

D R A F T

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ASSOCIATION OF PROFESSIONAL ENGINEERS OF ONTARIO

TO

ROTARY CLUB OF LONDON

AT THE SHRINE CLUB,

LONDON, ONTARIO

1:00 p.m. MONDAY, OCTOBER 25, 1982

Thank you for the invitation to be your guest speaker today. It has become somewhat of a tradition for APEO presidents to address your club during their term of office. My three immediate predecessors all made the pilgrimage to the Shrine Club.

They didn't come as penitents, as in the case of the young Irishman who, for his sins, was climbing a mountain in the West of Ireland to do penance at the top.

As he made his weary way up the slope, he caught sight ahead of him of a young lady who had caught her skirt on a rock. As he approached her, she said to him in a beseeching voice, "Sir, would you mind lifting my skirt?"

The young man paused for a moment, admiring her beauty; then finally, in a despairing voice, he said:

"Miss, I'd love to lift your skirt, but it's for doing that I'm doing this."

I prefer to interpret the frequency of your invitations to our Association as indicating a continuous interest in the engineering profession, a profession whose work so vitally affects the human condition since engineering is for people. It is a pleasure to be in London, a city where engineers have left their mark over the years. Their works have contributed to your industrial and economic development, but also, I like to think, to civic betterment and the enhancement of the quality of life you enjoy.

At last count, there were about 1,250 engineers in our London chapter, some of whom no doubt are members of Rotary since your club and our Association share a common bond of service to the public.

A speech, I am advised, should have a beginning and an ending, both of which should be placed not too far apart. In mulling over what I might say to you today, my main concern was what meat to put in the middle of the sandwich in view of the varied fare my predecessors have supplied you with for three years in a row.

For one moment, it occurred to me to feed all three speeches into a computer. Suitably programmed with this data, no doubt this collective wisdom would have produced the perfect speech. However, I was reminded of the experience the British Army had with its first use of a computer in the field.

The regiment was pinned down by enemy fire from a rocky ridge that had to be taken if its advance was to continue, and there were indications of substantial enemy strength. The commanding officer called for the computer officer, outlined to him his assessment of the situation and ordered him to feed the information into the computer. He instructed him to put the following question to the computer: "Should we advance or withdraw?"

The computer officer worked away on the keyboard, feeding in the data, and then punched in the question. There was a series of whirring and chunking noises--it was an early machine designed before the development of microchips. Then

slowly out came a printout with a single word on it,
"Yes."

This was taken to the commanding officer who read it fumingly. Then in an irate voice he gave the printout back to the computer officer with orders to ask the infernal machine, "Yes---What?"

Again, after an agonizing delay of whirring and chunking out from the computer came a second printout which read, "Yes, sir."

It is customary for the current APEO president to say something about the Association, but I'm going to skip that today, or at least considerably abridge it. In one important respect, we have been marking time for some years now. In April 1976, the Attorney General of Ontario initiated a review of statutes governing the professions of architecture, engineering, public accountancy and law "with a view to making recommendations to the government for comprehensive legislation setting the legal framework within which these professions are to operate" in the future.

This task was eventually assigned to a ministerial committee, known as the Professional Organizations Committee, which in April 1980 submitted a report to the Attorney General containing its recommendations. Since then the policy development branch of the ministry has been preparing legislation which, in our case, could be introduced in the Legislature before my term expires in April, or if not by that time, then at least during the term of my successor.

It will be the most comprehensive revision of legislation affecting the profession since APEO came into being with the passage of the first Professional Engineers Act in 1922. This was a so-called open act which encouraged those who were qualified to join the Association to be recognized as members of the profession. In 1937 the legislation was amended to make membership mandatory for all those who wished to practise engineering in the province.

In 60 years APEO has grown into an organization of almost 50,000 members, making it the largest self-governing professional body in Canada, if not the world.

Naturally, we are somewhat apprehensive about changes affecting the practice of engineering in Ontario as we feel the present system of regulation has worked well and served the public interest. The proof of the pudding is in the eating. Moreover, it hasn't cost the taxpayers a nickel. We bear all the costs ourselves.

We have had some indication from the report of the Professional Organizations Committee that it shares these views. Its report found the professions remarkably healthy, adaptable, commendably open to criticism and responsive to its members and the public. Our system of self-regulation and discipline has been widely envied by professional bodies outside Canada who have examined it.

We, therefore, don't expect major changes affecting our self-governing powers. However, I don't have to remind you that all professions, institutions and corporations that

act in the public domain are subject to criticism these days, and they must not only act but be seen to act in the public interest.

There will be some changes that strengthen public accountability in the new legislation, and we have no quarrel with that. We believe in the paramountcy of the public interest and our Code of Ethics embodies that concept.

All through this lengthy exercise, we have been fully consulted by the Attorney General's people and have provided input to the drafters.

From our joint discussions, we believe that the new act will not impede the mobility of engineers throughout Canada. The regulation of the professions comes under provincial jurisdiction and other provinces have engineering associations with self-governing powers similar to ours. Obviously, maintaining uniformity of registration, licensure, professional standards and disciplinary procedures is an important factor in facilitating mobility. An engineer registered in one province can become licensed to practise in another with the minimum of red tape.

Moreover, the Canadian Accreditation Board, funded by the provincial associations under the auspices of the Canadian Council of Professional Engineers, the national umbrella organization, carries out visitations of university engineering schools from coast to coast.

Engineering is not divisible by provincial jurisdictions and changes in Ontario legislation will not affect this position, we are assured.

We look to the new act also to provide at least the opportunity for greater utilization of technical skills both by professional engineers and by paraprofessionals who make up the engineering team. We look forward to more harmonious relations with architects with whom in the past jurisdictional disputes have at times occurred. Even prior to the introduction of the new act, engineers and architects have set up a Joint Practice Board under a third-party chairman to rule on such disputes. This agreement will be formally incorporated in the new legislation.

In summary, we see the new act as a springboard to the future, propelling the profession forward. It has been a long and time-consuming exercise, but a useful one. We have had a chance to see ourselves as others see us and also to do our own self-analysis. With this behind us we can get on with the job.

What is the job of the engineer today? Dr. Samuel Johnson in his dictionary, published in 1775, defined an engineer as "one who manages engines or directs the artillery of an army." No such simple definition would encompass the practice of engineering today so diffuse and diverse has the profession become.

The largest single percentage of engineers work in industry. As an industrial nation, competitively engaged in world trade, Canada is heavily dependent on technology. As appliers of science and technology, engineers have a key role to play in the economy.

I don't have to remind you of the poor shape things are in today. Economic growth--and recovery in the present circumstances--results from the generation of wealth. Through their role in designing products and processes, and their responsibility in implementing such designs, engineers work at the heart of the wealth-creating process. In my view it follows that engineers must play a leading role in the economic recovery that is ahead. They must be in the forefront of the new industrial wave.

This wealth-creation role is perhaps most apparent in the extractive industries since we are still primarily a resource-based country. The challenge today, however, is not simply to dig or drill things out of the ground or mass produce products and have them stockpile in depressed world markets, but rather how innovative, how cost productive, how competitive and how adaptable to change we can be.

Engineers have traditionally been community and nation-builders. Indeed, engineering in all its forms has played a central role in the material development of Canada. The task is far from being completed. With the emphasis today, and rightly so, on the environment and the quality of life--as can be seen here in London with the redevelopment of your city core--engineering today cannot stand simply on the shoulders of science and technology; it must have a human purpose and concern itself with the things that make life worth living.

In stressing the importance of utilizing engineering skills, I realize there are other factors that play a bearing on economic recovery--interest rates, inflation, business confidence, government policies, marketing and sales ability, etc. These are not matters which engineers can necessarily control, but they can influence them to some degree.

As president of Canada's largest professional body, I have called on our members to support the federal government's six and five per cent guidelines both in spirit and in action. In view of the central role engineers play in the economy, I believe it would be irresponsible for the engineering profession to oppose these guidelines.

Many of our members, of course, work for Ontario government ministries or agencies to which the economic restraint program recently introduced by the province will automatically apply, but the majority are employed in the private sector.

The marketplace itself will in these cases apply its own restraint, as I saw in Sudbury when I spoke to the Chapter there last month. Throughout Ontario, many firms have had to lay off significant numbers of employees, with the remaining on reduced salaries merely to survive--and indeed survival is the name of the game for a large part of the industrial sector today.

I have called on engineers to increase salaries and fees by no more than six per cent in 1982 and five per cent in 1983. I believe that the public sector restraint programs of the federal and provincial governments should reduce

inflation significantly and lead to renewed real growth and thus improve stability in our economy. Attitude and appropriate expectations will in large measure be responsible for the program's success.

For the past few months I have been dismayed by the forecasts of doom and gloom in our economy--and others have commented more forcefully than I on this phenomenon. On the other hand, I am impressed by the power of positive thinking--as exemplified by the series of Bank of Nova Scotia advertisements--and the importance of attitude in overcoming obstacles to achieve a desired goal.

Engineers are trained to be positive thinkers--a necessary prerequisite to problem solving. For this reason, and to counter the negative attitudes running rampant across our economy, engineers can help to lead the way to economic recovery.

From where I sit, I can see some light beginning to show at the end of the tunnel. Thinking positively again, I am certain that what I see is not the headlight of an oncoming train.

I referred earlier to the role engineers can play in spearheading economic recovery. That raises the logical question, as a profession are we fully equipped to play that role? I believe we must constantly test our product against the marketplace. We have a pot full of engineers. We need to know much more about what they do and their capabilities?

The Canadian Engineering Manpower Council is currently preparing an engineering manpower inventory which will give us a better picture. In addition, every new APEO president is entitled to undertake one pet project during his term of office. In February the Ontario Engineering Advisory Council, sponsored in part by APEO, will at my behest be hosting a seminar on the role of the engineer in the workplace.

From that seminar we hope to get some feedback from industry and other users of engineering services as to how equipped and qualified engineers are for the work they are called upon to perform.

While it is true that many things do not change--the principles of practice, the code of ethics and the basic sciences underlying our technology--there is also much that does--the technology itself, the rate at which responsibility is loaded on to new engineers entering the work force and the expectations of employers and engineers themselves.

It would be foolish to believe that newly graduated engineers are used the same way as they were 10 or 20 years ago. In addition to seeking better ways for employers to use engineers, we hope to reach a better understanding of the role and a more efficient utilization of non-engineers, such as scientists and computer experts in achieving that goal. As a profession, we cannot afford to stand still.

To wind up these remarks, I would like to mention briefly a frontier which Canadian scientists and engineers have penetrated with some considerable success in recent years, namely, space exploration. It is not exactly a new field since space research in Canada began during the first International Polar Year in 1882-83, and in the years following World War II new techniques appeared in Canada which revolutionized these studies. However, the launching by the Soviet Union of Sputnik 1, 25 years ago this month, gave a new sense of urgency to space exploration.

On a personal note, I recall standing on the roof at de Havilland at Malton helping to track Sputnik's orbits over Canada.

It is not generally appreciated that Canada was the third nation in the world to design and place a satellite in earth orbit, an event that took place 20 years ago last month. Among the outstanding achievements associated with the Alouette I launch was the development of a unique sounder antenna system, STEM which has proved to be a great export dollar earner. Since that time, more than a thousand satellites have been placed in orbit carrying STEMs.

Canada was also the first nation to have a domestic satellite in orbit--the first Anik. Canada's space program is concentrated on programs offering economic, social and cultural benefits.

In 1981, the federal government announced substantial increases to the space program that will bring expenditures in this area to about \$500 million by 1984-5. One thing is certain--your tax dollar will never have gone farther. Add to that figure private sector spending on space, and we have a billion dollar or more industry.

Many advantages have accrued from Canada's space program. Our industry has acquired design expertise, development and manufacturing capability. We have also gained international recognition in many areas of satellite and earth station technology--the most visible of course being CANADARM on the space shuttle Columbia. We are among the few nations in the world with the capacity to design and build complete satellites.

There has been a considerable industrial spinoff from this program and a mushrooming of new industries to take advantage of these opportunities. Canadian universities have also benefitted, among them Western, where the main thrust of the research effort lies in investigating the effects of the ionosphere on radio signals propagating through it.

Time does not permit me to go into the various uses to which our satellites are being put in communications--television and telephone service--meteorology, remote sensing, navigation, even forest fire detection, etc. In all we have had nine successful launches since Alouette 1 -in fact, never a failure--and four more are scheduled by the end of 1984.

We have every reason to be proud of our space program, and of the part engineers have played in it.

Well, it's time to draw these remarks to a close. Nice guys finish fast. I have tried to paint a broad-brush sketch of the engineering profession, highlighting some of our problems and concerns and the role, as I see it, of the engineer in the economy.

I have also tried as much as possible not to repeat what my three predecessors have said to you. I hope I have left you with a good fourth impression of our Association and the work our members do.

As long as you keep inviting us, we will be very happy to accept. Thank you again.