gauged from the fact that, between 1941 and 1950, the University of Toronto alone accounted for 29% of the 14,812 engineering graduates in Canada.⁸⁸

In the end, the students of Ajax Division became part again of the downtown campus, but the true legacy of Ajax may be found as much in these new buildings that moved the "School" into the modern era as in the legion of Ajax graduates who make up nearly a quarter of their contemporary cohort of Canadian engineers, with consequences on engineering in Canada that remain to be told.

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NOTES

- * *UTA stands here for University of Toronto Archives. The numerical code is given in the following order: accession number, box number, and folder number if necessary.*
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 - 3 H. Gaudefroy, "Engineering Education in Canada", in *Revue Trimestrielle Canadienne*, 37, Number 147 (Automne 1951), pp. 228–229.
 - 4 W. George Richardson, *Queen's Engineers* (Kingston: Queen's University, 1992), p. 34.
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BIOGRAPHICAL NOTE

After studies in physics and astronomy, as well as history and philosophy of science, Jean-Luis Trudel is currently working toward a Ph.D. in history at U.Q.A.M.