

Math in Engineering

Engineering has been defined as the art of directing the great sources of power in nature for the use and convenience of man. Engineering is a mathematical science in a peculiar sense, since mathematics has to deal with all questions involving relative magnitude. The engineer must measure the end and the means to achieve this and ensure that they are justly proportional. Engineers have always sought amid the stores of mathematicians and selected the handiest mathematical tool for their purpose of the moment. However, they have been able to do little in improving the tools which they have borrowed; quite different from experimental physics where they have repeatedly corrected the ideas of theorists from their practical experience.

It is quite a common experience that the strength of a long column depends not only on the strength in crushing of its material, but is modified by a bending tendency. By the use of a differential equation of the second order, the engineer may learn what critical value of load may be applied so that the column will always return to its straight condition when the load is removed. The theory of thick cylinders under bursting stress from within, never had more application than to the rifles and guns of today. Again a differential equation explains the theoretical action . . . why doubling the barrel thickness does not double the strength or why doubling the strength of the material allows the thickness to be diminished to less than one half.

Students of engineering today are inclined to believe that the application of mathematics to the solution of problems in the real world is an innovation of the last generation. However, Lord Kelvin made the predictions of performance before it was practical to lay the first trans-oceanic submarine cable well over half a century ago and this is almost a recent engineering feat.

In dealing with any oscillatory motion, from the rolling of ships at sea to acoustical building design and high frequency electrical phenomena, the calculus provides the key to an understanding of what the problem involves and how the answers may be provided. All the modern miracles associated with current electricity and radio wave phenomena would be well nigh impossible without that introductory and explanatory tool, the calculus. Mathematics made possible the development of telegraphy 100 years ago, and has been a fundamental pre-requisite of every electrical development since. Many students of engineering will by now realize the necessity of the calculus in predicting Transmission Line behavior.

It has been said that Mathematics is a good friend but bad master. Blind allegiance to a formula may lead to quite disastrous results.

May We Present



THE BOILERMAKER

Here he is, friend, that typical engineer, that boiler heater, that slide rule swisher, that smoke screen generator, that beer guzzler (reputedly 40 quarts capacity), that snooker fiend and cue cracker, that cookie crusher (no, not pastry), that laffer at lewd jokes, that short sleep snatcher (during lectures, a specialty), that cuss connoisseur, that, that—, and that— too!

You know him—call him Joe, borrow his pen in class and wake him up after the lecture. He has 150 brothers, all the sloppy same: a happy-go-lucky grin; level, twinkling eyes; and the wolf's whistle;—the backbone of this backwoods college. Under a battered hat, a cheerful countenance, a stoical resistance to education, baggy pants, fag-stained fingers, not more than an idle curiosity in co-eds—tendency to brag before a skirt, strong upholder of Wassails, but indifferent to all other student meetings, popular of drawing rooms and bowling alleys, always found in a dense cloud of pipe perfume, an enthusiastic bone-crusher and head-banger in interclass.

Altogether a good guy, but a strong individualist of the old school, never noted for flattery, and strongly addicted to picturesque speech. And if you don't get what we mean—this is an absolutely incongruous species, only to be found in the deepest jungles of engineering schools.

However, a mathematical analysis by even a competent mathematician has its limitations. In dealing with the expected performance of a steam engine, thermodynamic equations will not take into account strength, lubrication or accessibility of the moving parts. The sound engineering mind is instinctively practical, even while employing whatever analytical devices available.

Rumour has it that a hotel is the place where most rumours are spread.

"M A C"

This is about "George's Dog". All the engineers know who George is but for the benefit of less fortunate individuals, George has been the caretaker of the Engineering Building for twenty-seven years. "Mac" has followed him around for almost ten of these years and that is a long time in a dog's life. It is easily seen that Mac is a gentleman even if he is a dog. He is a pure bred water spaniel but it is not only his good-breeding that makes him a gentleman. He is very reserved and difficult to become acquainted with—very few can boast of his friendship; many have tried to make friends with him but he only hobbles along a little faster on his poor old rheumatic (not romantic) legs trying harder than ever to keep close to George.

Mac's heart is filled with love and charity and he does his dogged best to ease human suffering. No doubt some of you remember the big drive for empty Players cigarette packages that was on a few years ago. It seems the tobacco company promised an artificial leg to a crippled lad in Montreal if he could collect so many empty cases. Hugh Brennan was going up the hill at that time and was doing his bit by collecting all the empty cartons that he could. One day he told George about it and George passed the word along to Mac. Mac immediately began collecting all the cases he could find. George says that Mac very, very seldom picked up any other brand but Players. Even to this very day Mac carries empty cases around in his mouth, but he is getting careless and will pick up almost anything now. No doubt his memory is beginning to fail with old age creeping on. If any of you Arts and Science students disbelieve the story of Mac's hobby of collecting, just take a trip over to the Engineering building some day and watch him carry empty cardboard cases around. And now we leave Mac, a true Engineer's dog. He led a dog's life but he is happy anyway.

D. M.

Gym. P. A. System

We have the most up to date gymnasium in Eastern Canada, given to us by Lord Beaverbrook and named in memory of his late wife. The Lady Beaverbrook Gymnasium. This building cost well over a quarter of a million dollars, fully equipped but unfortunately the initial equipment did not include a public address system.

Since the opening of the gym every time that there has been any large function the committee has rented or borrowed a P.A. system. At a meeting of the gym committee and the President of the university it was suggested by B. H. C. Downman, a senior electrical engineering student who has had experience in such things that a P.A. system was a necessity for the gym. The committee agreed wholeheartedly that such a system would pay for itself in a short time and Mr. Downman was given permission to purchase the necessary equipment.

As a result of this we now have installed in our gym one of the most modern and up to date P.A. systems. The 30 watt amplifier is permanently set up in the Trophy room. From this room also the record player, the microphone and the loud speakers can be controlled. There are four loud speakers set on shelves—one in each corner of the gym. Considerable experimentation was necessary by Mr. Downman in order to find the best positions for these speakers. With the outfit also is a suitable microphone with 150 ft. of microphone cable which will allow the mike to be taken to any part of the floor. The modern record player makes it possible for entertainment to be given to the spectators during intermission.

The complete system is adequate for the area that it has to cover and the installing of this system has added a great deal to the enjoyment of sports in this university.

It's really marvelous what a college degree will do for people these days. We just heard of a Mt. A's graduate who was given a beautiful job by a local departmental store to work in their lingerie department. He's pulling down 200 a month.

"IT DOES TASTE GOOD IN A PIPE!"



Join the Picobac Fraternity. It means pleasant hours in every day—hours of mild, cool sweet converse with a pipe—that companion which enlivens company and enriches solitude.

Picobac

GROWN IN SUNNY, SOUTHERN ONTARIO

Engineers Save Forestry Bldg.

In a spectacular blaze of undetermined origin, flames swept through the ancient and condemned Forestry Building in the early hours of tomorrow morning, completely gutting the two-story fire-trap, with the exception of the Engineers' revered Math Lecture Room. "It was a good thing, should have come down years ago", fire-

chief Fleiger stated at presstime today. Full extent of the damage has not yet been estimated, but informed sources at the University Office indicate that since the only department of any value was saved, loss of the rest will not be noticed. If you look closely in the above picture you will notice Engineers really going to well with themselves (Downman and Belyea are reported to have carried pitchforks and shovels, respectively, to the party with them). It is unfortunate that no Forester escaped alive. The Engineering Society however is planning to plant a commemorative garden of Indian hemp on the spot, with fertilizer from the Men's Common Room. Reefers may be purchased at government prices from the Stores.



Civilian Engineer

Down in the mines they are reaching
For coal in the deepest seam,
For copper, and tin and iron
To feed the war machine.

They're harnessing up the river
In belts of concrete and steel
For power to run a nation,
For power to turn the wheel.

They're out on the trail and mountains
Checking a line for grade
Blasting through solid rock
Where a highway's to be made.

At the drafting board, in the workshop
They are striving to get things done,
And fast are their structures rising
To the tune of the rivet gun.

A big munitions factory
A mighty rolling mill
They plan and build together
Pooling all their skill.

You'll find them in the shipyards
You'll find them in Labrador
Crowding that last frontier
Where the Liberators roar.

You'll see the results of their planning
But I doubt if the country hears
Of the men of this lost battalion
The civilian engineers.

J. S. W.

Then there was the lipping shoe salesman, who said, "I'm thorry, Mith Thmith, but I'll have to look up your thize."



FOOD for FIGHTERS

Electronic devices developed by Westinghouse Engineers are being used to "stretch" our tin supply.

A new method used in steel mills electroplates sheet steel with a thin coating of tin . . . and to make this coating perfectly smooth, uniform and corrosion resistant, the steel strip must be heated evenly to spread the tin over the entire surface.

Putting electronics to work solved the problem. Westinghouse induction heating equipment helps the tin plate mills to supply the materials needed for containers to preserve food for our men and women in the services.

Westinghouse

The Name that means Everything in Electricity

COMPLIMENTS OF

K. I. CAMPBELL, President H. O. CLARK, General Manager

ACME CONSTRUCTION COMPANY

LIMITED

GENERAL CONTRACTORS AND BUILDERS

PHONE 3-3137

SAINT JOHN, N. B.