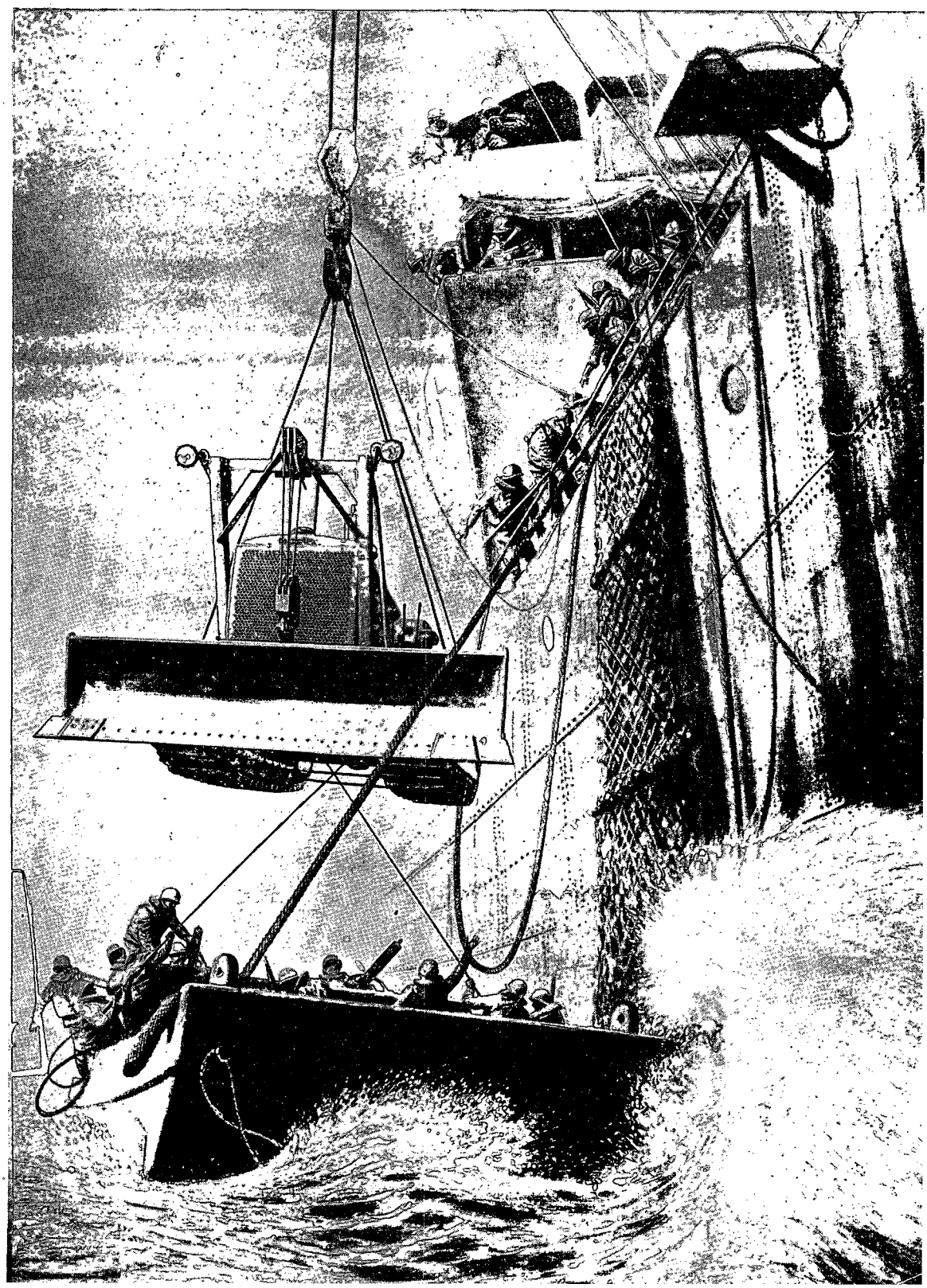
The Graduate Chronicle

BRI
18-19
THE LIBRA

JULY, 1944

Caterpillar Diesel . . .

is worth waiting for



UNIVERSITY OF
BRITISH COLUMB
AUG 5 1952
LIBRAR

FINN TRACTOR &
EQUIPMENT CO. LTD.
"CATERPILLAR"
DISTRIBUTORS FOR B.C.
VANCOUVER, B.C.

Laux-Glued Bridge

Manufactured by Unit Structures Inc., the basic engineering studies necessary to the successful design of such arches was done in the U.S. Forest Products Laboratory and shows not only the strength of such arches but the graceful lines of the bridge give evidence of the architectural advantages inherent in the laminated-with-glue arch construction. . Hundreds of arches built on the U.S.F.P.L. standards and employing Laucks Glues, are now in use in hangars, gymnasiums, warehouses, recreation centers, chapels, etc. . . .

★

"Your Glue Headquarters"

★

I. F. LAUCKS LTD.

Granville Island, Vancouver, Canada

In Stock for IMMEDIATE SHIPMENT

FIBERGLAS

("It Lasts Because It's Glass")

No. 60 Molded

PIPE INSULATION

Sizes: ½" to 12"

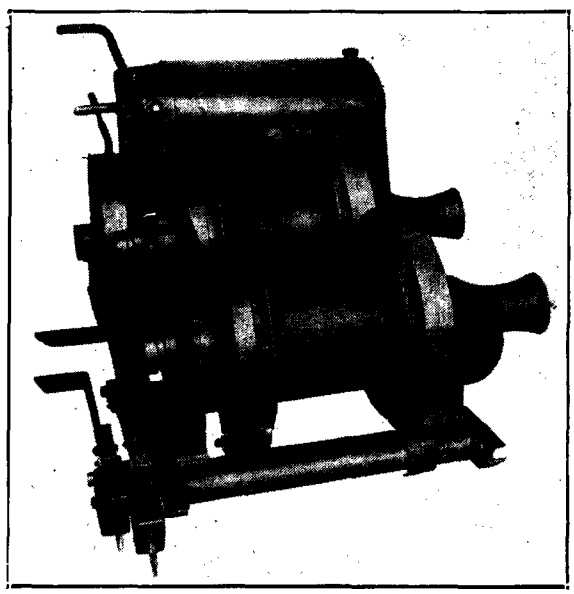
- High Insulating Efficiency.
- Light Weight.
- Not Affected by Moisture.
- Easy to Apply.

F. DREXEL CO. LTD.

Telephone HAstings 5241-2

831 POWELL ST. VANCOUVER, B. C.

What Drex Sells Excels



HOISTING WINCHES

MACHINERY and EQUIPMENT

STEEL FABRICATORS

WESTMINSTER IRON WORKS

COMPANY LIMITED

66 - 10th St., New Westminster, B.C.

Manufacturers Since 1874

AUG 8 - 1944
LIBRARY

The GRADUATE CHRONICLE

Published by the Alumni Association of the University of British Columbia

Vol. 6 JULY, 1944 No 4

Editor: DARRELL T. BRAIDWOOD, M.A., Barrister at Law

Associate Editor: A. D. CREER, M.E.I.C., M.INST.C.E.

Assistant Editors:

DOROTHY TAYLOR, B.A.; DONALD A. C. MCGILL, B.A.

Business Manager: W. E. G. MACDONALD

TABLE OF CONTENTS

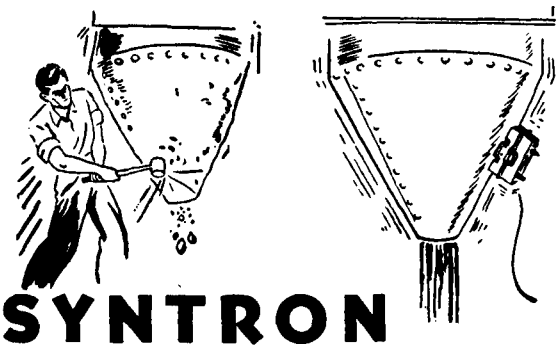
	Page
SUBSTANTIALLY FULL WORTHWHILE EMPLOYMENT—By A. L. Carruthers, Chief Engineer, Provincial Department of Public Works	2
STUDENT RESIDENCES	9
PROPOSED EIGHT-MILE TUNNEL	10
THE ENGINEER-STATESMAN	12
ANNUAL MEETING OF DOMINION COUNCIL OF PROFESSIONAL ENGINEERS	17
EDITORIAL VIEWS	18
THE PHYSIOLOGY OF HIGH ALTITUDE FLIGHT	20
WHAT IS WRONG AT THE UNIVERSITY?	22
CORRESPONDENCE—Views of Writers on Collective Bargaining for Professional Engineers	26
PROFESSIONAL VERSUS ROUTINE	32
UNIVERSITY WOMEN'S CLUB	33

Editorial Office:
ALUMNI ASSN. OFFICE,
BROCK BLDG.,
UNIVERSITY OF B. C.

Business Office:
16 - 555 HOWE STREET
VANCOUVER, B. C.

Published at Vancouver, British Columbia.

CROSSMAN



SYNTRON

PULSATING MAGNET

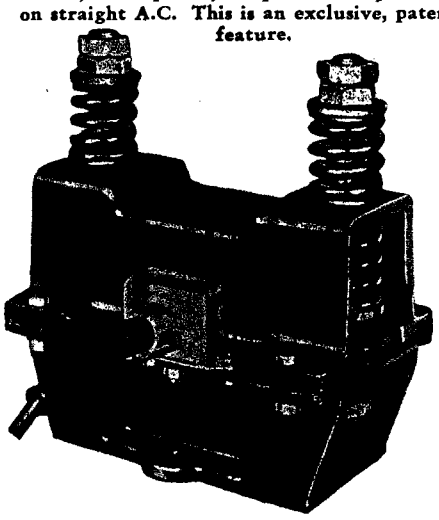
Electric Vibrators

with Rheostat Controlled Power

- Vibrating Bins, Hoppers and Chutes to keep material flowing freely.
- Vibrating Forms to eliminate air pockets and voids.
- Vibrating Containers to increase their weight contents.
- Vibrating Screens to increase their capacity.

HOW THEY OPERATE

The electronic valve in the Controller changes alternating current to pulsating waves with a time interval between each wave. These give the vibrators a long stroke, consequently amplitude or power not possible on straight A.C. This is an exclusive, patented Syntron feature.



ILLUSTRATED

Simple, Electromagnetic Vibrators that set up a flow of powerful vibrations from alternating current.

Complete facilities for servicing all types of electrical power equipment.

CROSSMAN

MACHINERY CO. LTD.

806 BEACH AVENUE PACIFIC 5461

VANCOUVER B.C.

Substantially Full Worthwhile Employment

By A. L. CARRUTHERS,
Chief Engineer, Provincial Department of Public Works.

In dealing with social and economic problems, people are very prone to forget the fundamentals, to forget to take into account nature and her laws and men and their ways.

Heredity and environment are important factors in human affairs, but the most important factor of all is man's response to life as he understands it. That he can lift himself upwards in spite of serious handicaps is quite possible; indeed the handicaps may be the needed spur to supreme effort; but unfortunately they may be such as to break him down in futility and defeat.

Our duty to each other may be expressed in a few words; namely, to see that each and every citizen has a fair chance to make a proper response to life, a worthwhile contribution to the welfare of all. That cannot possibly be done unless there is substantially full, worthwhile employment for all those prepared to render satisfactory service.

Much is being said to the effect that there must be no employment, be an end to poverty and distress, that peace and plenty should reign and the four freedoms be guaranteed to all. But these great benefits are not going to be made available simply by wiping out certain powerful interests, by getting rid of certain wicked men, by establishing some new social order. Be that as it may great responsibilities are contingent upon those benefits. Peace, plenty and freedom of themselves cannot release us from observance of the moral code, the practice of the golden rule. There remains forever the duty "to do justly, love mercy and walk humbly." We cannot live down injustice; we must correct it. If we refuse to extend mercy we cannot expect to obtain it. If in search of truth we must walk humbly or we shall never find it.

While employment will always be a world problem, the solution insofar as this country is concerned will devolve upon ourselves. Much perhaps can be learned from other countries and to some extent our future will depend upon what they may do. On the other hand we must solve the problem for ourselves and in doing so take into account our own history, progress, geography, resources, climate and more particularly our own people. What may work quite satisfactorily in other countries may be a dismal failure here.

The proposals to be presented herein are based upon fundamentals in human relations and in our own social economy. It is contended that they are very valid under any social and economic system that may be adopted and are accepted as valid by all right minded citizens, otherwise the proposals will lack the support essential to their success. These fundamentals will now be presented.

1. There should be no rights without duties and no privileges without responsibilities; and this should apply to all citizens, everybody. If men with health, education, skill or capabilities of any kind and especially those owning or controlling property, wealth and the means of production demand their rights and privileges without discharging their duties and responsibilities in the years to come, this country is headed for disaster. All this emphasis on rights and privileges, all this abuse of power, all this taking everything one can get and giving as little as possible in return, can end only in one thing; namely, everybody ultimately will suffer. There is a very disturbing lack of discipline, a low sense of honour and integrity prevalent in every class in the country. It is hoped and believed that the majority of our people do not mean it to be so; but they have permitted and supported their class organizations in abuse of their power. The tendency has been generally to get all you can, your efficiency and pay will be measured by what you can get *for us*.

2. The social unit is the family, not the individual, the community or the state. Without the family the individual and the state would soon cease to exist. The birthrate is becoming a great national, race and empire problem. Within the walls of the home are inspired all our most compelling emotions. It is life as lived around the fireside that is of prime national importance. The resounding sermons and speeches on the worth of human personality, the rights of the common man and the glory of the state are just so much wasted breath unless thoughts, affections, plans and efforts are inspired and directed primarily to make possible a high standard of family life. After all, what is this standard of living so much talked about? If asked to gauge the standard, let us see your homes, your show places need not be inspected. Our post-war rehabilitation will fail miserably if our efforts as a whole do not culminate in respectable family life.

3. People are perturbed about the manifest moral bankruptcy which is abroad. Governments, business concerns, labour unions and individuals neglect and in some cases refuse to keep their word, abide by their agreements, pay their debts. Their defense is that they are unable to do so; the system is wrong or others don't do it if they can help it, why should we?

There are hosts of people (thank God) who still have a high sense of honour; they do not believe that stability and equity of human affairs is at all possible so long as some people neglect or refuse to pay for goods and services which they receive. It is all too plain that someone, somewhere, somehow must pay. It is far too easy to pass it off with the general statement that society should foot the bills.

4. It is complained that modern life is *so* upsetting, *so* confusing, *so* nerve racking, we will all go 'mental.' So we will, if we don't simplify it for ourselves. Life *is* complex but so is an ordinary wool sock. Even the high-browed intellectual cannot explain how the stitches are linked together let alone how the heel is turned; but his practical wife who never got beyond public school understands it well and can knit a pair complete for his Ph. D. cold feet. Fortunately for him she keeps right on knitting only mildly interested in his dissertations on the new social order, the new world of substitutes, all made by machines (an unhappy, dull world indeed without sheep, wool, yarn and knitting needles).

We are organized to death largely to interfere in other people's businesss at other people's expense; wasting our own time and what is more serious—confusing people with real work to do. We have to be constantly reminded to give the trained man the tools and the job and leave him alone. An educated, trained and experienced man soon simplifies life for himself. He must do so. The most complicated machine to the amateur, is simplicity itself to the skilled machinist. To attain simplicity is to master the art of living together successfully and gracefully. Experienced, capable people are having their daily round and common task made unbearable by a succession of rules, regulations and interference on the part of authorities and organizations contributing little or nothing to the national welfare.

5. National wealth may be properly defined as consisting of those things, facilities and services which contribute to the common safety and welfare. So defined, national wealth can be built up *only by producing good-quality, desirable goods and services at low relative costs.* This is an economic law. Note that the goods and services must be of good quality and desirable, and the costs low with respect to the cost of living. In other words, the national effort as a whole must be profitable.

The thrifty, hard-working, capable people of the country are being upset and confused by advocates of a national economy that does not require that we compete in price, quality and service, that thrift is unnecessary and perhaps a mistake, that it is possible as a nation to get something for nothing. To our forefathers these were economic heresies—and they still are. Waste, idleness, inefficiency, thriftlessness and gambling are economic sins. So long as we require the goods and services of other countries we will have to compete in world markets. In spite of tariffs, embargoes, quotas, subsidies and subventions the prices paid and obtained by the nation as a whole are world prices and no more. We can compete and trade on those terms or do without—facts which cannot be over emphasized.

Futhermore, as long as we have drought, floods, epidemics, poor crops, war and other calamities and so long as we have obligations falling due or expansions and improvements necessary in the future we must save. True, we must spend to save but it also true we must save to be able to spend. A lazy, thriftless nation cannot hope to be solvent let alone prosperous anymore than a farmer can hope to have a crop if he has not saved seed grain, prepared the ground and sown the seed. To people with sense these are simple economic facts which they accept without question; but there are very vocal citizens who ignore these facts and are misleading those that haven't given the matter much thought.

6. No one in his sane mind believes that a nation can really prosper and progress without skill and work; nor does he believe that national security is possible in this man's world otherwise. Futhermore, mental and physical health and strength are not possible without hard mental and physical work. To teach young pepole that but for some wicked men or some bad system they would not have to work more than a very few hours per day and have all they need or desire, be comfortable, happy and secure is sheer madness. Nations that settle down after this war in comfort and idleness will be wiped out and it will not require another war to bring about their defeat. They will be pushed off the map by the onward march of enterprising peoples. The unrelenting struggle goes on, war or no war, and we must not be misled by grandiose dreams of a millenium.

7. Hopes of what science and the machine can do for us are too sanguine altogether. For the most part all they do is make available for our use quickly and in great quantities our natural resources. Many of these are not replenishable. We will reap only the one crop. Oh, but you say, how about substitutes? Yes, but these in turn are largely derived from other diminishing sources. We must possess ourselves of the disturbing fact that the machine will bankrupt us unless we soon learn to direct its use to producing those things which in the years to come will prove profitable and not wasteful. To continue to slash down and cut up our forests, our national heritage, our one great crop, which took hundreds of years to produce, and sell in the world's markets to buy goods and services of little or no real value is plain economic suicide. Science and the machine should be directed mainly to taking the drudgery out of life and releasing our people for finer and more profitable work.

8. People are not going to surrender the measure of freedom they have been accustomed to without a fight not even on the promise of a Heaven on earth. They will rebel against being pushed into Heaven, even if that were possible; especially if Heaven is to be peopled by the 'pushers.' During the present emergency they will submit to taxation, regulations and restrictions but there is bound to be a profound reaction to all this as soon as the emergency has passed. Those talking revolution should understand that the degree to which people will surrender their freedom will be determined by themselves or a counter revolution will be in the making.

9. The contention that all wealth is produced by labour is at best half-truth. Even if both mental and physical effort are included in the term 'labour,' the contention has to be qualified. Without capable management, forethought, skill and sustained effort on the part of all concerned, the results will be wasteful and unprofitable. To a degree sheer luck is a factor in human affairs, and we have about as much control over luck as we have over the weather; we simply have to make the best of it. Of this, however, we can be fairly certain,—Dame Fortune may smile on the wide awake but laughs at the fast asleep.

10. That there is such a thing as a labour 'market' is in itself a reproach. The thought of it should blast us out of our complacency. That able-bodied, willing men should at times have to queue up day after day on the chance of a few days work, or that an employer at other times should have difficulty in securing satisfactory workmen or men of any kind, shows that we are constantly faced with conditions beyond our control or there is something lacking in our management and control of human affairs, and something *must* be done about it.

It is not always practicable or wise to over simplify but if asked to reduce our post-war problem to one word—it is—*JOBS*—decent, steady worthwhile jobs for all. We can then close, pull down and burn up that old institution, the labour market.

11. The wives and mothers of Canada have a better sense of economics than the men. It has been well and truly said that national economy is no different to household economy. Certainly women are much more aware than men of what is best for the family. One of the most heartfelt wishes expressed by the women of Canada is: "I wish my husband, my son, had a good, steady job." They *know* that it makes for security, contentment, assured annual income, proper planning for future needs and all-round satisfactory family life. There is an appalling amount of anxiety and distress simply due to the fact that the husband and father may come home without a job and no other job in sight. There is a lot of marital difficulty and domestic unhappiness, the result of the husband hanging around home, walking the streets, or frequenting beer parlors for want of anything better to do.

12. As governmental authorities and financial industrial concerns expand, as management and technical operations become more highly mechanized, the ratio of salaried employees to wage earners steadily increases; but when plants are closed down or their output reduced, wage earners are immediately discharged but the salaried employees are largely retained. The answer ususually is that the organization must be held together but the loss must be cut down. That answer is not sufficient. There is an opinion widely held that this is an injustice which must be corrected. The wage earner is essential to the enterprise, why should he alone be made to suffer? Cannot industry be so conducted that shareholders, management, salaried and wage-earning employees be all treated as essential elements in the enterprise, each with duties and responsibilities to the whole, prepared to invest, plan and work, give and take, live and let live? Until industry has learned how to live it is not civilized.

13. Perhaps the fundamental cause of strife between capital and labour is the fact that thousands of employees feel that they are treated as if they are not essential and can be dispensed with, they don't belong anywhere or to anything or anybody insofar as their services are concerned. Naturally they decide to join a union in order to get recognition and secure fair treatment. On the other hand management at times feels that labour unions have no proper sense of their responsibilities, cannot be depended upon to abide by their agreements, are not prepared to give and take. Thus we have industrial strife which like all strife bears down hardest on innocent neutrals. It is significant that there are few labour troubles in concerns where employees are steadily employed. They become part of the concern, known, respected, and (as years go by) indispensable in the opinion of the management. Also their annual incomes are relatively high. Too much emphasis is put upon daily wage and too little on annual income which is what really matters. The highest wages paid are in the building construction industry but the annual incomes of the employees are the second lowest in the country.

14. Proper human relations are not possible unless the employee is free in his choice of a job and the employer free in his choice of help; but in the exercise of this freedom there must be in all things substantial justice to both parties concerned. Employment by the month would tend strongly towards both parties using care in making the choice and once made to stick to that choice and the longer the association continues on agreeable terms the less chance there is of injustice being attempted. Young men would approach their life's work with more thought and care. Management would take more care in selecting and training men. At present the initial employer-employee relationship is taken far too lightly. The employer says "I can get another man," and the employee "I can get another job," which makes for industrial and social instability. Of course, this is far from being all there is to labour relations but we are considering only one phase of it at the moment.

15. When one begins to discuss social, economic and industrial changes the question is raised "but how about the finance?" The answers we get are often ill-considered and generally the emphasis is on things not people. Out of all the discussion about finance it is self-evident that in the long run and as a nation, whether we so plan it or not, we have to provide all our people with a subsistence by way of wages, salaries and incomes or by doles, relief, unemployment, sickness and other benefits. The most expensive and demoralizing way is by doles, as we have seen many times but never learned. Why is it that we continue to finance things with little regard to people? Resources in the ground are almost worthless. It is the skill and labour expended on them that gives them value. If finance was seized of its responsibility in this respect, that come what may the salaries of so many people will have to be paid, the whole economic system would be steadied and improved. Management would hesitate to take on business requiring a sudden increase in staff with little chance of that business continuing. Governments would budget on a basis of so many employees, equipment, etc., to be steadily employed. Expansions would be more carefully planned with more regard for permanence. A check would be put upon wild-catting, exploitation and waste. It would appear at times that millions can be obtained to finance machines, equipment and buildings (much of which is imported) make a big show until someone gets cold feet, then close the whole thing down, discharge employees without one thought of what happens to them. The remains of this kind of finance are scattered all over the land. Let us finance our people, the primary indispensable asset of the country. Assuming there are, say, 3,000,000 employable people; they should have an average annual per capita income of, say, $1,800.00, or a total of national income of 5,400 million. Finance, industry and governments should undertake to maintain the national income at that level. Impossible you may say. Alright, we have to set up relief. In the depression years up to 1937 there was spent on relief alone in Canada, 768 million dollars, a classic case of, 'we pay if we do and we pay if we don't.'

16. Steadily employed salaried people are the best risks in the country. For the most part they pay their bills, own their own homes, take proper care of their families, provide their own security, pay their taxes, budget their expenditures, avoid strife, support worthy community services, resist booms and remain steady in a depression. That booms and depressions can be completely levelled off is not possible but certainly with a large part of our people in the salaried and steady income class a more stable economy would result. About 90% of all national income is expressed finally in pay envelopes. The annual total in

those envelopes determines the economic state of the nation, not the dividends on investments.

17. Some advocates of social security seem to base their plans upon the assumption that young men seek a life without worry, struggle, risks or disappointments—a comfortable, non competitive, feather-bed existence. This is in the main face a false assumption. Young manhood asks no favours, courts adventure and danger, and will take on competitors in any enterprise. All that they ask, all that the returned men will ask, is a chance to show what they can do.

In proposals to deal with social security we are going on the defensive. In a new country like Canada that may mean defeat. We should attack the problem; reduce unemployment, prevent a large percentage of accidents, wipe out epidemics and improve the general health, reduce the cost of raising a family and extend the period of useful living.

Social security is advisable and necessary up to a point; but when it is predicated upon a sick or going-to-be sick country, when it fosters a life that is on the defensive, lulls us into a false security, a Maginot Line instead of a springboard for attack on those things that lower National vitality and strength, the security intended will prove false.

There still remains the inevitable hazards of life but these can be and should be provided for by some sane insurance scheme supported by all citizens with incomes. The mainstay of any plan of security will be the steadily employed and their pay envelopes, the only thing that will make social security secure.

18. The small mills, shops, stores, farms and other small enterprises, and the professions, each employing less than ten people, give employment and provide incomes to more people (believe it or not) than all industry combined. These middle class employers are largely unorganized and are ground between the millstones of unorganized industry and labour. That they survive is due to their own hard work, enterprise and personal attention to business and is one strong argument in favour of the small, privately-owned industry and business. The more we have of them and the more prosperous they are, the sounder is our whole economy. It is all very well for organized industry to congratulate themselves on the attainment of higher wages, shorter hours and better prices, but these can only be sustained if unorganized consumers are able and willing to pay them. It is so easy and often so advantageous to make much of big enterprise and big people and to neglect and forget the little enterprise and little people.

19. Industry is becoming so completely mechanized and can produce in such quantities and at such low prices, that even the most optimistic men of affairs hold out little hopes of full employment under normal peacetime conditions.

The argument that because we can do so in war we can do so in peace is unsound and misleading for two simple reasons: the men in the armed services are not producers and a large part that is produced is immediately destroyed. In other words, only the least able part of our employable people are producing to supply an unlimited and to a large extent a non-competitive market. For want of any better idea to support their contention some go so far as to advocate that we continue the same destructive process; namely, keep the shipyards going and sink the ships as soon as they are built if we have no use for them. That sane people should even suggest such a solution is incredible. Others suggest we undertake huge national projects, undreamed of developments on an ever increasing scale in number and size. Providing these are or soon will be needed and worthwhile in our economy this proposal has definite merit but cannot be a complete solution. Others again fall back on the defensive and suggest shorter hours, earlier retirement, unemployment insurance and all the other security benefits. There is a real national danger in this. Competitor nations may decide to take the offensive and by full employment, long hours and the maximum use of machines bring about our defeat. Also, what kind of people are we anyway? A sick, debilitated, faint-hearted, ease-loving race ready for the hospital, sanitarium, old people's home or the grave? If so then by all means the Beveridge plan.

Make no mistake about it, victory to the United Nations will not of itself guarantee to us here in Canada the four freedoms or a worthy destiny. Our whole future will be determined by the quality of our goods, our services and our people. It is quality that distinguishes a great people, that ultimately wins. Quality, and nothing else, won the battle of Britain.

Our junk heaps, our dilapidated houses and buildings, our broken-down and obsolete industrial plants, our stores filled with shoddy goods are no credit to us. Thousands of our homes are shabby, many not fit for human habitation. We ought to be ashamed of our cities—largely unpaved, very few boulevards, neglected parks, obsolete and defective sanitary systems, polluted watercourses. Our highways are for the most part unimproved dirt roads. Many of our public buildings are "with order, symmetry or taste unblest." Most of our rural communities are without the ordinary conveniences. Much of the country is down at the heels, stuck in the mud. We have spread ourselves over a vast country, developed power and set machines to work on a quantity production basis, the maximum number of things with the fewest number of people; millions of things submerging and frustrating a few people.

It is when we undertake to produce quality goods and services that skill and time are required. A machine and one operator can rough out great quantities in little time but it takes the skilled artisan a long time to put on the finish and give the product the quality. To check the waste of our natural resources we must go hard over to quality production. There is much less material in a fine watch than in an alarm clock. There is as much material but much less work in a six-room $5,000.00 house than in a six-room $10,000.00 house. The artist uses only a few brushes, a few ounces of paint and a few square feet of canvas to produce a masterpiece but it takes months of artistic effort.

Both time and materials are largely wasted in poor-quality quantity production. High quality work requires high quality brains and skill, years of training and practice. It commands a high price in the market, hence we can afford to pay the producer a high price for his services. The national and individual income may therefore be high for the same time and materials expended and a larger number of our workers become artsians.

High quality products and services have a value that cannot be measured in dollars. Honest pride in one's work is a great uplifter. It is quality that inspires and helps men on the road to high attainments. It is an established fact that there are almost no skilled artisans in our penal institutions and mental hospitals. Why not then apply occupational therapy *before* people have to go to our in-

stitutions when it is generally too late? Why not stop gorging the machine and starving the workers bodily, mentally and spiritually?

Canada will shortly face an export market problem. To a large extent our exports are raw or only roughly manufactured products. These can be produced by machines and well-paid labour at world prices only so long as our immediately available resources and foreign markets hold out; but if these fail we will be forced to further increase plants, reduce payrolls and mine out our resources in the quickest way possible. Already we have gone far along this road. The export market has been represented as our only salvation; but to have and to hold it we may be paying too high a price. At times it would appear that we move our resources bodily and in the raw state into world markets. With more skilled, better paid and more steadily employed people we should be able to place in those markets finished, quality products requiring less material, less cargo space but more skilled labour to produce.

Certainly it is not recommended nor considered adviseable or possible to dispense with the machine. The argument is for better machines, better workmen, better pay, better products, a better, more interesting and satisfying life for all.

But you say, the export market? They demand our cheap, raw products. They will just have to do without them and we would be well advised to buy less of their cheap manufactured articles. It is what we get in return for our products which matters to us.

Definite Proposals

There are three things should be done and ways and means found to do them; namely:

1. Hopes of solving our difficulties by simply producing more things must be abandoned in favour of better things, better services and better people.
2. Ways should be found to finance people to provide the goods and services rather than finance goods and services which people may not need or cannot buy.
3. As far as it is humanly and economically possible, place all employable people in steady, worthwhile jobs, preferably salaried positions.

Ways and Means

It is quite beyond the scope of this address (paper) to lay down definite ways and means. Attention will, therefore, be directed to a few practical suggestions only. How they are to be carried out will be left for the most part for further consideration and discussion.

Reference will be made to certain governmental councils and boards. The exact nature and duties of these are not discussed. They already exist or are proposed by Post-war Planning Committees whose work in this regard is well worth consideration.

A. *Not More But Better Things*

It is urged that we go hard over to better goods and services, that the emphasis be placed on quality rather than quantity.

To succeed it will be necessary to begin with the young and the very young at that. Parents, teachers will have to undertake to train and educate them to do their best, to appreciate the fine things, abhor the crude, shabby and drab, to foster and encourage everything that is clean and wholesome, commend and reward progress and condemn slackness and undisciplined conduct.

As maturity approaches, our youth must be persuaded of the great truth that training for life's work is an essential prerequisite to a satisfactory way of life. They must divorce from their minds the thought that they can really succeed by 'pull' or trickery.

Probation and apprentice systems should be expanded and made obligatory in all professions, trades and services. Definite recognized standards of attainment and experience should be required of those seeking membership in the learned and skilled arts and for promotion therein. More and more, distinction and rewards should go exclusively to an aristocracy of brains and accomplishment.

Our Engineering and Architectural Institutes should revise and raise their specifications and buildings codes. All food, building materials, workmanship, shop and living conditions should be subjected to careful inspection; health and safety regulations enforced. It is quite true that industrialists are constantly trying to improve production but if better quality is not demanded they will hesitate to provide it. Our people have been altogether too slow to appreciate and demand quality goods and service, perhaps partly because they are shifted around too much and never seem to get settled down to living gracefully in permanent homes. Producers will soon respond to a consumer's market demanding better quality.

Scientific and industrial research (government and private) can be of great service in searching out our better products, improved methods and more efficient devices. We should abandon the idea that because a product is new it is necessarily better. It should be submitted first to a severe test.

The women of Canada who actually spend a very large percent of the whole national income (not all on themselves of course) could exert a profound influence in putting this part of the plan into operation. All they need do is—refuse to buy shoddy goods, to live in badly designed houses or to put up with poor services. If they would demand the best for the purpose intended, our standards would soon go up, especially if they threaten a buyers' strike—the most salutary and effective strike possible.

B. *Finance People Rather Than Goods*

How is this to be done? It cannot be done until we get firmly in our minds that come what may all our employable people must be assured of worthwhile work and annual incomes commensurate with the services rendered.

Finance and management will have to face the stern realities. After all they hardly need to be told that they are on trial. If it is still necessary (and that would seem not so) their duties will have to be set out in no uncertain terms. Perhaps we can leave it at that.

But finance has every right to ask—what are you going to do with the money? Employers, management and labour must undertake to direct their efforts and spend that money only on high-quality, worthwhile, desirable and marketable goods and services at prices that will result in an increase in national wealth and well-being, and will sustain at all times a firm confidence in our will and ability to pay.

This brings us face to face with rehabilitation programs. Projects proposed should be carefully reviewed, criticized, revised and selected by carefully chosen planning boards critical of every expenditure proposed. The mere

fact that a project will provide employment is not sufficient. The most worthwhile should be given prioity, and those economically unsound struck off the list.

Given worthwhile projects failure can still result unless the approved plans are placed in the hands of managers and workmen that know how to get things done well and economically. Slackness and inefficiency resulting from any cause must not be permitted. It is quite proper and to be expected that those providing the funds will refuse to invest in badly managed, poorly built projects. Thus it follows that those representing finance should be included in national planning boards, and be fully advised as to where and how the money is to be spent.

Having determined the number of those needing employment, expenditure budgets should be based upon the total required to furnish annual incomes for all employable people in accordance with their will and ability to produce; in other words, budget for the people rather than for the job. There is no end to worthwhile projects, why is it that we stop work because there is no balance in a ledger account covering a specific project.

There is no doubt that many employers do make a real effort to keep their men steadily employed but when faced with a declining market they have to discharge employees to remain solvent. At the same time their customers may have plenty of work in view requiring goods and materials produced by those very employers. To meet a threatened decline of this kind there should be set up a National Economic Research and Development Board to which employers can appeal. The Board should have on file a list of approved projects and possible markets and will function to bring producers and consumers together. In a depression, company sales agents get a frigid reception everywhere simply because everybody has cold feet. The advantage that such a Board would have over the sales agent is that the Board would know what projects and markets can be made available. The idea is to have a naional authority to which industry can appeal in an emergency—an authority having the confidence of finance, management, labour and the public, all co-operating primarily to keep people employed.

In the depression of the thirties industry was without markets and at the same time governments, railways and other corporations had plans for millions of dollar's worth of work on their drafting boards; but there was no authority to bring the two together. Hence, able men were put to work raking leaves and cutting brush.

It is contended and rightly so that economy of a project cannot be assessed unless it is known from the beginning what it will cost. The reply is that an estimate of the cost of the job is very necessary but experience has been overwhelmingly to the effect that very few projects are completed for the estimated cost or within the estimated time. Then why are we so fussy about book entries? In the large majority of cases better results would have been obtained had the work been less subject to alternate haste and decline due to uncertainties of labour and finance. A budget that provides for a steady level of expenditures is a safer and far more satisfactory way to finance.

So long as we finance the job without regard to people, employment is bound to be uncertain. After all whether a project is finished sooner or later than expected is often not so important but it is very important that people have a sustained source of income and that the country obtains the full benefit of their continuous service. Finance is only a means to an end (a powerful means if you like) but only a means, no different to other resources and means of production and should be made available to produce maximum benefits.

This all boils down to one requirement—that finance definitely undertake its full share of the duty to hold the national income at a level considered necessary and adequate by a Board of our ablest and most responsible men.

c. *Steady Employment*

This is the factor in the proposal most difficult to accomplish. It predicates assured profitable markets, a low absenteeism, favourable weather, a high national income, a willingness on the part of everyone to do his best, and a sustained confidence in ourselves and each other.

Under any governmental, social or economic order there is *only one* remedy for unemployment and that is employment. Let us ponder that. The proposal here made is simply to apply that remedy and put people to work. If convinced that the remedy prescribed is the only hope, we will find ways to administer it no matter how obstinate the patient may be. Management all over the country, all employers of labour, governments, farmers; and including that large and important class, the small enterprisers—fully aware of the seriousness of the problem and of their responsibilities as citizens, must take on as many employees as they can possibly employ usefully, and consider themselves obligated to keep them employed so long as they render satisfactory service. Inevitably that will result in the proportion of salaried employees being very largely increased—a most desirable effect.

The success of this plan will depend upon the extent to which all those in intimate contact with and experienced in industry and finance are willing and able to assume their undoubted responsibilities. *Let us repeat that.* It will be argued that they will not do so unless compelled; that there must be a supreme overall authority with executive power to enforce decrees. This is tantamount to saying that we have to depart from democratic processes, which would be unfortunate and would be resisted ultimately. Surely, our people, our governments, industrialists, labour and particularly our corporations and trade organizations must be now seized of their responsibilities and duties. It is unthinkable that men of education, brains, skill and experience, those with vested rights and interest should hesitate to risk everything they are and have in an organized effort to prevent catastrophe.

It will mean that all the best men in the country will have to get together as they have never done to date. Employers will have to form themselves into voluntary organizations all over Canada and their representatives meet in convention. The first and primary thing on the agenda will not be finance, markets, etc., but employment and employable people. Every last employer will be asked to undertake voluntarily the steady employment of the largest number of people possible without real risk to his enterprise. As men are chalked up in one industry more men will be necessary in several others in a position to supply the potential market thereby improved. A force of 300 bridge erectors (for example) required by railways and governments will require that 1,200 men be employed in the mills to supply them with timber, concrete and steel and so on. The mere fact that they are met together prepared to assume their responsibilities is sufficient to instil the confidence so necessary in a crisis. As the lists are carefully revised upwards potential markets are increased until a safe maximum is reached. The need

not be further elaborated. The idea is to estimate on the basis of people not goods—establish incomes and the demand is assured.

Similarly trade, professional and labour organizations will meet. The first thing on the agenda will not be professional status, salary schedules or union rights but employable people. They will compile a register of all employables, grade them into classes on the basis of capacity, training and skills. As the lists develop the capacity for service and production will begin to take hold of the conferees. The mere fact that they are prepared to assume their responsibilities and duties will build up confidence in their ability to deliver the goods. Having disposed of primary matters, the less important can receive attention.

These organizations will then make their submissions to a National Board composed of representatives of the various interests to be served. The first thing to be discussed will not be past industrial wars, jurisdictional boundaries, etc., but people and work. Employable people, including returned men and women, will have to be accepted as they are but means must be adopted to increase their capacity for effectvie, good quality work. The idea is to have an authority which will bring together management and labour, co-ordinate and make effective the work of labour, civil re-establishment, selective service and other governmental and private organizations; and eliminate as far as practicable the tremendous amount of effort, expense and worry in getting workers to their jobs. The real difficulty will be to keep them steadily employed. The National Economic Research and Development Board will have to be a permanent authority, constantly watching over our whole economy. An industry facing declining markets will have recourse to the Board for advice and help but the response will be favourable or otherwise depending upon conditions and more particularly upon that industry's will and ability to compete in price, quality and service. We cannot be any system of advice and control save an industry from the results of its own lack of enterprise.

But you say, what about the young, the old, sick, incapacitated, the casualties, the useless. There is only one answer—we will have to take care of them. Except for the young and old we should be able to reduce their numbers, restore to a large extent their usefulness. After all haste is not advisable or neceseary. Providing we are marching towards the dawn, the light of a new day will strengthen and invigorate the strong and heal and restore the weak.

Conclusions

It is admitted there are many difficulties to be overcome. Management and labour will have to make good their publicly stated promises to co-operate, and learn to give and take, live and let live. The great need is to get our people to understand these things. Perhaps the greatest need is a campaign of education and instruction, especially among the young—the old are too set in their ways.

No one doubts that our post-war difficulties will be such as never before experienced. We will have to stand up to them with all our strength and fortitude. We have to make good the waste of war, pay our debts every last one of them, rehabilitate this country and its people and help as much as we can to rehabilitate other less fortunate peoples.

These things cannot possibly be done unless we all plan and work as we have never done in our whole history, with all the skill, energy and persistence of which we are capable. Confusion, futility and mass unemployment cannot and must not be allowed. A thousand reasons could be given why it is impracticable to guaranteed substantially full employment, but there is one reason why it should be done; namely, it must be done. If we admit that we have made a good start.

It is said in a fine old book, "The young men shall see visions and the old men dream dreams." What do our young men see and our old men dream? Ask yourself, ask them. Listen again—"Where there is no vision (no faith) the people perish." There we have it; are we, are the people of Canada prepared to make the choice or simply default. Is there deep down in us a sustained faith in ourselves, in each other, in our country? The trouble is "not in our stars but in ourselves." It is not the devil without but the devil within us and he keeps us fighting with ourselves, prevents us from becoming integrated personalities, integrated communities and provinces and an integrated nation. Disunity, indecision, discord and futility can easily result from this inward civil war with devastating consequences.

Let us not be misled. A new and better, more civilized world cannot emerge of itself from this world conflict. The very opposite is far more likely. Bathtubs, motor cars, planes and radios have almost nothing to do with civilization. It is the will and ability to give and take, live and let live, bear and forbear, practice the golden rule. How then can this war be expected to advance civilization when it has reduced itself to 'an eye for an eye, and a tooth for a tooth' struggle for mastery. Admitting freely that when that stage was reached there was no alternative, then what of the aftermath of smouldering hate? And what about our own industrial strife, class hatred, greed, corruption and selfishness? How can a better world evolve from no better people? We can still hope, however, that we have learned a lesson, surely that is not too much to expect.

There is plenty of justification for a well-founded faith in our people. The great majority are sane and sound. They are facing up to the present crisis with fortitude; but some way it seems the right people are not articulate. After all the discussion has ceased, those capable of getting things done should be heard from and drafted to do the job or we will fail.

So much that we hear and read emanates from well-meaning but impractical visionaries, intellectuals who haven't faced up to life and fought their way to competence, authorities on everybody's job but their own. They can tell us about substitutes for wool but cannot knit a sock.

The three indispensable qualities in a nation are strength, balance and stability. Perhaps the most important is stability which requires that we do not let ouselves, each other and our country down.

It is not surprising that humans vary widely in their response to life. After all, what is life? Is it a pilgrimage? If so, many will get lost in the wilderness and long to return to the flesh-pots of Egypt. Is it a game? Then only a few get prizes, some that don't deserve them. Is it a crusade? Then many will falter, lose faith and some be martyred. Is it a battle? Then there will be many casualties, unfortunately far too many among the innocents.

To most of us it has been at times all of these things but none of them is quite satisfactory. Life should be an *enterprise* for which we educate and train ourselves; into which we put our time, our strength and our skill; in which we are prepared to take definite risks but from

STUDENT RESIDENCES

On June 12 the Alumni Executive issued a circular letter containing facts and suggestions on student residences. The Chronicle prints herewith excerpts from some of the many letters received in response to the circular:

President-Elect
NORMAN MacKENZIE:

I wish to acknowledge your letter of June 12th with regard to student residences. Personally I fully agree with everything that you say about their importance and I will do what I can to see that these are built.

HON. IAN MACKENZIE, M.P.,
Minister of Pensions and National Health:

Your representations concerning the necessity for immediate construction of student residences have been carefully noted, and will have my consideration.

GEORGE CRUICKSHANK, M.P.,
Fraser Valley:

On behalf of Flt./Lieut. Sinclair, who has returned to active duty with the R.C.A.F., and myself I will be glad to bring your recommendations regarding housing before the proper authorities.

HAROLD WINCH, M.L.A.,
C.C.F. Leader in the B. C. House:

We appreciate your writing on this matter and assure you that our organization is most desirous that the U.B.C. should be developed to the fullest extent and that all necessary facilities should be provided. You may be assured that we will do all possible to assist in the attainment of your objectives.

JOSEPH B. CLEARIHUE,
Member, Board of Governors:

I think every member of the Board of Governors is convinced of the necessity of such buildings and is prepared to erect the same just as soon as money is supplied but as you know the money comes largely from the Government and we must look to this source to secure the money for student residences. Just as soon as this is available I can assure you that the Board will construct the same.

HON. JOHN S. HART,
Premier of B. C.:

I have for acknowledgment your letter of June 12, and note what you have to say regarding the establishment of student residences at the University of British Columbia.

HON. E. C. CARSON,
B. C. Minister of Mines:

I am keenly aware of the necessity, am interested in your objective and will endeavour to further your cause when opportunity offers.

GRACE MacINNIS,
C.C.F., M.L.A., Vancouver:

As one who began university life in the old Fairview buildings, I can well realize the long and difficult process of getting adequate buildings, both for class and laboratory work and for living accommodation. There is a pressing need for residences and I agree that the most strenuous efforts should be put forward now to get them built as soon as men and materials can be made available.

On behalf of our C.C.F. group, I and several others have urged the need for a large-scale, low-rental housing program under public auspices for our city. At the next session of the Legislature I hope to renew that demand and add to it the one for university residences and a new nurses' residence for the Vancouver General Hospital. I shall do what I can in the meantime to arouse public interest and want to assure you that the more you can do in that line the easier it will be to secure legislative action when the matter comes up in the Legislature.

HON. H. G. T. PERRY,
B. C. Minister of Education:

In reply to your letter of the 12th instant I may say that I am in full sympathy with the desire of your Association to have student residences erected on the University campus but I would point out that it is quite impossible to proceed with such a project at the present time. No funds have been voted by the Legislature for the purpose and the Government has consistently refrained from entering upon large new projects during the war. We shall keep your recommendation in mind for the post-war period.

BERNARD G. WEBBER,
M.L.A., Similkameen:

May I say that I am heartily in accord with the proposal in your circular letter of the 12th instant, and will do what I can to bring it to fruition.

WORTHWHILE EMPLOYMENT---*Continued*

which we can be assured of a fair return (perhaps an abundant reward), not necessarily in dollars and cents but in those far better things which satisfy and adorn life.

If such is this one life in this world, what is our duty to our partners in this great enterprise? Just simply to see that they all get a fair chance and a just reward. There is the conclusion to the whole matter.

We canot secure for ourselves a worthy destiny without hard work, much sweat and certain risks but it is wholly possible without drudgery, tears and bankruptcy provided we proceed on a plan that is sound and just, compatible with nature and her laws and men and their ways and in step with those great spiritual forces marching on with ever expanding purpose to order and harmony.

Proposed Eight Mile Tunnel . . .

for Strait of Oresund

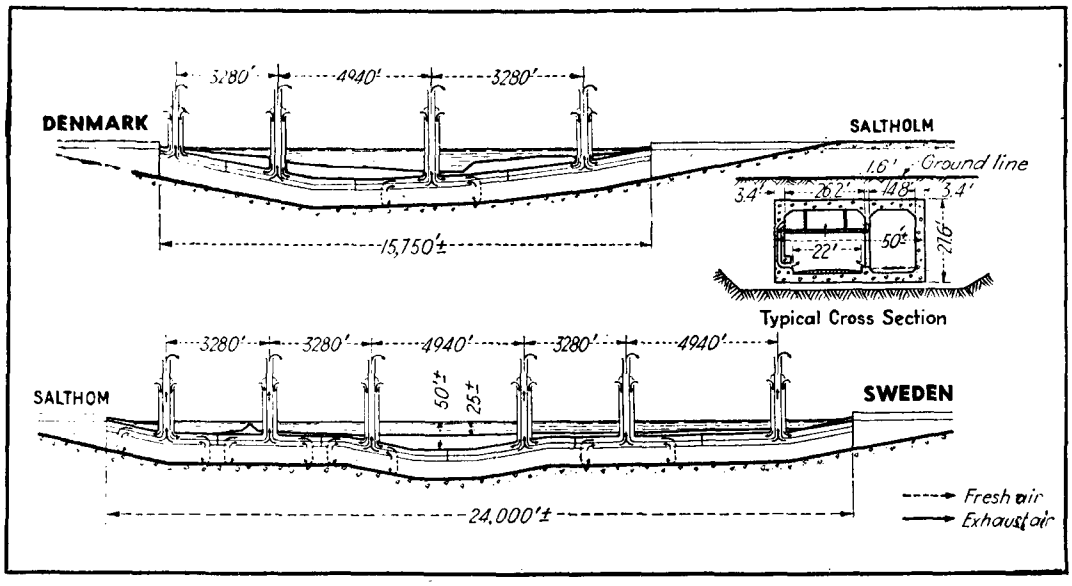
Post-war project will require special excavators for economical construction of world's longest underwater tunnel.

Plans are ready for an early start after the war on construction of a tunnel to connect Denmark, near Copenhagen, with the Swedish mainland near Malmo, passing under the Strait of Oresund. The strait at this point is very shallow—only 35 ft. at deepest point—and the bottom consists of layers of hard sand and limestone. Thus, it will be practical to use the open trench method of construction, but the scheme will require the building of very special excavators for a deep and wide trench under water. The tunnel will come up to the open on the Island of Saltholm, a little more than three miles from the Danish side, and more than 4½ miles from the Swedish side of the strait. The nearly eight-mile length is said to make this the longest under-water tunnel in the world.

Plan for construction is to build a graving dock at each of the four places where the tunnel goes under water. The tunnel sections, each 165 ft. long, will be built in the graving docks at the rate of one every three weeks, and will then be floated out and sunk to position in the open trench. After the tunnel sections are complete, the full length of the graving dock becomes the open approaches to the tunnel.

As will be noted from the cross section of this tunnel, it is a rectangular box and will have space for one track for an electric train, and a two-lane highway with a catwalk on one side. The road will be 22 ft. wide, a little greater than ordinary American tunnels. Traffic capacity will be 8,000 motor vehicles and 60 trains in each direction per day. Ten ventilation towers, at an average spacing of 3600 ft. along the tunnel, will make possible a renewal of air every other minute when the tunnel traffic reaches its peak.

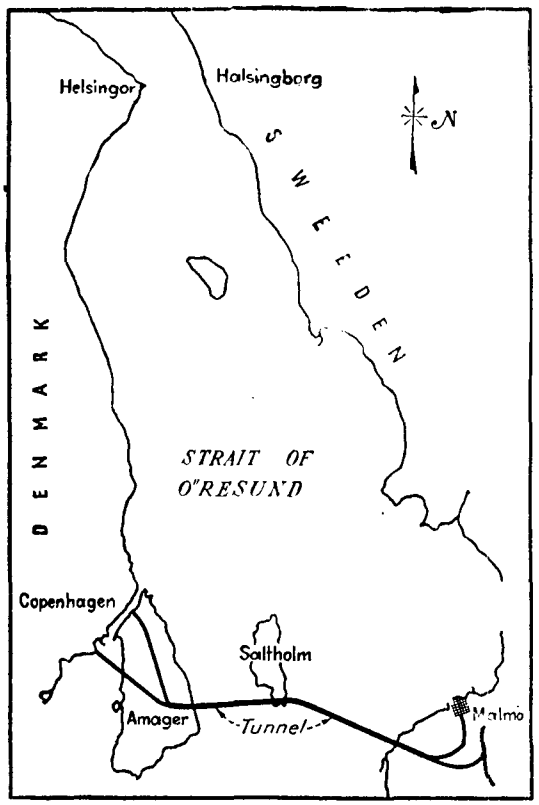
The tunnel is expected to require some 200,000 tons of cement, and 1,300,000 cu. yd. of sand and gravel. Estimated cost is almost $50,000,000. It is expected that a part of this cost will be offset by increase in the value of the Island Saltholm, the 10 sq. miles of which is at present uninhabited and almost worthless. With rapid access by the tunnel it will become a suburb of Copenhagen and will undoubtedly be popular as a summer resort.



A toll to be imposed on all trains, vehicles and passengers is expected to cover the maintenance and fixed charges and yield a small dividend on the investments, which will most likely be under government control.

The natural affinity and friendship between Denmark and Sweden has long made the connection under the Strait of Oresund desirable. Division of the world into spheres of influence has strengthened the feeling of unity in the Scandinavian countries and made this tangible link a mutual project.

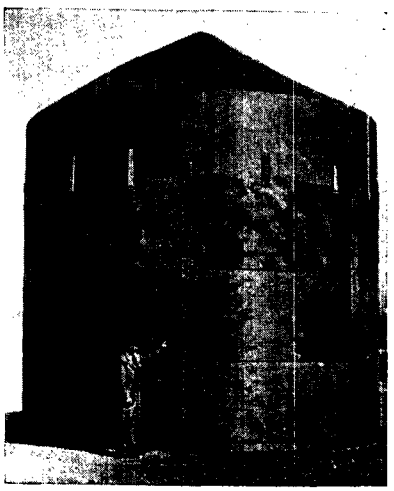
Planning of this tunnel has been carried out in minute detail, in Denmark under the supervision and leadership of N. J. Manniche and in Sweden by J. N. Dalhoff, Managing Director of the Asa Engineering Firms. Detail plans have been prepared largely in Denmark, where current construction and engineering work would benefit the Germans so



well reputed firms have been concentrating solely on post-war planning. Sweden has had more heavy construction work during the war than in normal times, largely fortifications and other measures in preparing the country for defense against possible aggression.

Mr. Dalhoff is at present in the United States investigating the possibilities of securing the special equipment required for the unusual tunnel excavation and other machines necessary for a project of this size. The machine particularly sought is an excavator to travel on the ocean floor and dig out the trench, thus avoiding the limitations of floating equipment. Mr. Dalhoff also has been seeking information on American practices and suggestions from American tunnel builders. — From *Engineering News-Record*, June 15, 1944.

PLYWOOD AND GLUE GRAIN BIN



This Laux-glued grain bin passed over load tests for safety and has been recommended as a permanent type of storage, replacing iron and steel bins.

These bins were constructed of 5/16th-inch three-ply ply-wood, 19ft. in diameter.

ENGINEERING NEWS AND NOTES

Mr. ALLAN S. GENTLES, Western Manager of the Dominion Bridge Company, was elected a member of the executive of the Canadian Institute of Steel Construction, Inc., at the recent annual meeting of the Institute in Toronto.

The new mine superintendent for the Kelowna Exploration Company is Mr. E. E. MASON.

Mr. W. O. RICHMOND is Vice-Chairman for the current year of the B. C. Chapter of the American Society of Metals.

Department of Public Work transfers list Mr. S. A. CUNLIFFE, Assistant District Engineer, going from Smithers to Pouce Coupe. He is succeeded by W. R. WORKMAN of Nelson.

R. E. RENSHAW is taking up civilian work again and is now with the Pioneer Gold Mines.

After serving with the Department of Railways since 1910, Mr. WM. RAE retired at the end of June. He was Chief Inspector of Rolling Stock with headquarters in Vancouver.

Mr. G. B. ALEXANDER has been appointed District Engineer of the C.P.R. for Saskatchewan. He was formerly Division Engineer at Vancouver and is succeeded by Mr. C. A. Colpitts of Saskatoon.

Mr. FRANK. BUCKLE, formerly with the Granby Company, has been appointed Superintendent of the Canadian Johns-Manville Company at Asbestos, Quebec.

Flying Officer GORDON CROSBY has been spending a month's leave back in Vancouver after having been listed as "missing" for four months. His plane was forced down on enemy territory but he managed to escape to England. Another airman glad to be home is Flying Officer C. C. CUNNINGHAM, D.F.C. He has been overseas for the past three years.

Mr. J. D. MOORE has returned from Ontario to take the position of Assistant Mill Superintendent with the Cariboo Gold Quartz.

Congratulations to F. G. deWOLF and R. E. WILKINS on their promotions to Acting Lieutenant-Colonel. Congratulations also to Major R. C. FARROW, Major K. R. FORD, Acting Major J. S. KENNEDY, Acting Captain J. W. TARBOX, and Wing Commander V. R. Hill, on their promotions.

Announcement has been made from Ottawa of the retirement of Brigadier N. D. LAMBERT from his post as Deputy Quartermaster-General (Engineering). He will rejoin the Northern Construction Co. and J. W. Stewart Ltd., of Vancouver, of which he was Superintendent before enlistment.

Mr. D. L. COULTER has succeeded the late Bert F. Smith as Manager of the Premier Gold Mines.

The newly appointed Vice-President and Managing Director of Bralorne Mines Limited is Mr. M. M. O'BRIEN, for many years connected with the Consolidated Mining & Smelting Company of Trail.

The Engineer-Statesman and the General Welfare

By DWAYNE ORTON
Director of Education,
International Business Machines Corporation.

Presented at the Annual Meeting, Middle Atlantic Section, S.P.E.E., Manhattan College, Dec. 4, 1943.

The arrangement of today's program has conspired to bring together three different voices and experiences on the same theme, although no one of us conferred with either of the others. The message of Brother Victor is more than a courteous welcome. His words are an assurance that our theme would be hospitably received by our host institution. The paper which Commissioner Sheridan has read not only gives me confidence in my own point of view but, also, provides me with the support of his statement which is at once profound and practical.

My theme opens upon a scene set a quarter century ago. I was seated one noon-hour at my drafting board idly fingering the pages of an engineering journal when my attention was riveted upon an advertisement for technical books. Across the top of a two-page spread and set in bold face type were these challenging words: "WHAT, NO MORE WORLDS TO CONQUER?" The text of the ad went on to note that the passing of the geographic frontier had caused some to think pioneering a thing of the past. However, argued the text, we are at the portal of a great new frontier—the technical world of the future for which the geographic frontier was only a prelude. Here was a challenge to pioneer the "wonder-full" opportunities of a new civilization.

Now we stand in the fresh, confident, adolescence of that new world and feel the warm strength of our growing achievement in the conquest of nature's resources. With the restlessness of adolescence, we reach out in a vague consciousness that "eye hath not seen, nor ear heard, neither hath it entered into the heart of man the things which the Lord hath in store for him." As it is with youth, so it is with our technical development, we have yet to achieve the mature judgment with which we will make technical power legitimate.

Here, then, is a new frontier. Just as the geographic frontier provided the resources for our technical exploitation, so the technical frontier provides the power with which man may realize the responsible maturity of the race.

Nowhere have I found this so well illustrated as in the motion picture, "Edison, The Man," in which Spencer Tracy played the part of Edison. The scene portrays Edison at the banquet where the great of science and engineering pay tribute to his achievements. When Edison rises to respond, he speaks these words:

"To be told by the outstanding men and women of your time that you have contributed a great deal to human betterment is pleasant, very pleasant. I would hardly be human if my heart did not fill with such a major compliment. But somehow I have not achieved the success I want. Earlier this evening I talked with two school children. Tomorrow the world will be theirs. It is a troubled world—full of doubt and uncertainty. You say we men of science have been helping it. Are those children and their children going to approve of what we have done? Or are they going to discover too late that science was trusted too much so that it has turned into a monster whose final triumph is man's own destruction? Some of us are beginning to feel that danger, but it can be avoided. I once had two dynamos. They needed regulating. It was a problem of balance and adjustment. And I feel that the confusion in the world today presents much the same problem. The dynamo of man's God-given ingenuity is running away with the dynamo of his equally God-given humanity. I am too old now to do much more than to say, 'Put those dynamos in balance. Make them work in harmony as the great Designer intended they should.' It can be done. What man's mind can conceive, man's character can control. Man must learn that, and then we needn't be afraid of tomorrow, and man will go forward toward more light."

This, then, is a goal for the technical professions: "Put those dynamos in balance." Bring the forces of human engineering into mature control of the power generated by material engineering. Just as knowledge without love is barbarism, so ingenuity without humanity is a destructive force. The travail of the world at war is sufficient testimony to this principle. Ingenuity controlled by humanity can bring in the brotherhood of man.

Here is a high privilege and a primary goal of the technical professions.

I.

In exploiting this theme, let us note first that the interdependence technology has created in the modern world favors those whose special interests can be coordinated with the interest of the general welfare.

Edward C. Lindemann[1] has pointed out that each period of modern history shows certain centripetal ideas around which the currents and eddies of thought tend to polarize. The Seventeenth Century was dominated by INQUIRY and AFFIRMATION, the Eighteenth Century by DENIAL and INVENTION, and the Nineteenth Century by ACQUISITION and COMPETITION. The developing trends in the Twentieth Century indicate that COORDINATION AND PARTICIPAPTION are central in the complex of modern thought. TO RELATE AND TO PARTICIPATE are imperative verbs in our time.

Two world wars have written in blood the lesson that no nation can live unto itself alone. Now we are learning that no race can live unto itself alone.

The incredible advance in radio communication has placed such a premium on intercultural understanding that men are forced to relate their thought to that of other men.

The ingenious development of aviation has given us a common carrier that flies with impunity over the traditional barrier of oceans, mountain ranges, ice caps, rivers, and deserts. These no longer separate nations or provide the physical basis for national sovereignty. Today the air-

plane is a carrier of destruction. It can be a messenger of peace tomorrow.

Perhaps no instrument of man's creation points up the interdependence of material and human engineering as does the airplane. It has given man a new dimension of living. It has revolutionized military tactics and we are at long last trying out its strategic power. "But this eagle will not always be an eagle. It will some day be a dove." The ingenuity of the engineer has given the world a transport that, used for the general welfare, can bring the promise of peace and understanding. It has shrunk the world so that men rub elbows with a frequency and complexity hitherto unknown. They will clash in painful friction or they will link arms in cooperation.

The industrial developments of specialized manufacture and division of labor have created a fundamental interdependence among raw material holders and finished goods producers. Reciprocal coordination of trade is as necessary to healthy economic life as the intake and exhaust of breathing are to body hygiene.

Just as no race, no nation, no institution, can live unto itself in isolation, no special interest can live unto itself alone. Scientific thinking cannot separate itself from the social effects of its application. Engineering and business must plan with consideration for the social welfare as well as for gods, labor, and capital.

Laboratory tests and machine operations may be specialized but the general welfare cannot be. The machine operation has significance only as it contributes to the whole product. In like manner, technical operations have significance only as they relate to the general welfare. The technical professions must become the socio-technical professions.

II.

In the second place, let us note that there are many signs of the times which indicate that men are learning to relate their special interests to general goals. In its masterful monograph on "The Domestic Economy,"[2] *Fortune* magazine points out that "the many corporate managers who so solemnly chose 'service' as their motto are not really trying to fool anybody. They are groping, if only subconsciously, for a new social principle by which their power may be made legitimate."

In his life-long purpose to develop "World Peace Through World Trade," Mr. Thomas J. Watson, President of International Business Machines Corporation, reaches beyond the limitations of ordinary business self-interest to assume social responsibility equivalent to business' social power.

"Management," said Mr. Alfred E. Sloan, Chairman of the Board of General Motors, "must contemplate the effect of its policies on the community at large—and plan accordingly." [3]

The program of the Committee for Economic Development under the guidance of Paul G. Hoffman and the leadership Eric Johnston is giving as President of the United States Chamber of Commerce are leading business to plan for the conservation of human resources as well as for the production of material goods. These signs of the times are encouraging to those whose faith looks to voluntary social development: to save our economy from dependence upon state control.

III.

Thirdly: To the engineer, as to all men, the truth applies that much is required of him to whom much is entrusted. By virtue of his great technical power, the engineer has equally great responsibility to make that power socially legitimate. A people who have conquered the earth, the sea, and the air must conquer the spiritual forces which give meaning and direction to material striving.

In this campaign, technical leadership occupies a strategic position. I may serve to bring poise and balance to a world that is prone to follow science as the children of Hamlin followed the Pied Piper.

Much of the gross secularism of our time has its roots in the ethical relativism which conditions so much of our private living and public thinking. This fickle lack of standards which characterizes so much of public appeasement is directly antithecal to the technical precision of science and engineering. The revolt against the principle which favors the so-called "realistic mind," which glorifies "individual self-expression," which approves "expediency" in public affairs, is ethical anarchy. It is the trend which, according to Alfred Noyes, has brought our civilization to "The Edge of the Abyss."

The universality of quantitative measurement, the reliability of physical properties, the habit of proving and checking calculations—all properties of the technical man must be interpolated into human engineering. Here is a challenge which holds the opportunity for engineering statesmanship. He who fails to meet it will remain the craftsman-technician. He who rises to the social need will fulfill the high purpose of statesmanship.

IV.

What has this to do with engineering education? It is obvious that the continued development of our technology will bring the engineer increasingly into social and administrative responsibility. The lag of human engineering behind material engineering should propose no moratorium on technology as some of the imaginative Utopians have suggested. Rather, it demands that those who have achieved so much in technical advance should give leadership in bringing the dynamo of humanity into balance with the dynamo of ingenuity.

Lest we pay too exclusive attention to him who protests that the technical man cannot attend to social considerations without diluting his science and engineering, shall we note again that the general welfare is not specialiazed. The technical man must not "draw a circle and shut him (the social scientist) out" crying "heretic, rebel, a thing to flout." No, he and love must have "the wit to win . . . draw a circle and take him in." Here is a challenge to leadership. Rather than selling science short, hospitality to social problems consequent of scientific advance will tend to assure the social stability of technology.

Engineering education is beginning to recognize the advantages of building a teaching and research department into a cooperative working synthesis of the scientists, mathematicians, and engineers. Should we not make the circle complete and bring the social scientist into the partnership?

An analogy to this proposal is found in the growth of industrial design. Not long ago, a famous manufacturer held the policy that he cared nothing for the appearance of his cars if large masses of people could buy them. Within twenty years, this policy had shifted so radically that beauty was central in advertising copy for that manufac-

Please turn to Page 16, Column 1

[1] Hazen Conference Lectures, Ansilomar, California, August, 1936.
[2] Supplement to *Fortune* Magazine, December, 1942.
[3] *Ibid.*
[4] "The Edge of the Abyss," *Fortune* Magazine, October, 1942.

KILLED IN ACTION

SGT. PILOT GEO. B. SANDERSON, R.C.A.F.—Graduated in 1934 in Commerce—starred in English rugby, golf and running. Was an efficiency expert with the Gloucester Aircraft Company before joining the R.C.A.F.—Ph.D. in Economics at the U. of London, England.

W/O DAVID GRAHAM (2nd Class)—On active service over Germany.

F/O GILBERT W. M. BRERETON, R.C.A.F.—Killed in action piloting an R.A.F. bomber overseas.

CAPT. JOHN A. WILSON, Seaforth Highlanders—Killed in Italy.

LIEUT. JOHN KENNETH HENTIG, Seaforth Highlanders—Killed in action in Italy. B.Com. 1935—Prominent in the Junior Board of Trade and Point Grey Golf Club.

WOUNDED IN ACTION

CAPT. JOHN J. CONWAY—Seriously injured in Italy—B.A. 1935.

LT. ALLEN COE—severely wounded in Italy—Was a member of the C.O.T.C. at U.B.C. and was staff photographer on the *Ubyssey*.

LT. TED CRUISE—Wounded in Italy—in the Westminster Regiment.

CAPT. MALCOLM BROWN—Armored Car Regt.—Seriously wounded.—B.A. 1939.

MISSING IN ACTION

F/O DON ROBERTSON, R.C.A.F.—Graduated from Pearce, Alta., from the Air Observer School, as the youngest member of his class, with second highest honors. Has been overseas as navigator with a night bomber squadron—was prominent on the campus in sports.

WO2 JACK MORRITT, R.C.A.F.—Missing after air operations overseas.

FLT. LT. J. P. "PAT" FLYNN, R.C.A.F.—Missing on air operations after going over Germany—was a member of the Thunderbird basketball team which won the Dominion championship in 1941.

WO1 DONALD M. ROBSON, R.C.A.F., New Westminster—Missing after air operations as a bomber pilot.

WO R. B. "ROD" McMILLAN, R.C.A.F.—Missing in action overseas—a navigator. Rod was a well-known soccer player.

F/O DUNCAN MacFAYDEN, R.C.A.F., is listed as missing. F/O McFayden left University in January, 1942, his graduating year in forestry, to join the R.C.A.F. He had already obtained his Bachelor of Commerce degree. He was born in McBride and attended schools in Prince Albert, Ottawa, Kamloops and New Westminster, graduating from Lord Byng High School here. While at U.B.C. he was musical society president.

F/O R. D. TAYLOR, Ap. Sc. '44, has been listed as missing overseas in the invasion operations. F/O Taylor was affiliated with Delta Upsilon fraternity.

JOHN E. STOREY, Lieut. (E.), R.C.N.V.R., was the only son of Lt.-Cmdr. (E.) and Mrs. G. T. Storey. He was born in Victoria, B.C., May 3rd, 1917, but received all his education in Vancouver. He attended General Gordon School, Kitsilano Junior High, and was an honour student at Vancouver Tech. He graduated with the 1941 Class, U.B.C., receiving the degree of B.A.Sc. in Mechanical Engineering.

Joining the R.C.N.V.R. as Prob. Sub-Lt. in February of that year, he was called to active service immediately upon completing the University exams and left for King's College, Halifax, for three months' training.

In September, 1941, he was posted for service with the Royal Navy and given an appointment as Sub-Lt. (E.) on the cruiser H.M.S. *Glasgow*, with instructions to join her in Singapore. On reporting to Naval Authorities there, he was ordered to proceed to Ceylon, and from there across India by train, to Bombay, where he finally joined the ship just prior to the Japanese attack on Pearl Harbour.

The following eight months were spent in strenuous activity around Singapore, East Indies, Coral Sea, and Indian Ocean. Due to damage from enemy action the ship was sent, via South Africa, to U.S.A. for repairs, and Sub-Lt. Storey returned home on leave, later receiving an appointment as Engineer Officer of the Minesweeper H.M.C.S. *Ignonish*, engaged in patrol duties on the North Pacific.

In April, 1943, he was appointed to the East Coast, promoted to Lieutenant, and given charge of machinery of the Minesweeper H.M.C.S. *Red Deer*, doing convoy and patrol duties on the North Atlantic.

In November, 1943, he was sent to an Eastern shipyard to stand by the building of the Frigate H.M.C.S. *Valleyfield*, and when the ship went into commission was appointed Engineer Officer in charge of machinery.

The H.M.C.S. *Valleyfield* proceeded on convoy-escort duty to and from Great Britain and was torpedoed and sunk with considerable loss of life at midnight on May 6th, 1944.

PRISONERS OF WAR

F/O CAMERON MADDIN, R.C.A.F.—In a temporary camp near the Rhine River in Germany.

SGT. MICHAEL G. McGEER, R.C.A.F.—In Germany.

EUGENE LOPATECKI—Interned in Sumatra Camp, Netherlands East Indies—B.A. 1938, M.A. 1939. A chemistry graduate—was appointed to a rubber plantation in Malaya in June, 1941.

F/L DANIEL B. QUAYLE, R.C.A.F.—From Ladysmith, Vancouver Island, B.C.

W/C C. A. WILLIS, R.C.A.F.—Previsously missing, now prisoner of war.

B. C. MEN IN SERVICES

P/O ALAN BREMNER, R.C.A.F.—At A.G.T.S. at Calgary.

P/O LESLIE S. PARSONS, R.C.A.F.—Now stationed at Pat Bay as a navigator.

P/O EDWARD McDONNELL, R.C.A.F.—Serving overseas.

SPR. GEORGE J. SMITH—Serving overseas with the Royal Canadian Engineers.

LT. STANLEY G. PATTERSON—B.A.Sc. with honors in 1943—serving with the Royal Canadian Ordnance Corps, Pacific Command.

LT. LAWRENCE PATTERSON—B.A.Sc. with honors in 1943—serving with the Royal Canadian Corps of Signals overseas.

SUB-LT. (E) W. H. GOODWIN, R.C.N.V.R.—Took a special course at H.M.C.S. *Stadacona*—B.A.Sc. 1943.

LS ROBERT MacDONALD, R.C.N.V.R.—Serving overseas since 1943.

LT. E. R. M. FLESHER, Canadian Armored Corps—Serving overseas—B.A. with honors, 1940.

LT. J. H. COLLYER, R.C.N.—Is aboard H.M.C.S. *Prince Henry*—is on a R.C.N. cruiser and landed soldiers on the French invasion coast.

AWARDS

P/O ELMER BARNES, R.C.A.F.—Serving overseas as a Navigator.

W/C D. F. MANDERS, R.C.A.F.—Was made a Member of the Order of the British Empire in the King's birthday honors list. B.A. 1939—He is one of three Canadian flyers who invented a two-channel ground-to-air transmitter now used by the R.A.F.

F/O CHARLES "CLEVE" CUNNINGHAM, R.C.A.F.—Recently awarded the Distinguished Flying Cross for courageous action in sinking a Nazi U-boat off the coast of Iceland. Was well-known at U.B.C. in sporting circles.

LT.-CMDR. GORDON W. STEAD, R.C.N.V.R.—Awarded a bar to his Distinguished Service Cross.—Now stationed at Halifax.

COL. PERCY M. BARR, U.S. Army Air Corps—Intelligence in Italy.—Awarded the LEGION OF MERIT for extraordinary fidelity and essential service.—B.A.Sc. 1924.

S/L HOWIE D. CLEVELAND, R.C.A.F.—Awarded the D.F.C.—The citation read: "This officer is an extremely efficient flight commander whose example of courage and determination has proved most inspiring. He has completed very many sorties."—He was first reported missing and then was found to be interned in Sweden. However, he has since returned to England.

S/L RALPH MANNING, R.C.A.F.—Awarded the D.F.C. for sinking an Axis tanker in the Mediterranean in October, 1942, and torpedo bombing of the German cruiser *Prinz Eugen* in May of 1942.—He is well into his second year of operations in the Far East.

COL. A. M. BROWN—Awarded the O.B.E.—Is at present stationed in England. Was a former partner of Maj.-Gen. Victor Odlum, Canadian Ambassador to Chungking.

NEWS IN GENERAL OF THE SERVICES

SGT. DONALD F. McLEOD, R.C.A.F.—Recent graduate from Air Observer School at Chatham, N.B.

S/L "HUNK" HENDERSON, R.C.A.F.—A prisoner of war in Germany since 1941, writes that Canadian internees are enthused over news of Allied developments which filters into camps. He has recovered from his leg injury, and now walks six miles a day.

F/O R. G. CROSBY, R.C.A.F.—Missing four months in enemy territory but returned to England. B.A.Sc., 1939.

F/O J. D. PENN McLEOD, R.C.A.F.—He is writing off economics examinations for the Inter B Commerce degree of London University—has been a prisoner of war since May, 1943.

F/O ARCHIE PATON, R.C.A.F.—He was forced down with his crew in the North Sea after a trip over Germany. After three hours, they were rescued.—B.A. 1941.—He is a former editor of the *Ubyssey*,. He is a navigator with the Moose Squadron.

LT. C. J. HILL and LT. CMDR. L. S. KYLE, R.C.N.V.R.—Manned landing craft that ferried the first Allied troops to the Normandy beachhead. Kyle commanded a flotilla of Canadian vessels which teamed up with the United States Navy in beaching troops during the invasion.

F.O. CLARENCE D. SIBBETT, R.C.A.F.—Shot down a German aircraft near La Havre while on patrol over France—also shot down a Dornier 217 in a raid over London during March.

P/O GORDON L. BELL, R.C.A.F.—Received his navigator's wing recently at Winnipeg.

LT. PETER J. McTAVISH, R.C.N.V.R.—Was navigator on the destroyer *Gatineau* when it, along with other Canadian escort warships, forced a German submarine to the surface and destroyed it in a recent North Atlantic action. He was also on the *Skeena* when she destroyed an enemy submarine in the summer of 1942. He graduated in Commerce in 1941.

S/L LAURENCE MEREDITH, R.A.F.—Has been appointed to Lord Louis Mountbatten's staff to serve in Ceylon at the present. He graduated in Arts in 1929.

BRIG. GEN. NOEL D. LAMBERT, Deputy Quartermaster-General of the Canadian Army and a U.B.C. engineering grad., has returned to his civilian position of general manager of Northern Construction Co. and J. W. Stewart Ltd.

S/L R. E. CLINE, R.C.A.F.—Won the D.F.C. for meritorious service while a member of the crew of a plane which, in conjunction with naval forces, almost totally destroyed an enemy convoy.—He has also been awarded the Africa Star and Service Medal. He will train for a pilot after two and a half years as an observer.

LT. THOS. E. LADNER, R.C.N.V.R.—One of nine members of the R.C.N.V.R. to win mention in despatches. This is the third time he has been mentioned—he was previously cited for "gallantry in attack on an escort tanker," and "for bravery in an attack on the enemy while serving in M.G.B.'s." He received his B.A. in 1937.

P/O J. S. BYRN, R.C.A.F.—Following in his father's footsteps when he received his wings as Macleod, Alta., in April. He left U.B.C. to enlist.

F/L M. K. PICKARD and F/O H. S. HOSKINS, R.C.A.F.—Back in Vancouver after serving overseas. F/O Hoskins will instruct at Boundary Bay. He received his B.Com. in 1940.

FLT. LT. ROBERT A. HAYWOOD, former Varsity Rugby player and a member of the Commerce class, shot down a Messerschmitt 109 near Evreux, France, early in June.

P!O DAVID G. CUMMING, R.C.A.F.—Recently promoted to the rank of P!O from Warrant Officer while serving overseas.

LT. GEORGE MACDONALD SCHUTHE, R.C.N.V.R.—Graduated recently from a navigation course at an Eastern Canadian port. Mentioned in despatches "for displaying skill and devotion to duty in carrying out hazardous mine recovery operations," he has had 15 months' sea time to his credit serving aboard three sub-chasing Fairmile M.L.'s. He was on the French Merchantman *Lisieux* when she foundered in the North Atlantic nearly three years ago. The crew was picked up after 22 hours in open lifeboats.

LT. EDWARD H. MAGUIRE, R.C.N.V.R.—Is commanding officer of the Royal Canadian Navy minesweeper H.M.C.S. *Milltown*, one of the minesweepers which cleared the sea during the invasion. He has had three and a half years' sea time, having served in two Royal Navy corvettes before being appointed to a command course in Canada and to his present command. He got his B.A. in 1937.

LT. ROBERT KILLAM, LT. CHARLES CHAFFEY, LT. JOSEPH ADAM, LT. VERNON BARLOW, LT. ROBERT SMITH, all of the R.C.N.V.R., manned torpedo boats on D-Day—these boats defended the invasion armada—they guarded invasion lines open to France for supplies.

THE ENGINEER - STATESMAN

Continued from Page 13

turer's car. The esthetic urge in the people had won out.

Another illustration of the interdependence of technical and human factors is found in the general practice of manufacturers who have field men from sales and service constantly reviewing and criticising mechanical design. Modern business practice requires a place for the buying public at the engineering conference table.

Now we enter a new period in which the old slogan, "The public be damned," is replaced by the slogan, "The public be served." The general welfare is more than a constitutional phrase. There is a ground swell in the thinking of men which, taken at the flood, leads on to a better world.

The future is to those who learn to relate their special interests to the general welfare. Professional education will stand or fall in the eyes of the public, the support of patrons, and the attendance of students to the extent that it learns to RELATE its specialties to general ends and to teach its students to PARTICIPATE in the general welfare.

—From *The Journal of Engineering Education*, Feb., 1944.

† Obituaries †

BERT F. SMITH, B.S., Min.E. (Idaho), Mem. A.I.M.E., M.C.I.M., Manager of the Premier Gold Mining Company, died suddenly at Premier on June 13th. Though born in England, Mr. Smith's education was received in the United States and his early mining experience was gained while in the employ of the American Smelting and Refining Company. In 1920 he joined the Premier Company as Assistant Manager and was appointed Manager in 1935. He will be greatly missed by his mining associates.

P. W. W. BELL, R.M.C., died recently at St. Joseph's Hospital, Victoria, at the age of seventy-one. He had been in ill health for the past eighteen months. Born in Port Hope, Ontario, his early engineering work was with eastern railway companies. From 1899-1901 he served in the South African War and later carried out various civilian railway works in South Africa. He returned to British Columbia in 1912 and joined the Department of Public Works. In 1916 he went to China on railway work for the Pacific Construction Company. Following this he carried on a private practice for a few years but rejoined the Department of Public Works in 1923. At the time of his retirement in 1942 he was District Engineer for Victoria.

Travellers, Etc.

MISS ELIZABETH ANN SCOTT—To Oklahoma for the summer.—B.A. 1944.

DR. MURIEL E. HIDY, associate professor of Economics at Wheaton College at Norton, Mass., visiting her parents in Vancouver. She graduated from U.B.C. in 1927 with first-class honors, and was awarded the Antiquarian Fellowship at Clark's University, Worcester, Mass.

PHYLLIS BISHOP will go to Toronto, Endecott, N.Y., and New York City. She was chosen with four other Canadian University co-eds to attend a series of system service classes to be conducted in the above-mentioned cities. She is the first B.C. girl to receive the distinction of being chosen. After her course is finished, she will return to Vancouver to represent the firm sponsoring her. She received her B.Com. 1944.

SECTION OFFICER VALERIE ROBINSON was one of the initial group sent to Florida for specialized training under an Army Air Corps scheme. She is stationed at Western Air Command at present, a member of operations department. She was the first U.B.C. student to join the W.D., R.C.A.F.

DELEGATES TO QUEBEC MEETING, MAY 24-26
Left to Right, Back Row: Col. C. C. Lindsay, J. B. deHart, Dr. A. E. Cameron, Dean R. A. Spencer, H. C. Anderson. Front Row: M. J. Aykroyd, W. P. Dobson, P. Burke-Gaffney, Major M. Barry Watson, A. D. Creer.

Left to Right: P. Burke-Gaffney, J. O. Martineau, H. C. Anderson.

Annual Meeting . . . Dominion Council of Professional Engineers

The Annual Meeting of the Dominion Council of Professional Engineers was held at the Chateau Frontenac, Quebec, on May 24th-26th. Representatives from the various Provinces were:—

W. P. Dobson, Ontario, President.
P. Burke-Gaffney, Manitoba, Vice-President.
Dr. A. E. Cameron, Nova Scotia.
G. G. Murdoch, New Brunswick.
Col. C. C. Lindsay, Quebec.
Dean R. A. Spencer, Saskatchewan.
J. B. deHart, Alberta.
H. C. Anderson, British Columbia.
Major M. Barry Watson, Secretary-Treasurer.

Mr. M. J. Aykroyd, President of the Ontario Association, and Mr. A. D. Creer, Registrar of the British Columbia Association were present as obeservers.

The major topic of discussion was the effect of Order-in-Council P.C. 1003 on the employed engineer. President Dobson reported on the ruling of the Wartime Labour Relations Board following a deputation representing not only the Professional Associations, but the voluntary engineering and allied societies. The ruling was as follows:—

"For purposes of the regulations, persons employed in a professional capacity shall be deemed to be employed in a confidential capacity, with the Board reserving the right to review its decision in six months."

The following resolution was passed unanimously:—

Whereas the consensus of opinion of the delegates here assembled is:—

1. That it would have been preferable if conditions were such that it would not be necessary for professional engineers to group themselves together for their own protection and advancement;

2. That conditions being what they are, something must be done for the welfare of the professional engineers, engineers-in-training and students of engineering throughout Canada.

3. That professional engineers in the normal practice of their profession occupy a position between labour and management; therefore, in order to serve the best interests of both groups, it is imperative that they be not identified with either labour or management.

Be it therefore resolved:

(a) That the existing provincial professional engineering associations and corporation should immediately seek from their membership the necessary authority to act for them in matters affecting the salaries and welfare of their registered members, engineers-in-training, recorded members, students and juniors.

(b) That whereas these organizations are not now legally empowered to assume such authority, they should take the necessary steps to have their charters or acts amended to that end.

(c) In those cases where direct action is not possible and legislative amendment is not feasible, that a separate organization sponsored by the provincial associations or corporation should be established for this purpose.

Be it Further Resolved:

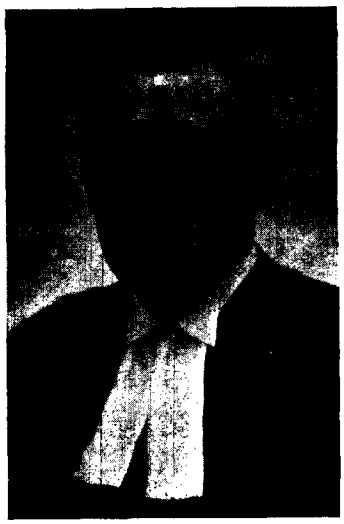
That pending the granting of such necessary authority to the provincial associations or their duly constituted organizations that exclusion from the provisions of P.C. 1003 be continued and that a request be made for a supplementary order-in-council granting sole rights to these associations or their duly constituted organizations to negotiate agreements affecting the salaries and welfare of professional engineers, engineers-in-training and engineering students where these are engaged in the work of their profession.

The Council is unanimous in the suggestion that when submitting this proposal to the membership of each association that the latter should be informed that there will be additional financial obligations involved in this undertaking.

Among other items discussed were the following: Engineering Education; Admission of Foreign Engineers; and Post War Reconstruction Plans.

In view of the negotiations with the Government as to the Wartime Labour Relations Act, it was unanimously agreed that the President, Mr. W. P. Dobson, and the Vice-President, Mr. P. Burke-Gaffney, should continue in office for another year. The 1945 meeting will be held in Alberta.

Editorial Views



SOMETHING NEW

A Vancouver daily has editorialized recently on the advisability of establishing a School of Chinese Studies on the campus. With well-reasoned logic the editorial points out that now is the time for Vancouver to think about truly becoming the Gateway to the Orient. When the War is over, it would appear that there are tremendous possibilities for expansion of trade in the Orient and British Columbia is Canada's nearest area to the Orient. Further, says the editorial, the establishment of such a faculty would not be overly costly since much of the staff and equipment is already present in Vancouver.

The Chronicle is not necessarily advocating a School of Chinese Studies, but the reasoning behind such a proposition is a sound one. The University of British Columbia is sorely in need of a progressive attitude towards education in this province. There has been far too much fear of venturing into new fields and the result has been that our University is getting away behind more far-seeing institutions.

It is true that monetary considerations have been our major handicap but there are many instances where the chances of overcoming the financial barrier are more than good. A law faculty, for example, would not be extremely costly since there is present in the province a large legal body whose support could be enrolled. Elsewhere in this issue will be found news of a gift of ten thousand dollars put up by the druggists of this province to help the setting up of a pharmacy course at the University. A Physical Education faculty does not present insurmountable monetary barriers.

There are some varied types of educational facilities that could be offered, even if only in a small way, if the University really set itself out to offer them. What is needed is a desire on the part of the University governing bodies, and of the Provincial government, to provide these facilities.

Instead of this desire the policy has been one of concentration of a few formalized fields. Even in these success has by no means been great. Some of our faculties are so badly understaffed or under-equipped as to make their courses useless. Only in recent years has the University been able to offer more than a smattering of a Commerce course for those men who might well become the business leaders of tomorrow and even now the course is by no means complete.

The University must come to realize that it is living in a world of wide educational demands. We cannot dare concentrate our higher educational facilities on strictly academic subjects. They are all well and good in their place and in their proper proportion but we must be ready to train our young men and women in the fields in which they are to earn their livelihood.

This does not mean that we should adopt an unrestrained course of setting up innumerable small faculties. The results of such would prove useless. Nevertheless there is room—and much room—for expansion in a far-sighted way and for a realization that the world of tomorrow is to a large extent a product of what we teach our young people of today.

THE ENGINEERS' VIEWPOINT . . .

When a man relinquishes control of his own affairs he naturally and automatically becomes controlled by others. In time he is dominated by others. He has lost his individuality. He becomes only a part of a machine. He has lost his freedom. The road to freedom is paved with individual initiative; with individual responsibility.

Today the tendency throughout the world, and, we believe, particularly in Canada, is to take from men that individual responsibility and place it with some central body of authority. We find men abrogating their rights to Union Officials. We see small businesses under the thumb (and usually a very heavy thumb) of a huge octopus. In the realm of big business we have world-wide cartels. But what appears to be the most dangerous feature of this modern trend is that it has crept into our body politic.

Under the disguise of efficiency or with the excuse of wartime emergency, the Canadian provinces are slowly but surely handing their rights to the Federal Government at Ottawa. Certain interests are openly advocating more centralized control in the government of this Dominion. Their chief argument is that there should be more uniformity in the laws of the nine provinces. But uniformity should not of necessity mean central control. In fact, there is no uniformity of natural conditions in this vast country, and the idea of uniformity, therefore, should be tempered with the local conditions and local needs. Only the various provinces themselves can successfully cope with these conditions.

We bring these thoughts to our readers because we believe it imperative that the subject be openly discussed by men who have the country's interests at heart. As engineers we know the absurdity of a top-heavy structure and a weak foundation. The strength of any structure is not controlled at the top. It is the foundation that is important. If the foundation is sound the top is likely to take care of itself. The foundation of this Canada of ours is you and I. How good are we? How sound is our thinking? Do we think at all, or are we just parrots relaying somebody else's gibberish, or "believing" in some one else's belief?

These are pertinent questions. They are questions that you and I must face fearlessly lest we wake up one morning and find the central power so infinite that we no longer have the privilege of expressing our thoughts.

Where control is in the hands of the few, the normal functioning of democratic methods can be balked and harrassed at every turn. Orders in Council, bureaucracy, Special Committees with powers to act—these all tend to stifle the voice of the people. It is but a short step then to lobbying; to control by minority, pressure groups with personal axes to grind.

We suggest that the extreme view of any subject is seldom, if ever, the correct perspective. A measure of wise control is naturally necessary, but it is only wise when it is performing the will of the controlled. Remote control cannot be in touch with that will of the people. Our civic and provincial authorities are necessary, and it is our belief that we should guard zealously our local rights of government. We are going to see still more forays on our provincial and civic sovereignty, and it is for us to analyze the situation and make our stand on the question.

The question, then, is: which is the more democratic—centralized power or decentralized authority? Can we in this Dominion prosper by relinquishing control of most of our own affairs to a centralized few at Ottawa, or should we insist on our heritage? Can Ottawa really get a true acquaintance of Western needs, and would Ottawa do better for us than we can do for ourselves?

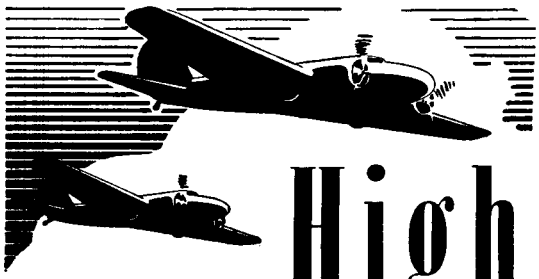
We all want a united Canada. Union is strength and strength means power—power to obtain what we want as individuals. In fact it is only insofar as that individuality is respected that the union becomes a success. The British Commonwealth of Nations is unfolding as a possible blueprint of a new world order, but if the rights of the respective members of that commonwealth were encroached upon, the whole structure would fall.

It is equally true in the smaller sphere of the nation itself. The provincial field of taxation has been taken over almost lock, stock and barrel by the Dominion Government. Ottawa in turn doles out to the provinces scanty funds for local needs and local development. The moment a man or community of men become economically dependent on others, that man or community have become indeed abject slaves. We suggest, therefore, as a basis for our approach to the subject, "Centralization or decentralization," that we stand pat on our economic rights. Only thus can we maintain our liberty of thought and action.

Vested interests—vested powers are not the friends of the common man. Whether in the industrial, commercial or political world, we voice the belief that we are travelling too fast along the road of centralized power. In some business and industrial quarters far-sighted men at the helm have realized this fact, and are, as quickly as possible, travelling the other way.

Civic rights, once they are relinquished, are very hard to regain. When the war is over the British North America Act will come up for discussion. It may need some revision to bring it up to date, but it will call for constant vigil on the part of every one of us if we are to retain our civic and provincial rights—fought for and handed down to us by our forefathers.

This question is a challenge to all, but particularly to the scientific minds of technical men, who, when they build, know how to build well. An engineer is truly a better engineer for being interested in the vital problems of his day and generation, and for being willing to contribute toward their solution with orderly, scientific thinking.



The Physiology of High Altitude Flight

By FLIGHT LIEUTENANT W. C. GIBSON

Editor's Note: Bill Gibson is one of the University's greatest "boosters." He has travelled extensively in England, Spain, Russia, and the United States. Currently Flt. Lt. Gibson is campaigning for the establishment of a Medical Faculty on the campus and also a school of public administration for professional men. He is associated with the No. 1 Clinical Investigation Unit, R.C.A.F., Toronto. For the interest of our readers we print herewith part of one of the lectures on high altitude flight that Bill has been giving across Canada. This material is published by permission of R.C.A.F. authorities.

* * * *

The three major physiological problems of high altitude flight are anoxia (or oxygen starvation), decompression sickness (or "bends"), and frostbite. They are today the chief causes of failure in carrying out assigned flying missions at altitudes above 25,000 feet.

One is often asked why it is necessary for aircrew to fly at altitudes up to 40,000 feet where the physiological risks involved are reputedly as great as the dangers of enemy action at lower levels. It should be made clear at the outset that by persistent and pooled research by physiologists, engineers, and clothing experts, it has been possible to overcome the hazards of high altitude flight in a very effective way. High altitude flying can be shown to be safer than any other type when the equipment so laboriously perfected in laboratories is used by aircrew strictly according to the rules laid down. The stratosphere exacts a grim price from those who fail to adhere to the rules.

The values of high-altitude flight may be briefly enumerated as:—

(a) Protection from anti-aircraft fire, which now exceeds 30,000 feet.

(b) Protection from unpredictable weather hazards on long missions, such as ice forming on the wings. To take an illustration from the commercial field: A survey was made in the United States to determine at what altitude so-called "Stratoliners" would have to operate in order to fly transcontinental schedules daily, regardless of the weather. It was found that an altitude of 20,000 feet would permit "overweather" operations 90% of the time. By going to 30,000 feet, an insignificant advantage was to be gained.

(c) Protection from interceptor craft.

(d) For properly designed aircraft the optimal speed at 40,000 feet is just twice that at ground level, due to the decreased density of the atmosphere at great heights. In other words, long bombing missions can be accomplished more rapidly at high altitudes.

(e) If a pilot is equipped for high altitude flight he can select that level at which he has the help of a favourable wind, thus increasing speed and decreasing fuel consumption.

(f) Finally, reconnaissance planes, capable of flying above 40,000 feet, can carry on their important photographic work unmolested. Carrying no armament whatever, they can streak across the sky, photographing battle lines, bombed areas, or fresh targets.

ANOXIA

(Anoxemia, altitude sickness or oxygen starvation)

The problem of anoxia is an old one. It determines the outcome of battles today just as it did in ancient times. Marco Polo, travelling across the high plateaux of central Asia, complained thta there, "fire is not so bright nor so warm as in other places." The Chinese attributed their mountain hardships to "pestilential exhalations from the ground." Thousands perished of anoxia and cold in the conquest of Peru and of Chile, about the time Jacques Cartier landed in Canada.

The history of the way in which we gained our present understanding of anoxia is particularly interesting for medical men, since the first balloonists were doctors—and to balloonists we owe a lot for their early attempts to find out the composition of the atmosphere in which we now fly so freely.

The first human being to go up in a balloon was the French surgeon, de Rozier (1783). A Boston physician, John Jeffries, flew a balloon from Dover across to France soon afterwards. Edward Jenner startled the quiet folk of Gloucestershire with a hydrogen balloon for a time. James Tytler, a Scottish surgeon, was the first man to go up in a balloon in the British Isles. George Fordyce, the London physician, sent up hydrogen balloons with a motley crew composed of a pigeon and a cat, a dog and an Italian! These ascents all had as their object the gathering of information on meteorology and on the effects of high altitudes on living creatures. They are to be sharply disitnguished from the later buffoonery in which showmen took up tigers and wedding parties in balloons!

In the evening of January 30th, 1804, a Russian otologist, Sacharov, made a very useful balloon ascent from St. Petersburg, in company with a distinguished French pilot. Sacharov described the dullness and numbness in the ears so well known to flyers today from barometric pressure changes. He accurately measured the reflection of his voice from the earth, his pulse and respirations, and he fllled evacuated tubes with air at varying altitudes up to 8,000 feet. By 10:30 p.m. he was feeling so well that he wanted to go on all night. When the pilot refused to concur in this, Sacharov, with a disregard for January weather found only in Russians, took off his fur coat and threw it out of the balloon, in the hope of gaining height. But the pilot, obviously less affected, promptly brought the balloon down.

Not all pilots have had the sense to come down as this one did, while still able to make sensible decisions. In 1875 a balloon ascent, in which two physiologists died, shook

the French nation as if a bomb had struck. Two well trained aeronauts had died while ascending to an altitude of 28,000 feet. A third, Tissandier, landed in a state of collapse, but soon recovered. The story of what happened on that tragic ascent, as contained in Tissandier's notebook, is so typical of what happens even today, wherever aviators are stubbornly skeptical of the value of oxygen, that I shall dwell for a moment on the relevant details of the flight.

The most striking thing about the whole tragedy is that two men died from lack of oxygen, and yet when the balloon landed, the leather oxygen bags contained "the larger part of the oxygen that had been put into them" originally.

The three balloonists took ofl knowing that they had a dangerously inadequate oxygen supply. Against the advice of Paul Bert, the great French physiologist, they took off, resolved that they would use the oxygen sparingly, and only when absolutely necessary. Two of them died before this necessity occurred to them—anoxia's onset was, and still is, so insidious.

Their oxygen was breathed from a short tube stuck in the cork of an ordinary laboratory "wash bottle." Oxygen from the leather storage bags entered the wash bottle by a tube which bubbled it up through water "flavored with benzoin"—to take away the odor of the leather bags. With no mention of the nose being shut off, it is possible that the balloonists breathed in the surrounding air as well as their oxygen, even when they did use their apparatus. Water, even "flavored with benzoin", freezes at about —3° C., and since the balloonists spent two hours at —8° C. or colder, it may be that their oxygen bubbler system froze up—just as some poorly designed oxygen masks do today.

At 14,000 feet the French balloonists took a few token whiffs of oxygen to reassure themselves that their oxygen apparatus would work. But a false sense of security was even then overcoming them, and their fatal mistake, too often repeated today, was made at *14,000 feet*—for there they set aside their ozygen until they should "really" need it. At 23,000 feet Tissandier awoke to the fact that his companions were motionless. He later wrote, "Numbness had seized me; my hands were cold and icy. I wanted to put on my fur gloves; but without realizing it, the action of taking them from my pocket demanded an effort which I could no longer make."

Though Tissandier managed to write a few more notes, he had no recollection of his having written them when he studied his records as ground level. As his handwriting became less legible, it became repetitive—both classic signs of anoxia.

Anoxic incidents of this type occurring in military aircraft today have brought near tragic results of which we know, and probably fatal results of which we shall never know.

Tissandier summarized the situation in a nut-shell when he said, "One does not suffer at all; on the contrary. One experiences inner joy—one becomes indifferent; one no longer thinks of the perilous situation or the danger; one rises and is happy to rise." He continues, "Soon I wanted to seize the oxygen tube, but could not raise my arm." Soon all three were unconscious.

For a brief moment it seemed as if Fortune were with them, as the balloon began rapidly to descend. With the decrease in altitude and the tossing of the balloon, one man regained consciousness. He threw out ballast in order to stop the descent, and then in a desperate effort threw over instruments, and the blankets which were to keep the three warm. This was the final error, for it was then —8° C. and the altitude was 21,000 feet. Up went the balloon again to an unknown height, to return to the ground 1½ hours later with two men dead, and one in a faint.

Thanks to the labours of Paul Bert and other physiologists, the reasons for "altitude sickness" have been made clear to us. He showed that decreasing the barometric pressure had no effect on a man if he breathed sufficient oxygen. It was the lack of oxygen in the upper atmosphere which killed men, not the decreased barometric pressure as such. This seems a commonplace to us today, who laugh at the evil spirits and "pestilential exhalations" once thought to be the danger. But how many of us stop to realize that at an altitude of 10,000 feet there is available only two-thirds the mass of oxygen which we enjoy at sea level, and at 16,500 feet only half as much? At 33,500 feet there is only one-fifth the sea level oxygen.

Now human beings are so constructed as to require an oxygen pressure of three pounds per square inch in the lungs at all times (i.e. one-fifth of the atmospheric pressure at sea level). The further we rise from sea level the greater must be the oxygen *supplement* introduced through a mask. At approximately 35,000 feet, where the total atmospheric pressure is only about three pounds per square inch, our respiratory intake must be *entirely* oxygen. The natural air at 35,000 feet will not sustain human life for many seconds. But a properly functioning oxygen system will make life 100% efficient at an altitude of 35,000 feet for as long as one wants to remain there. Such a system has been perfected by R.C.A.F. researchers and is available for service today wherever required.

For altitudes in the neighborhood of 40,000 feet or above, where the total barometric pressure falls to approximately two pounds per square inch, methods must be found to raise this to the three pounds per square inch necessary to support life, even when breathing 100% oxygen. As Paul Bert suggested last century, pressurized cabins and pressure suits would solve the problem, as they have done, to a large extent, in small, easily-pressurized aircraft. But the structural problem of pressurizing large bombers is still considerable. A plane built strongly enough to maintain sea level conditions inside the cabin, while flying at 50,000 feet, would never leave the ground, so heavy would it be. The future for pressure suits is not bright, due to their inflexibility and awkwardness. However, the Russians have stayed 5½ hours at a simulated altitude of 53,000 feet in pressure suits, and have flown aircraft in comfort at the same altitude with them.

A final oxygen problem of high altitude flying is concerned with parachuting from high levels. An aviator leaving his aircraft at 40,000 feet and not opening his parachute, would reach the ground in three minutes. If he opened his parachute on leaving his plane, he would reach the ground in 24 minutes; he would float for eleven minutes through the cold and oxygen-deficient air above 20,000 feet. He might, therefore, land safely, but be dead. If, on the other hand, he delayed opening his parachute, he might lose consciousness at a great height and fail to awaken in time to pull his rip-cord. In which case he, also, would be dead. Therefore, high altitude flyers are equipped with a small portable bail-out bottle, that which contains sufficient oxygen for several minutes' breathing. With this a flyer can remain conscious during his delayed jump, and can pull his rip-cord when he has left the cold and anoxic regions of the sky.

What is WRONG ... at ... The University ?

Editor's Note: This analysis and criticism of our University government together with some constructive suggestions for improvements has been prepared by a group of prominent alumni and is being released with the hope that it will foster much discussion and call forth further ideas in the interests of the betterment of higher educational facilities in B. C.

Comments and criticism will be equally welcomed. We are waiting to hear from you.

* * * *

Outmoded Constitution at U. B. C.

A bi-cameral system of government is an extremely good device to prevent things being done. The British Columbia University Act (1936) provides for a bi-cameral system of government, viz. (a) Board of Governors and (b) Senate. The other provisions regarding Convocation and Faculty Council are unimportant and in practice have no influence on University Government policy. A bi-cameral system of government has its origin in one of the flukes of history—away back in the time of Simon de Montfort (1265) when the king in calling representatives to his Great Council issued two kinds of writ, one a general writ to burgesses (whence comes the House of Commons) and another a personal writ to squires and landowners (whence comes the House of Lords).

Governmental institutions the world over have followed the British pattern on the theory that an elected body, which might reflect the popular emotions, would prevent hasty action and put a brake on social change.

In Canada the Senate has become an asylum for superannuated politicians; in the United States the constitutional division of powers is even worse. The early constitution builders of the American Constitution followed Montesquieu's adulation of the British Constitution and read into it a division of powers—Executive, Legislative and Juridical Divisions of authority—at a time when in Great Britain the Executive and Legislative functions were being co-joined in a Cabinet system responsible to the House of Commons.

This development escaped Montesquieu and the Americans, following the earlier model, set up a system of checks and balances which is nowadays a constitutional anachronism and leads to continuous obstruction. These facts are well known.

Centralization of Power

In a University there is no need for a system of government designed to obstruct educational policy and educational development or expansion.

The Board of Governors is supposed to be a finance committee, and really nothing else, while the Senate is supposed to be in control of educational policy, but this division of powers is not only obstructionist but also impossible of attainment.

It is well known that he who controls the purse strings controls the policy also. In practice, therefore, the Board of Governors controls the educational policy, the personal policy, and the public relations policy (if these do exist) of the University.

The Senate, which is much more representative, has become simply either a rubber stamp for changes in courses proposed by the faculties or a mildly suggestive body for something new, e.g. Home Economics.

Undemocratic System of Appointments

What makes the matter worse is that the majority of the Board of Governors are government appointees, appointed on a 3-year rotal system which gives the government an indirect but regulatory control over the finances and policies of the institution. It may be objected that the government does not interfere directly with the institution; it doesn't need to interfere when it controls the majority appointments to the Board.

Meager Senate Representation

The Senate representation of three members to the Board has in practice been of no importance whatever; they have never asserted an education policy which was either their own or the declared policy of the senate. In appointing members to the Board the Government has not chosen citizens of outstanding educational qualifications or those representative of educational aspirations.

Raise Appropriations, Not the Fees

They have chosen for the most part successful business men, conservative in their thinking. The Board has never shown any vision, any constructive thinking, any forwardness in promoting the University one way or another. They have followed the line of least resistance—raising fees rather than fighting to raise appropriations.

This is to be expected from Government nominees; they are not likely to attack the Government which appoints them. As long as they think of their own prestige as members of a University Board of Governors they sacrifice the prestige of the University.

The result has been that the University has become less and less democratic both in government and in spirit.

Educational Opportunity Curtailed

Increasing the cost of a University education limits its services and the opportunities it presents to the public. Equality of educational opportunity is limited by economic status, and if the policy of the University Government is to raise fees rather than appropriations it is providing educational facilities not for all who wish to avail themselves of these opportunities but for those of the middle class—the sons and daughters of the more prosperous citizens. It becomes a class and not a provincial institution.

That has been the development of the University ever since the depression slice in the University appropriations. Nor has the Board of Governors ever made an effort to fight publicly for a better deal for the institution. Apparently they have been willing to accept prestige without the responsibility of being members of a University governing body.

No Personnel Policy

This lack of responsibility, of constructive action, of forward thinking and even of ordinary awareness permeates the whole institution. For example, there is no personnel policy. Increases and promotions are both haphazard and beyond normal expectancy. Promotions are not made for length of service, personal research, personal publications, personal teaching ability, or on any reasonable criterion which one would normally associate with an institution of higher learning.

Outstanding members of the staff have gone for years without increases or promotions while others with no better training or comparative achievement and even with a shorter period of service to the institution are rewarded in preference.

How can any department function in the best interest of the University when it is operating on a temporary basis for a period of years while the head of the department is on perpetual leave of absence? This arrangement is not fair to the acting head nor inducive to the best educational services to the students.

Such a policy does not make for harmony in the institution; some men eventually get soured, feel that there is no use putting forth a special effort and take their duties perfunctorily. This lack of a personnel policy has led to the suggestion that increases and promotions should be decided by lottery—then at least all would have an equal chance!

The fault, of course, lies with the Board of Governors; their staff committee apparently assents to all changes, to all increases or promotions presented to them by their administrative officers without enquiring, but, what is more important, *without reference to a set of rules or criteria which any sound personnel policy should have.*

Senate Only a Channel

Without the tools you cannot build. Without the personnel you have not a universtiy of higher education, but merely an uninspired school for routine training.

The Senate, which is more representative and democratic than the Board of Governors, has not shown much initiative either in presenting an educational policy or in pushing. Of course, the Senate is at a big disadvantage. All its resolutions are canalised and when presented to the board may take on a new significance in the light of financial commitments or of financial policy. When so many of your ideas are stillborn you stop conceiving. So it has been with the Senate.

The President and University Government.

What is the solution? No matter what manner of a new President the University may get the governmental set-up still remains. If he is a man who is so afraid of making mistakes that he will never do anything the situation will be bad. A President should not be in a position to play the Senate against the Board, and play educational policy against financial policy; he should be as representative of the educational aspirations of the institutions as every member in it and in its government. He should not be in a position where he can be blamed for a lack of initiative or of a constructive policy if he is blocked by a bifurcated system of government and responsibility; nor should he be in a position to claim an alibi for himself by blaming his own shortcomings on the Board or the Senate.

The present system of government places a President in an ideal position for escaping personal responsibility and for assuming powers which rightly do not belong to him at all. An undemocratic system of government makes for petty dictatorship; an enlightened dictatorship may be tolerable but this does not justify it. An unenlightened dictatorship is a cancer on the institution which is designed to serve democratic needs.

The President Responsible to a Democratic Representation of the People

The President must be made amenable to democratic institutions, that is, amenable to control and to the broad policy of education in this Province; he ought to be responsible to a governing body elected on broad democratic principles, not to a body largely appointed by the hand that controls the Provincial appropriations. If he is a small man in a big job he will be made bigger than he really is by working with democratic representatives. If he is a big man to start with he will not object to working with those representing the larger purposes of the community.

The institution must be protected against the appointment of a small man by making the University a big responsibility. That in the last analysis can only be done by making the Government of the University as democratic as possible, i.e., as representative as can be of professional, education and group interests of every community, income bracket, or occupational field in the province.

Change University Act.

The time has come not only to get a new President but to get a new constitution for the University. We have the former, now to get the latter. The British Columbia University Act should be changed. One governing body should be established which would have in its own hands the education policy and the financial policy of the institution.

Enlarge Senate.

The Board of Governors should be abolished and a broad representative body after the model of the Senate should be set up in its stead. The Government could still appoint a few members to the new representative senate if it so desired but these would plainly have to be in the minority.

The finance function of the body could well be undertaken by a committee which would report ways and means to the body (or Senate) on every new proposal. In this way educational policy would be integrated directly with financial resources.

Faster Public Discussion.

Moreover, if finances should not be available for any proposed development (e.g. establishment of a law school) it would be the responsibility of the Senate to present its case as a body to the Provincial Government, initiate public discussion on the policy and obtain public support.

There has been too much hide-and-seek in the past; the public has never been fully informed about University matters—policies, finances or problems—but these should be brought into the light of public discussion. If the University policy is sound and constructive the University has nothing to hide from the public. If it wants to hide something from the public you may be sure it is wrong.

Alumni Action.

The Alumni should press, therefore, for a change in the University Constitution immediately. The opportunity is now and it may be related to the post-war educational programme for higher education and above all for the democratization of higher education.

Recommendations—Decentralization of All University Facilities.

Immediate objectives should be:—

(a) Change in the University Constitution as indicated above.

(b) The reduction of fees to a nominal amount to make equality of education opportunity a reality.

(c) A revision of curricular requirements in line with a broader educational policy for the institution, such as inclusion of a department of Human Relations (we have studied many relations during the recent century of scientific development but little attention has been paid to better ways of getting along with your co-worker, neighbor or fellow nation—witness the present war's strife between people).

(d) Provision of funds for social and economic research iether from Foundations or from special appropriations from the Government for this purpose.

(e) Dominion subsidies for higher education to meet
   (i) technical and occupational forming;
   (ii) to co-ordinate government research and University research in a wide range of scientific fields through the better use of their joint staff and equipment.

For this, due emphasis must be placed on liberal arts educational facilities, for the province and nation will need many well rounded and clear thinking men and women as leaders in the human cause of democracy to counterbalance the large number of scientific and technical personnel being trained at present.

One might add that the function of the University should be broadened out as far as possible not only into general education for the masses, but also into the promotion of the Province's resources and industrial development. Only hesitant and tentative steps have recently been taken in this direction; they have come not from the initiative of the University authorities but rather from outside necessities.

Finale.

The first two (a) and (b) above, are primary requisites for the democratization and the better government of the University. The others are ancillary but eventually necessary if the University is to fill its proper place in the life and opportunities of the Province.

Tuum Est "it is up to you" has come to mean "It is up to the other fellow—I'll pass the buck. Better our motto should be "it is up to us" and let us earnestly do something about our provincial University of B. C.

Babcock Equipment

is Serving Both Afloat and Ashore

Our over 85 years' experience and facilities unequalled in this country are producing Marine Boilers, Marine Engines, Pumps, Compressors, etc., for corvettes, minesweepers and cargo boats. Also for the Canadian War Effort on land we are supplying boilers and other equipment to generate power for vital war production industries. BABCOCK design and BABCOCK manufacturing standards ensure efficiency and dependability.

BABCOCK-WILCOX & GOLDIE-McCULLOCH
GALT LIMITED CANADA
Branch Offices
Montreal Toronto Winnipeg Vancouver

B. C. Representative

C. C. MOORE & CO., VANCOUVER

The Wartime Bureau of Technical Personnel Monthly Bulletin

University Science Students Regulations

By the end of May, out of approximately 1350 Engineering and Science graduates of the class of 1944, 1000 had been definitely placed either with the Armed Forces or in essential civilian undertakings. In this connection, it should be borne in mind that certain universities had not held their convocation exercises and quite a number of students were busy with attendance at C.O.T.C. camps. Actually, the placement of the graduating class was well advanced as compared with the previous year and this is no doubt due to the fact that it was possible to put into effect the machinery for allocating these students considerably earlier this year due to experience gained in 1943, which was the first year in which the Science Regulations were administered.

Reference to the Bureau's permit files indicates that there is no lack of openings in essential undertakings for the absorption of this year's graduates. In certain branches of engineering and science, the graduating class had been practically completely absorbed by the end of May and applications were continuing to come in for the balance.

Demand for Technical Personnel (Armed Force)

It is estimated that there are between 5000 and 6000 technical persons now serving in the Armed Forces as technical officers. In addition to those who have been placed in technical appointments, there is a considerable number serving either as officers in non-technical branches or in the ranks of the three services. It is also known that considerably more than half of the technical persons serving in the Armed Forces graduated since the war broke out. This is, of course, to be expected in view of the fact that maximum ages for entry in various capacities in the different services tend to restrict appointments and enlistments to men in comparatively low age groups.

So far as technical appointments are concerned, there has been no difficulty in securing for the technical branches of all three services such technical persons as are required from time to time.

Monthly Statistics

During the month, 1800 interviews were granted by the Bureau staff; 97 questionnaires were added to the files; and 793 permits to employ technical personnel were issued.

FAIRBRIDGE

By DOROTHY G. TAYLOR, B.A.

Editor's Note: Miss Taylor, a prominent graduate and newspaperwoman, is an Assistant Editor of the Chronicle.

That Col. H. T. Logan, Rhodes scholar and ex-U.B.C. faculty member, is doing a fine job as principal of the Prince of Wales Fairbridge Farm School at Duncan is no news to U.B.C. alumni. But an interview with Col. Logan during his annual Convocation visit to Vancouver convinced this representative of the *Graduate Chronicle* that the secret of his success lies even beyond his ability and his enthusiasm for the work being done. The principal of Fairbridge is spurred on in his achievements by a deep conviction that the training of future Canadians as provided at the farm school is one of the greatest contributions that can be made towards the successful future of this country.

To help the underprivileged child in England, at the same time enriching Canada's population by providing sound, well trained settlers, is the object of the Kingsley Fairbridge system as outlined by Col. Logan, who points out that this is a form of immigration that cannot fail in results. "We try to teach the children what is good and right," said the Prince of Wales School principal, "and how they can get a start in Canada along lines that will contribute to Canada's well-being. The work is sound in method and sound in results—and is work that can be multiplied over and over again, in every province of Canada, if the people want it."

The Fairbridge farms, established in 1909 by the late Kingsley Fairbridge, to rescue children from damaging conditions and to train them for life and work in the Dominions, are supported by private subscription in the United Kingdom as well as by grants from the British government. The British Columbia school has also for the past three years received a grant from the provincial government, and since the beginning of the war has succeeded in getting several large private subscriptions in Canada, to ease the sterling situation.

Interesting facts disclosed by Col. Logan included the information that already the total earnings of Fairbridge graduates more than balance the cost of their education. In 1942 the youngsters, both graduates and those still in training, earned more than $60,000 in wages, and have invested in excess of $10,000 in Victory Bonds. Each child has a savings account, as a saving plan is an important part of Fairbridge training. Until the age of 21, it is a rule that part of all wages received goes into the bank. At present Fairbridgians' savings amount to over $20,000.

"So you see," Col. Logan explained in this connection, "it is worth it even from an economic standpoint—and still more from a human one."

The number of children at the Prince of Wales School is now down to 124—40 girls and 84 boys. There have been no new arrivals since 1941, and a recently expected group had their sailing cancelled by the Home Office as a pre-invasion measure.

Of the 125 graduates, 45 boys and 9 girls are in the active forces, 20 being already overseas. The average age of these youngsters is 18½.

(Please Turn to Page 36)

✤ DORMITORIES ✤

We are indeed gratified to learn that organizations in this Province, other than groups closely associated with the University, are interesting themselves in the question of dormitories for the undergraduates.

At the recent Conference of the B. C. Region of the Canadian Junior Chamber of Commerce held at Penticton, the following resolution was unanimously adopted:

> Whereas the Senate and the Board of Governors of the University of British Columbia have submitted a Brief to the Post-War Rehabilitation Council asking for buildings costing $550,000.00 for dormitories for men and women;and
>
> Whereas the need for these dormitories has long been apparent in as much as it has been very difficult for students from the Interior to find suitable living quarters; and
>
> Whereas this difficulty has been further aggravated during the last four years due to the influx of war workers; and
>
> Whereas this condition has undoubtedly in many cases been the deciding factor in turning students away from the University of British Columbia to other universities;
>
> Now therefore be it resolved that the British Columbia Region of the Junior Chamber of Commerce of Canada give their strongest support to the request of the Senate and Board of Governors of the University of British Columbia and ask the Government that such dormitories be given first consideration in any building programme at the University of British Columbia.

The resolution was submitted by the Rossland Junior Board of Trade.

We hope that the action of such a representative body as the Canadian Junior Chamber of Commerce will be emulated by other organizations throughout the Province, particularly those located in communities in the Interior. We have good reason to believe that the success of our endeavours to persuade the authorities to construct such obviously necessary facilities will depend to a great extent upon the demand arising from centres and rural districts in the Interior from which students requiring such accommodation originate.

It should be the duty of all graduates living anywhere in this Province to sponsor resolutions such as this within any organization or group to which they belong. Public opinion on a broad and substantial basis must be mobilized in support of dormitories if our programme is to succeed.

Correspondence . . .

Replies and Views of the Writers on the Subject of

Collective Bargaining for Professional Engineers

June 20, 1944.

Registrar,
Association of Professional Engineers of B. C.,
930 Birks Building,
Vancouver, B. C.

Dear Sir:

Referring to your circular letter of May 19th on the subject of Collective Bargaining for Professional Engineers, I have already forwarded to you my answers to the questions set out in the questionnaire which accompanied your letter.

From casual discussion of the subject with other engineers, I find that I do not see eye to eye with some of my fellow members of the Association, and as my views are definitely against exclusion of Engineers from the provisions of P.C. 1003, it may be proper that I should record my opinion, so that the Council may know that the viewpoint in favour of exclusion, which has gained wide publicity, is not unanimous among the rank and file of our membership.

It seems to me that the Engineering Profession has become unduly disturbed over the question of Collective Bargaining, and I personally see no objection to associating myself with my fellow employees for the purpose of collaborating with our employer in matters of working conditions and general welfare.

P.C. 1003, entitled "Wartime Labour Relations Regulations," was passed by the Governor General-in-Council on February 18, 1944, as a measure in the public interest to facilitate collaboration between employers and employees "for the advancement of the enterprises in which they are engaged." These regulations are deemed necessary "by reason of the War, for the security, defense, peace, order and welfare of Canada and for the effective prosecution of the War."

According to the preamble of the Order, the regulations are made for the following purpose:—

"That employers and employees should freely discuss matters of mutual interest with each other;

"That differences between employers and employees should be settled by peaceful means; and

"That both employers and employees should be free to organize for the conduct of negotiations between them and that a procedure should be established for such negotiations."

The regulations authorize Collective Bargaining, and provide for the establishment of Wartime Labour Relations Boards, Conciliation Officers and Boards, and other machinery for the proper functioning of the provisions made.

Canada Chain & Forge Co.
LIMITED

MANUFACTURERS

WELDED CHAIN

GRANVILLE ISLAND
VANCOUVER, B. C.

The memo prepared by the Ontario Association, a copy of which was forwarded with your letter, indicates that some engineers wish to be excluded from participation in Collective Bargaining as outlined in P.C. 1003, and as an alternative urge the establishment of a Dominion-wide body composed of engineers only. In other words, it is proposed to form a National Trades Union of Professional Engineers. This appears to me a dangerous proposal, to which I am definitely opposed.

There are two statements in the Ontario memo with which I disagree and shall deal with presently, but first of all I agree that there are some members of the engineering profession who are not affected by P.C. 1003, namely, those who are classed as employers. There is a further group, the consulting engineers in private practice, who can quite well look after themselves by acting as their own bargaining agents. It is the great bulk of the members of the profession, those who are employed by Manufacturers, Contractors, Mining Companies, Public Utilities, Government Departments, Municipal Governments, etc., who are mainly affected by this order-in-council, and it is with this group chiefly that my further comments are concerned.

In the second paragraph of Article 4 of the Ontario memo it is stated that:—

"It (P.C. 1003) places engineers in a group whose interests are not their own."

I disagree with this statement. Why should engineering employees stand aloof from their fellow employees, such as accountants, salesmen, clerks, stenographers, etc., and expect treatment under Wartime Labour Relations Regulations different from that which may be legitimately desired by their fellow employees? And why should engineering employees deny their fellow employees the benefit of helpful co-operation in such matters?

Engineers as a group should have no self-interest in regard to Collective Bargaining which could not be shared to advantage with their fellow employees. Our professional interests are not directly or primarily concerned with Wartime Labour Relations, and any attempt on our part to make use of our position as a professional body, restricted by legislative enactment, to obtain preferential treatment under an exclusive form of Collective Bargaining, would in my opinion not only lose us the respect of our fellow citizens, but would destroy also within ourselves the professional spirit that we have consciously striven to cultivate during the past 25 years.

There may be engineers who do not wish to associate themselves with any of the large industrial Labour Unions, but, as far as I can see, it is not required under P.C. 1003 that they must do this. Take my own case; I have hundreds of fellow employees who belong to one International Labour Union, and hundreds more who belong to another such Union. I have joined neither, but belong to a group of non-union employees who have formed ourselves into an "Employees' Organization" under the provisions of P.C. 1003. Similar action should be open to any non-unionized group of employees of other companies.

In the sixth paragraph of Article 2 of the Ontario memo, the opinion is expressed: "that there is no reason why engineers should not bargain collectively."

As already stated, I believe it to be not only inadvisable, but indeed quite improper that registered engineers should bargain collectively as an exclusive body in matters governed by P.C. 1003. Such an arrangement would automatically confer Trades Union Status on a legalized professional group, and would constantly expose the Profession to a strong temptation to make self-interest its prime aim and objective.

Any yielding to such temptation would conflict with the philosophy of the Engineering Profession, and would be contrary to the spirit and purpose of the legislative acts which we have been entrusted to administer.

It may well be that engineers who now occupy the Council seats would scorn the idea of setting self-interest before public interest, but once a Trades Union Organization were established, we would soon get candidates running for office who would see an opportunity for pri-

vate gain, and whose ideas of professional outlook and public interest might lead the whole engineering body sadly astray.

It is the old story of the serpent in the Garden of Eden pointing to the attractive looking fruit. This particular fruit is called Exclusive Bargaining for Engineers. Is it sweet, and is it juicy? And how? But if we take it and eat thereof, we may well find ourselves faced with the prospect one fine day of expulsion from the garden of professional people.

In conclusion, just one word about the idea of still another Dominion-wide organization of engineers. We have too many as it is. After years of discussion, we decided that the Dominion Council is the logical body to represent all registered engineers nationally. That Council has made slow and steady progress. It is natural and desirable that its growth should be evolutionary rather than spectacular. If we have a surplus of money and energy to put into Dominion-wide organization, let us put such effort into the activities of the Dominion Council. But because the Government finds it expedient to set up certain Wartime Labour Relations Regulations to take care of problems between employers and employees is no reason for forming yet another engineering organization.

Let us be good citizens and make common cause with our fellow employees in this matter, just as the Government intends us to do, and let us not lay ourselves open to reproach that we made opportunity out of Wartime difficulties to jockey ourselves into a preferred position.

Yours very truly,

A. VILSTRUP.

May 25, 1944.

Registrar,
Association of Professional Engineers of B. C.,
930 Birks Building,
Vancouver, B. C.

Dear Sir:

COLLECTIVE BARGAINING

This will acknowledge receipt of your letter of the 19th inst., with two circulars:—

(1) Memorandum re Collective Bargaining.

(2) Questionnaire on Collective Bargaining.

I have just read the memorandum, and before looking at the questionnaire I would like to express my views on the whole situation. I feel that I have had better than usual opportunity of dealing with labour relations, and I would like my fellow members in the Engineering Profession to consider my views on the subject.

(1) I am very definitely opposed to professional people being represented by trades unions. There is practically nothing in any trades union set-up as it exists in Canada today which makes it imperative that a man should have any particular qualifications in order to be in the Union. I think I am safe to say that ability to pay the fee is the chief criterion for membership.

(2) The above being the case, we find our workers being organized into conflicting groups, each trying to steal an advantage over the other, and in many cases working under the terrorism of a Union dictatorship.

(3 Under condition (2) the individual worker has very little incentive to better his performance. In fact, he sometimes becomes a marked man if he produces more than a less expert fellow worker.

(4) The professions—Engineering, Law, etc.—make demands that a member shall have certain qualifications and live up to certain ethical standards.

(5) With recognition of statement (4), why should such qualified people be represented by others without qualifications?

(6) In view of the foregoing I trust that all Professional Engineers will insist that they be represented for the purpose of collective bargaining by their own profession.

(7) P.C. 1003 provides in Clause 2 (f) (i) that an employee does not include "a person employed in a confidential capacity or having authority to employ or discharge employees."

(8) In view of (7) it should be quite possible for the Society of Professional Engineers to become a collective bargaining agency even though its membership is made up of employers, those in confidential capacities, and employees not in a confidential capacity.

(9) It seems to me that the Association of Professional Engineers in this Province could get powers to act as bargaining agents, and that no segregation of membership is necessary to carry on bargaining.

(10) If you were to seek segregation you would be faced with the difficulty that a member may be an employer one day and an employee the next. He might be in a confidential capacity one day and in another category another time, and so on. The job he is holding for the time being will determine his right to participate in the bargaining on one side or the other.

Generally: With these ten points before me I think I can answer your questionnaire.

In expressing the foregoing I want you to understand that I am definitely of opinion that the profession will not be improved by any legislation that will deprive its members of initiative or accepting responsibility, and that has been very definitely the trend of Trades Unionism in this country. However, if it is imperative that a collective bargaining agency must be created then we should seek to establish it in a form that will cause least harm to the dignity and usefulness of the profession, and that is my thought in providing the answers herewith.

Yours faithfully,

W. D. McLAREN,
General Manager, West Coast Shipbuilders Ltd.

May 26th, 1944.

Registrar,
Association of Professional Engineers of B. C.,
930 Birks Building,
Vancouver, B. C.

Dear Sir:

Re questionnaire on Federal Order-in-Council P.C. 1003. This Order will automatically lapse at the end of the war, and it is folly to add more confusion to its consequences by trying to make permanent adjustments with a temporary outburst of dictatorial authority.

It would take many years to bring nineteen Professional Organizations and eight Provincial Parliaments into harmony with the Order, and the action of the Ontario Government. Let us hope the war will end much sooner.

Professional Associations should keep absolutely clear of Trades Unions. The Engineers would be permanently swamped by votes of the inferior classes of employees.

The Trades Unions are going to be told, after the war, by the returned soldiers, that their behavior in organizing war-time strikes has been a disgrace. The general public will agree with that view.

Yours truly,

E. C. THRUPP.

June 14th, 1944.

Registrar,
Association of Professional Engineers of B. C.,
930 Birks Building,
Vancouver, B. C.

Dear Sir:

I am attaching, as per your request, completed questionnaire on collective bargaining. I would, however, like to make one comment which I feel may be of some use to you.

With regard to Question 3 concerning professional men working on a fee basis. It is no doubt probable that at some time or another, the great majority of engineers are acting in the capacity of an employer with the power to hire and fire employees, either of the trades class or of the engineering class, and Question 3 having been answered "no" would, therefore, eliminate a great number of engineers.

I would therefore like to suggest that a rider to this question be added stating that all professional men working on a fee basis be excluded from the bargaining group and be deprived of their voting

ENGINEERS AND CONTRACTORS

MArine 0751

HODGSON, KING & MARBLE

1401 MAIN STREET

VANCOUVER, B. C.

COMPLETE MINING PLANTS

INTERNATIONAL TRACTORS and POWER UNITS
MANCHA STORAGE BATTERY LOCOMOTIVES
EIMCO LOADERS
HOLMAN MINING EQUIPMENT
PETTER DIESEL ENGINES
WHEAT ELECTRIC MINER'S LAMPS

*

B. C. Equipment Co. Ltd.

Head Office
551 Howe Street
Vancouver, B.C.

Warehouses
Granville Island
306 Industrial St.

MODERN
ENGINEERING CO.

W. F. KENT

1695 West 5th Avenue

Vancouver, B. C.

*

SUPPLYING AIRCRAFT
TOOLS AND PARTS TO

BOEING AIRCRAFT OF CANADA

C. P. FOSTER & COMPANY LTD.

DEPENDABLE DRAWING MATERIALS
SENSITIZED PAPERS AND CLOTHS
ENGINEERS' INSTRUMENTS AND SUPPLIES

STEEL TAPES CROSS SECTION PAPERS
COMMERCIAL STATIONERS
IMPERIAL TRACING CLOTH
OZALID DIRECT PROCESS PAPERS
PARAGON REVOLUTE BLUEPRINT MACHINERY

PAcific 5841

631 Seymour Street Vancouver, B. C.

privileges only when employed in an employer capacity with the firm being bargained with. I am making this suggestion because I feel that there are no doubt many engineers working on a fee basis whose advice would be of considerable value to a bargaining group or agent, either in an advisory capacity or in an active capacity as a member of the group.

I trust you will not consider it impertinent that I should make such a suggestion, but respectfully submit this for your consideration.

Respectfully yours,

W. BRAIDWOOD.

June 26th, 1944.

Registrar,
Association of Professional Engineers of B. C.,
930 Birks Building,
Vancouver, B. C.

Dear Sir:

Please find questionnaire enclosed.

The difficulty of the problem is apparent the moment one attempts to answer the questions. Perhaps in one's own interests they should in some cases be answered No!, but for the good of juniors in the profession, perhaps Yes. In other words, engineers are all the time working up to positions of responsibility, close to management where wage policies are determined. If those in industry are to be divided into two classes, bargaining (inevitably fighting) with each other over wage schedules, then senior engineers will perforce have to line up with management and junior engineers with employees. Those in between with ambitions and getting near to responsibile positions will be in difficulties, not knowing whether to line up with management or stay "with the boys" and will bring on themselves suspicion. In other words, the great body of engineers in direct charge of work will be rendered inarticulate insofar as collective bargaining is concerned.

My own personal opinion is—collective bargaining as proposed is going to fail unless we devise some scheme which does not set one class against another, professions against trade, and all against management, with the result that the unorganized pay the bill. Power in the hands of executives remote from the dispute and with large funds at their disposal to be used at their discretion, is almost certain to be abused.

The position of engineers in affairs has been traditionally that of arbiters with very substantial influence in dictating policies, settling disputes and bringing about agreements. There is the danger that collective bargaining will force us to take sides without regard to the justice of the case, a definite departure from our traditional place in affairs.

It is quite understandable that underpaid engineers take the view that it is a struggle for survival in which the power of an organized agency should be brought to bear; but is that the long view, the wise one? In my opinion it is not.

The Engineering Profession as a whole should be close to management and labour but in a position apart, judicial in the best sense of that word.

Very truly yours,

REGISTERED ENGINEER.

Carbon and Alloy
Steel Castings

•

Westland Iron and Steel Foundries Limited

•

HAstings 3040
1395 FRANKLIN STREET
VANCOUVER, B. C.

Registrar,
Association of Professional Engineers of B. C.,
930 Birks Building,
Vancouver, B. C.

Dear Sir:

Returned herewith your questionnaire regarding collective bargaining for engineers in Canada. It is late, I received it only today. However, the points you mention are of as vital importance to those of us who will return to the profession after the war as to those who come directly under the provisions of P.C. 1003, which I understand refers to the war period only; for no doubt many of the wartime industrial regulations will be carried over, in part, to peacetime.

Please, let us not come back to Trade Unions of Engineers, let us come back to the National Association of Professional Engineers for our own material benefit.

Yours sincerely,
ENGINEER-IN-TRAINING, OVERSEAS.

Note: With reference to the above, under the British North America Act the control of the professions is in the hands of the Provincial Legislatures. A national association could only be formed by agreement between the Provincial Associations along the lines of the present Dominion Council of Professional Engineers.

Registrar,
Association of Professional Engineers of B. C.,
930 Birks Building,
Vancouver, B. C.

Dear Sir:

In connection with your letter of May 19th, together with questionnaire dealing with the matter of collective bargaining.

The first reaction, of course, is that professional men should demand and insist on being left out entirely from the provisions of P.C. 1003. The only reason why collective bargaining has become an accomplished fact and is being encouraged by law is because of pressure exerted on various Government bodies by organized labor. Admittedly, it has points in its favor. It also serves greatly to increase the power, already great, of the leaders of organized labor. Whether this is a good thing or not is open to question, as in all too many cases these leaders are making the whole labor movement into a private racket for themselves. The more power given them, the more they become entrenched in their positions.

If the technical men of Canada, in a body, insisted on being left out from these collective bargaining rulings and exerted their undoubted power in the manner that labor unions do, I imagine the Government would soon back down and arrange matters so that there would be no possibility of a labor union ever demanding that they be the bargaining agency for the professional class.

In connection with question "5" on the questionnaire; I believe the bargaining group would exert more power and influence if organized on a national basis. On the other hand, members of a bargaining group, who might be civil engineers, would know very little of the problems affecting certain other groups of professional men. For this reason, I think any bargaining should be done by a group representing the different technical societies involved, but only if the society were organized on a national basis.

There is no doubt that professional men should be represented by men from professional ranks and our various societies should leave no doubt in the Government's mind that engineers, as a whole, will have nothing to do towards permitting a trade union to represent them.

Yours truly,
REGISTERED ENGINEER.

Wallace & Tiernan Limited
Head Office and Factory
TORONTO
Chlorine and Ammonia Control Apparatus
for
Water Sterilization
Sewage Disinfection
Swimming Pool Protection
Industrial Uses
British Columbia Representative:
SHANAHAN'S LIMITED
Vancouver

Registrar,
Association of Professional Engineers of B. C.,
930 Birks Building,
Vancouver, B. C.
Registrar,

June 13th, 1944.

Dear Sir:

I do not wish to bore you or take too much of your time, but I am not sure that the answers on the questionnaire adequately express my opinion on collective bargaining. I have received questionnaires from both the B. C. Profession and the A.I.E.E. (Canadian Section).

I agree with the author of the A.I.E.E. paper that, first of all, the word "engineer" must be properly defined. It is an easy matter to write down ten or more definitions of "engineer," each definition representative of the opinion of different business groups and not one being in accord with any other. What is to become of the junior men (draughtsmen, rodmen, technicians, etc.) that are working to become engineers if they are not included in the group, but are forced to join a trade union? Will they find it easy to switch over when they qualify as engineers? What will be the standing of a university graduate in physics, pure chemistry, pure mathematics, etc., if he chooses to enter an engineering office or plant?

It is obvious that the word engineer cannot be defined in one word or sentence. Could an engineer not qualify himself as such through a system of credits?

For example: (The following proportion of credits may be radically incorrect but it serves as an illustration.)

Let a man who has completed a bachelor's degree consisting of a prescribed amount of mathematics and physics or other scientific studies be given, towards education ..... 15 credits

Let any man who has acquired his mathematics, physics, etc., through other sources (private study, correspondence schools, advanced technical schools, etc.) be given, towards education ..... up to 10 credits

Since the person taking an applied science course at a university has more practical work than the pure physicist or mathematician, let the applied science student be given, towards practice ..... 4 credits

Let each year of suitably varied experience in engineering offices or plants of the candidate's special field and each year up to two years in other engineering fields be given, towards practice ..... 2 credits

Let each year of experience in engineering fields other than that chosen for specialization over the two-year limit be given, towards practice ..... 1 credit

For each membership of three years' duration and up to three such memberships in technical societies (nine years in one society, three years in each of three societies, etc.) with a reasonable attendance record at meetings, let each candidate be given, towards education ..... 1 credit

From the time of application of such a scheme, to become a professional engineer, let a man be required to have senior matriculation and thirty credits, at least eight educational credits and at least ten practical credits.

Consider the following examples:

UNIVERSITY MAN	Credits	Years	NON-UNIVERSITY MAN	Credits	Years
B.A.Sc.	15	4	Studies	8	nights
(practical)	4	--	General experience	5	3
Specialized experience	8	4	Specialized experience	14	7
Societies	3	--	Societies	3	--
Totals	30	8	Totals	30	10

A. C. R. Yuill
M.E.I.C., MEM. A.I.E.E.
Consulting Engineer
675 West Hastings Street
Vancouver, B. C.
HYDRAULIC - STEAM - DIESEL - ELECTRIC POWER
Special Representative
Dominion Engineering Company Limited
Montreal, Canada

Now some may not be capable of acquiring the necessary educational credits but may nevertheless be valuable men from a technical standpoint and therefore from a collective bargaining standpoint since they would be capable of performing a considerable portion of an engineer's work. Therefore any man with senior matricultion and four credits towards education and the required practical credits could be included in the same collective bargaining group and classed by an exclusive name similar to, but designating a lower category than, "professional engineer." (Let us call this category "Group B" for convenience.)

The professional group should be organized on a national or international basis with present provincial bodies carrying out the actual enrolment of members. To gain admission to this group, a candidate could have senior matriculation, indicate his desire to become an engineer to the local provincial association and pay his entrance fees. He could then be classed as an "Engineer-in-Training." He should have his course of studies approved by the local professional body and write such examinations as may be required of him from time to time as he completes portions of his educational career. He would have an attendance card for each technical society attended and some senior member of each society could be appointed to sign the card for each meeting attended. The minimum attendance being, say, four meetings per year. There should be a time limit on the completion of the educational program and penalty exacted for completing the program outside of this time limit.

The penalty might be the loss of some credits or a fine.

If such a group were possible, in place of your questionnaire, I would prefer to express myself as follows:

(a) (i) That the group should not be governed by collective bargaining laws.

(a) (ii) Such a group could, if desired by a majority, participate in collective bargaining through a member representative of the profession. In the case of the profession hiring their own lawyers, legal men might be given educational credits for their university education and practical credits for their years of association with the profession with the allowance that they be designated as lawyers by some addendum to their engineering title.

(b) The group should not be associated with any trade union.

(c) The group should be divided into branches according to specialization and into local according to the disposition of the central offices.

(d) The group should be national and international, if possible.

(e) The wage scales in any one country should be mutually agreed upon by other countries, whenever possible, with the laxity required to prevent oppression of the engineering resources of any one country.

(g) The wage scales within the country should be allowed to vary within a specified tolerance of the stated range, exclusive of expenses, in order to allow for local fluctuation, depressions, etc. If the tolerance is not satisfactory, a new scale should be investigated by a national committee and the necessary adjustments made. Consultants should be allowed a free scale to permit sufficiently high income to account for slack periods.

(h) The words "engineer", "(Group B)", and "Engineer-in-Training" should be legalized by a national Order in Council and the courts should be authorized to fine persons misusing the names. Electrical appliance repairmen, automotive mechanics, tinsmiths, blacksmiths, prospectors, and other tradesmen should not be allowed to misrepresent themselves to the public. Misrepresentation is generally regarded as a serious offence. Why not in engineering?

(i) In such a group, nearly all employer engineers would pass through membership in the group as employee engineers and would therefore be linked to the group by a fraternal binding even if they were barred from continued membership by collective-bargaining laws.

(j) The professional associations would form the nucleus of the group. The technical societies could follow exactly the same grades as the professional group with an extra grade, say 'affiliate" for those who are non-professionals.

I must excuse myself if I have been too long winded. I am not pretending to present new ideas but merely an assimilation of old ideas. Some could not be effected immediately, and to such an extent they are impractical. I hope I have not wasted your time. The paper is now yours to tear up physically or analytically.

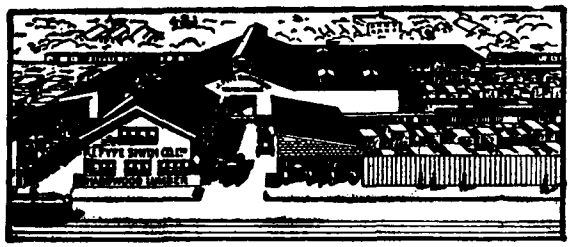
Very truly yours,

A. H. ROME.

Headquarters for

HARDWOODS

FOR ALL PURPOSES



Stocks available at our Vancouver warehouses.

★

LUMBER
PANELS
VENEER
FLOORING

★

J. Fyfe Smith Co. Ltd.

MArine 2564

1320 Richards St. Vancouver, B. C.

Don't Get in the Rut of Complacency

Continue to Buy

Bonds and Certificates

SPECIALISTS IN CORRECT LUBRICATION

PRODUCTION SUPPLY COMPANY

Representing

The Houghton Line

OILS AND LEATHERS FOR THE INDUSTRIES

1272 Richards Street MArine 9826

LESS OIL LESS OFTEN WITH STAY PUT LUBRICANTS

Vancouver, B. C.

Social News

Marriages

LT. JOHN ALEXANDER McLAREN, R.C.A.M.C., was married in Vancouver on June 24th to Valerie Jean Adams of Wilmette, Illinois. Jack was president of the graduating class in '39 and later went to McGill to take his medical degree.

MISS DAPHNE RYAN to MR. HAROLD M. GRAHAM —Both grads of 1944, Miss Ryan in Arts and Mr. Graham got his Master of Applied Science—took place June 20, 1944.

MISS FLORENCE TRIMBLE to MR. LYNN SULLY—Both attended the University of B.C. Date: July 15, 1944. Lynn was a former Thunderbird star.

An Ottawa wedding of great interest to U.B.C. Alumni took place in late June. Wren Telegrapher MARY ELEANOR BOYD, W.R.C.N.S., '43, became the bride of LT. RICHARD "DICK" MONTGOMERY, R.C.N., Arts '40. Capt. John Pearson, Students' Council President in 1940, was groomsman, and two more Varsity grads, James Macdonald and Dave Pettapiece, were ushers.

MISS SUSAN MONA ASSELSTINE TO MR. HAROLD T. FARGEY—Mr. Fargey graduated in Chemical Engineering in 1942. Date: July 15, 1944.

PATRICIA GRAHAM BIBBS to LAS RICHARD OUTRAM MASSY—Miss Bibbs got her B.A. in 1941. Date: July 22nd, 1944.

MARIE CONWAY TO F/L HUGH LEGG, R.A.F.—Date: June, 1944.

JOAN MARENTETTE to MICHAEL CRICKMAY—Date: June 20, 1944.

MARY FINLAY to LT. N. W. JOHNS, U.S. Army—Mr. Johns is a graduate of Texas A. and M., while Miss Finlay attended U.B.C. for three years. Date: latter summer.

GRACE S. MACMILLAN to CAPT. ROBERT G. S. ARTHURS, R.C.A.M.C.—Miss Macmillan's parents are now interned in Bangkok, Thailand. The wedding will take place in the latter part of July.

MISS KATHLEEN BINGAY to MR. ARNOLD D. DUNTON—He is the General Manager of the Wartime Information Board and Editor of the Montreal *Standard*, while Miss Bingay has been a member of the legal division of the Department of External Affairs in Ottawa. She graduated from U.B.C. in 1938.

ELIZABETH E. CONKEY to LT. HANDLY F. FITCH —Both attended U.B.C.—Date: June 26.

SHIRLEY PARNUM to CAPT. JOHN PEARSON, R.C.O.C.—Both attended the U.B.C., the groom graduating in 1940. While at the University, Capt. Pearson was President of the Students' Council in his last year. The wedding took place on July 7.

BETTY MOXON to SURGEON LT. WILLIAM M. TAIT, R.C.N.V.R.—Miss Moxon attended U.B.C.—The wedding will take place in the late summer.

BARBARA ANN McGIBBON to DARRELL BRAIDWOOD—The bride is a graduate of McMaster University and the groom attended the University of B.C. and received his B.A. in 1940 and M.A. 1941. He is the present editor of the *Graduate Chronicle*. The wedding took place on May 27, 1944, in Hamilton, Ontario.

NANCY DAVIDSON to LT. JOHN D. CHISHOLM, R.C.N.V.R.—Date: July 15.

AILEEN McKINNON to MR. ALFRED J. GREGORY —Both are graduates of U.B.C., Miss McKinnon in 1940 and Mr. Gregory in 1941. Date: July 8.

BETTY CROSSLEY to F/O DONALD T. BAIN, D.F.C., R.A.F.—Both attended U.B.C. Date: June, 1944.

MISS MARY M. LYNN to MR. JOHN H. MANN—Mr. Mann is a graduate of U.B.C. Date: July 15.

Northern Construction Company

&

J. W. Stewart Limited

Engineers and General Contractors

736 GRANVILLE ST. VANCOUVER, B.C.
MArine 4535

KEYES CONSTRUCTION

GENERAL CONTRACTORS AND ENGINEERS

SPECIALIZING IN CEMENT GUN WORK OF ALL TYPES
TUNNEL DRIVING AND ROCK EXCAVATION OF ALL KINDS

Offices and Warehouses at 250-260 Industrial Avenue

Telephone MArine 4621 VANCOUVER, B. C.

PROFESSIONAL *versus* ROUTINE

Engineers have recently objected to, or at least been disturbed by, the fact that the Armed Forces appear to regard the training of young doctors of medicine (and, incidentally, dentists) as being far more important than the training of young engineers. Such "discrimination" appeared in the recent radical contraction of the Army Specialized Training Program. Engineering courses were virtually wiped out; medical courses were preserved almost intact.

Nevertheless, the action, to a considerable extent, is based on valid grounds. A fundamental difference exists in the character of the work of an engineer and that of a doctor. An Army unit of 10,000 fighting men must have a minimum number of physicians and surgeons. The average is said to be about fifty; but whether it is more or less is immaterial. Whatever it is, it is relatively fixed. The reason is that the doctor provides a personal service of specialized character that requires knowledge and experience. He cannot delegate the work to others who are not experts themselves. On the other hand, one engineer can plan and supervise engineering work of a dozen men, that, with relatively little training, can become competent to function provided they have expert direction and leadership. The doctor is a performer; the engineer is a supervisor. Observe the difference between building an airport or demolishing a bridge, on the one hand, and diagnosing sickness and amputating limbs, on the other.

A somewhat analogous line of thought is suggested by the comments on so-called technical institutes in the current report of the Committee on Education After the War, of the Society for the Promotion of Engineering Education. The technical institute is a school that trains youths for engineering activities on an "intermediate or subprofessional level." For example, studies have shown that eight persons are needed for routine work as surveyors, computers, draftsmen, chemists, testers, inspectors, and laboratory technicians for each one needed for work of a professional character as engineers or industrial superintendents.

The Report says:

The relative numbers of individuals trained for subordinate technical positions in this country, in comparison with engineering graduates, are in reverse proportion to the need. The inevitable result of this situation is to cause industries to seek engineering graduates in large numbers to fill positions for which briefer, less fundamental, and more practical types of training programs would provide more suitable preparation. The result is also to cause many young men to enter engineering colleges who would profit better by pursuing educational programs designed to equip them for more immediate usefulness in the numerous types of industrial pursuits illustrated by the examples given above. If this be true, and there is little reason to doubt that the educators know what they are talking about, the remedy would seem to be to raise the standards of admission to engineering schools so as to exclude those who because of inaptitude, or lack of capacity, are not likely ever to achieve the status of professional engineer. If this were done, enrollment for engineering education on the professional level would decline, at least for a time; but, on the other hand, the man thus educated would command, deservedly, higher compensation from industry. As a consequence, complaint that employers do not pay young engineers fairly and adequately would become less vociferous and less prevalent.

The foregoing does not mean that young graduates will step directly from engineering schools into highly responsible and remunerative positions, nor that practical experience will no longer be necessary. Nor does it mean that the numerical demand for competent professional engineers will be diminished. It does mean that the distinction will be accentuated between men qualified to perform the routine work of engineering enterprise and those qualified to function in the engineering and technologic world as professional men in the best snese. The opportunity for young men endowed with the right mental equipment and all-around capacity is greater in the engineering profession than ever before. The statement is true with respect to all fields of engineering, and particularly to "mineral engineering."

—From *Mining and Metallurgy*, June, 1944.

British Ropes Canadian Factory Ltd.

MANUFACTURERS OF

ALL DESCRIPTIONS OF WIRE ROPES

★

Plant Established in 1919. Serves Leading B. C. Industries.

★

Index of Quality

GRANVILLE ISLAND — Phone MArine 4454 — VANCOUVER, B. C.

UNIVERSITY ... Women's Club ...

Membership in the University Women's Club of Vancouver is an investment that pays dividends in pleasure and interest to all women graduates of the area. Not only does it provide opportunities to contact again the classmates with whom one has lost touch throughout the years, but it brings together graduates of all ages and from many different universities, and through its interest groups allows those with similar tastes to gather at small, informal meetings, apart from the general membership.

Climaxing a year of interesting sessions was the annual meeting held at the Art Gallery in April. Topical films on China and Russia were presented, and the guest of the evening was Mrs. Li Chao, wife of the rcently appointed Chinese consul in Vancouver.

Among the many excellent reports presented by leaders of Interest Groups, the summary, read by Miss Jessie Casselman, of the findings of the Education Committee, was outstanding. The report dealt with the subject under three headings: University Entrance, Secondary School Course, and Teachers' Certificates. The *Chronicle* has chosen excerpts from the sub-section dealing with scholarships as particularly suitable for reprinting in this issue:

This committee has interpreted the term scholarships in its widest sense, to mean any type of financial aid given to superior students, such as loans, part-time employment, bursaries, co-operative housing schemes, as well as prizes for excellence.

Under an ideal system the state would be financially responsible for the education of every child, whether its parents were rich or poor. scholarships of the fin financial aid type would then be superfluous; if scholarships were awarded at all, they would be prizes for excellence, with no conditions attached.

According to the survey committee of the C.N.E.A., "gifted children have been entirely neglected in Canada." The efforts of the state have been concentrated on the average, or below average, children, while the potential leaders of the community have been allowed to struggle up as best they might.

We would therefore recommend:

That the club endorse the recommendation of the C.N.E.A. Survey Committee: that for gifted high school children whose parents are unable to provide for them, a system of scholarships should be established, the amount varying with the individual need. We would also recommend that the recipients of these scholarships should be placed in special classes and given a greatly enriched curriculum instead of being allowed to develop habits of second-rate work under a program designed for the average student.

That a considerable portion of such increased financial assistance as may be offered by the government to the universities should be directed toward prospective freshmen.

That the system of matriculation scholarships should be greatly extended, through the financial assistance of the Provincial or the Dominion government, or both, in the provinces where the present scheme is inadequate. The aim should be to ensure that all students who are in financial need and who are suitable college material should be able to attend the university.

That, in the accomplishment of this aim, due account should be taken of the inequalities at present existing between students from the university towns and those from other parts of the province. The remedy for this injustice is not, in our opinion, the establishment of a number of junior colleges which would offer the first two years of university. To finance these institutions, the university itself would be starved, and still they could not give the student the advantages of a large library and staff. The remedy is rather the adjustment of matriculation scholarships so that out-of-town students may be on the same footing as those in the University towns.

That these scholarships should be awarded not on the basis of geographical districts, but solely on the basis of ability and financial need.

That co-operative housing schemes should be encouraged by the universities, not only in order to reduce student expenses, but also for the training in financial and social matters which they afford.

That no attempt should be made to increase the loan funds at present existing for undergraduate students, the loan being, in our opinion, the least profitable method of giving the undergraduate financial aid. We would suggest that persons wishing to give money to the universities should be urged to use it for the encouragement of co-operative schemes, which reach a larger number of students more effffectively than any loan fund is likely to do.

That a system of organized part-time work as a means of financial aid to students should be encouraged. The scheme should concentrate on upper class students rather than freshmen. The government has already, in connection with the war effort, set up a Dominion-Provincial Youth Training scheme under which financial aid is given to students, chiefly those in technical and scientific fields. We would suggest that this scheme might well be extended to include more of the gifted students in the humanities; and that payment to the student should be in the form of credits with the bursar, not as a lump sum at the beginning of the college year.

That some consideration should be given in Canada, especially by the older universities in the larger cultural centres, to the Harvard plan of national scholarships for exceptionally gifted students. These scholarships are competitive, the sole basis of award being "pre-eminence in ability and merit." We feel that such students as these, trained by the university to use their rich native endowments to the full and for the good of the community, would be of inestimable value in the future life of Canada.

Chairman of the scholarship section of the education committee was Dr. D. Blakey Smith, with whom were associated Dr. D. Mawdsley, Miss Janet Greig and Miss M. Morrison.

The University Women's Club executive, chosen at the April meeting, is as follows: President, Mrs. D. Orson Banfield; vice-presidents, Miss Alice Keenlyside and Mrs. Ralph Plant; secretary, Mrs. G. B. Atkinson; treasurer, Miss M. K. Thompson; press, Miss Louise Mary Gilmour.

FAirmont 0327 - 0328

A1 Aluminum Foundry, Ltd.

Manufacturers of

A 1 MAJOR SAWDUST BURNERS

AIRCRAFT AND INDUSTRIAL ALUMINUM CASTINGS

MAJOR

5 WEST SECOND AVENUE **VANCOUVER, B. C.**

ALUMNI *Personalities*

By JANET WALKER, B.A.

Editor's Note: This is No. 4 in a series of "personality articles" on the Alumni Executive.

JORDAN GUY

Executive Member, U.B.C. Alumni Association

Refuting the time-worn adage that ministers' sons always rebel against the "good" life, and wander from the straight and narrow, Jordan Guy, executive member of the Alumni Assocaition, says: "I didn't go to the dogs—and I guess the dogs weren't very interesting at that time anyway."

He was referring to the depression years in which he attended the University of B.C.—he graduated with the class of '31—and his previous schools were in Regina, Swift Current, Vernon, and Victoria.

But in spite of his professed "canine shortcomings," Jordie has managed to build up a solid foundation for his present career of conveyance and estate administration law. He is an associate with the firm of Walsh, Bull, Housser, Tupper, Ray and Carroll.

An outstanding debater while at college, he was on the McGoun cup team that travelled to Edmonton, and discussed "Home Rule in India."

He is completely absorbed in what is going on in the world today, and as a member of the Junior Board of Trade government affairs committee, he has been extremely active in fostering intelligent discussion on world conditions.

He studied law at night school, the same way as did his pal, Pearly Brissenden. Before that, he was employed with several commercial firms including H .R. MacMillan, Hudson's Bay Co., and Pemberton's.

His high ideals regarding the social and economic problems current in the world extend to his interest in the Alumni Association, which he sees as a powerful organization to help in such vital matters as safeguarding the intellectual integrity of the faculty members of the university; making the university meet community needs, and promoting better relations between the university and the community.

Jordan is extremely active in many spheres involving public discussion of current problems. He takes much interest in summer discussion camps, many of which he has helped organize.

"The most significant event in history is the Russian revolution," he says. Regarding Canadian politics, he thinks the winning of the C.C.F. election is indicative of a fundamental swing in Canadian opinion.

"Canada is capable of it, and probably is well on the road towards a more balanced economy, based on a strong reform policy among Western powers."

Regarding the pertinent question upon which everyone holds forth these days, "Is woman's place in the home?" Jordie cannily says: "Woman's place is wherever she wants it."

Jordie was once a swing fan but now such desires have waned, and he prefers music in a more classical vein. "I was never a jitterbug, though," he hastens to assure us.

Salads are his favori e food and indeed Jordan has made a very detailed study of foods.

Jordan was married in 1940 to a Winnipeg girl—Jean Cotter, and they have a son Jordan Junior.

Like all lawyers Jordie is inclined to complicate things somewhat. However, his work with his firm has proven that complications or no he has established a successful record.

But don't think that Jordie's "complications" have him confused. He knows exactly what the score is.

Manufacturers of
VALVES AND FITTINGS
Brass, Iron and Steel
for
Corvettes, Frigates, Minesweepers,
and
Cargo Vessels

WEBB & GIFFORD LIMITED

222 Front Street New Westminster, B. C.

Phone 1026

OTHER NAMES IN THE NEWS

DR. W. N. SAGE of the University of B.C., recently elected president of the Canadian Historical Association.

DR. N. A. MacKENZIE, Presiden-elect of U.B.C., elected vice-president of the National Council of the Y.M.C.A. at the annual meeting in Toronto, held recently.

LT.-COL. G. J. OKULITCH of Abbotsford, Vancouver and Moscow, U.S.S.R., has started back to Russia to resume his duties. He was an agricultural graduate from U.B.C. in 1933.

DR. LEONARD MITCHELL, now engaged in chemical research under the sponsorship of the National Research Council. He received his M.A. at U.B.C. in 1942, and his Ph.D. at McGill University in 1944.

DR. ALBERT E. (DAL) GRAUER, secretary of the B. C. Electric Railway Co., was recently elected vice-president of the B. C. Power Corporation. He is also chairman of the Vancouver branch of the Canadian Institute of International Affairs. He took his B.A. in 1925 and was named Rhodes Scholar for 1926. He studied law at Oxford, later taking his Ph.D. at the University of California.

MR. FERGUS MUTRIE is now in Toronto, where he has taken over the post of C.B.C. assistant supervisor of Farm Broadcasts. He received his B.S.A. 1926. In 1943 he was elected to the University Senate as alumni representative. He inaugurated C.B.C.'s daily Farm Broadcast for B.C. when he joined the staff of the corporation four years ago.

MISS NANCY BRUCE won a scholarship to the School of the Theatre. She is well-known for her work in the University Players' Club, in the Little Theatre, and in radio, in which field she is now meeting encouraging success.

MR. ROBERT DUFF WALKER, chemical engineer with the Shell Chemical plant at Torrance, Calif., was killed accidentally during chemical experiments. He won the I.O.D.E. Bursary previous to entering the University of B.C. and graduated in chemical engineering in 1937, later completing his education at the University of Californmia. In 1939, he joined the Shell Oil Co.

GIBB G. HENDERSON, B.A., B.A.Sc. '33, is now with the Georgia Pharmacy in Vancouver.

T. A. "TOM" LEACH, B.S.A., has been appointed chief of the C.B.C.'s Farm Broadcast Department for British Columbia. Tom was president of the Aggie Undergrads in 1931. Since then he has had a most colorful career, including a trip to Denmark to study the dairying industry.

DR. REID G. FORDYCE has perfected a new plastic named "CEREX" which is the first of its type. It can even be boiled in sulphuric acid without any material change. The substance has now been placed high

PARAMOUNT

REG. TRADE MARK

PUMPS

FOR EVERY PURPOSE

Day in and day out "Paramount" Pumps deliver uninterrupted service with a minimum of attention. Pumps for municipal water supply systems—condensation return and circulating pumps—drainage, boiler feed and sewage pumps—have proven their high efficiency and rugged dependability. Specify "Paramount" pumps —they deliver more water at less cost.

We know you will agree — vital war production must come first. Sometimes we are unable to fill the requirements of normal industry.

124A

PUMPS & POWER, LIMITED

31 YEARS IN HYDRAULICS

40 EAST CORDOVA ST. . . . . VANCOUVER, B.C.

MArine 5364

MACDONALD & MACDONALD

INSPECTING AND TESTING ENGINEERS

ANALYTICAL CHEMISTS • ASSAYERS

718 GRANVILLE STREET VANCOUVER, B. C.

Vancouver Construction Company Ltd.

ENGINEERS *and* GENERAL CONTRACTORS

MArine 7027

827-8-9 ROGERS BUILDING VANCOUVER, B. C.

P. D. MURPHY D. D. CHISHOLM

T. CONNORS DIAMOND DRILLING COMPANY LIMITED

744 W. Hastings Street - Vancouver, B. C.

Diamond Drill Contractors

PAcific 5953

CORE BITS OF ALL SIZES
AND
DIAMOND POINTED TOOLS

B. C. Concrete Co. Ltd.

Manufacturers of

Hume Centrifugal Concrete Pipe

for

Sewers, Culverts and Water Supply Lines
Size 6" to 68" — Plain or Reinforced

Oak Street and 77th Avenue Vancouver, B.C.

Phone LA 0230

R.H.SHEPHERD

NEW INSTRUMENTS AND REPAIRS

SWITCHBOARD INSTRUMENTS
TEMPERATURE CONTROL INSTRUMENTS
MEGGERS WATT HOUR METERS, ETC.
TONG TEST INSTRUMENTS

MArine 9351

1200 HOMER STREET VANCOUVER, B. C.

FAirmont 1546

McLean & Powell Iron Works

STOVE *and* FURNACE
CASTINGS

General Foundry Works

398 West Second Ave. Vancouver, B. C.

in the priority list of U.S. war production. After he left U.B.C. Dr. Fordyce went to McGill, where he took his Ph.D. in 1939.

CAPT. D. F. "DON" COLQUHOUN "organized and supervised a system of Bren gun carriers to act as mobile stretchers" when the Seaforths engaged in the Liri Valley battle on May 23rd.

THE DRUGGISTS' ASSOCIATION of British Columbia has voted ten thousand dollars towards the proposed school of pharmacy at the University. This gift follows the $25,000 given a few months ago by a prominent Vancouver business man.

FAIRBRIDGE

(Continued from Page 25)

The remaining ex-Fairbridge pupils are in various occupations, many girls at domestic work, and boys on farms, in the Merchant Navy and in war industries. One girl is at present attending King Edward High School, and arrangements will be made later for her to continue her education at U.B.C.

"One of our greatest difficulties," said Col. Logan, "is to convince the youngsters that school is not only for the privileged class. However, the work is succeeding in spite of difficulties that are inevitable when dealing with human beings, but which can be and have been overcome by care and tactful approach."

Asked whether homesickness was one of these difficulties, the school principal admitted that it was, but went on to explain that in many cases the children have been rescued from such deplorable home conditions that they cannot fail to be impressed by their improved surroundings and opportunities. The war has given many of the graduates an unexpected chance to visit their home land, and their reaction has been interesting to those who have pondered over this aspect of the scheme.

"We want all our graduates to feel that Fairbridge is their home," said Col. Logan. "They nearly all return for Christmas, and are welcome for visits at any time."

One boy who was admittedly homesick for England is over there now, and a recent letter to Col. Logan sheds light on the eventual feeling of these new Canadians for their adopted country. "I am 6,000 miles away from Canada," writes this youth. "And I am 6,000 miles more homesick that I ever was before."

Alaska Pine Company Limited

NEW WESTMINSTER, B. C.

SAWMILL
PLANERMILL
BOX FACTORY

Telephone: 2464-7 Telegrams: Alaskapine

FAIRMONT 1257
75 W. 3rd Ave.
Vancouver,
B. C.

McDonell Metal Manufacturing Company Ltd.

ENGINEERS
MACHINISTS

Tool and Die Makers
Plumbers' Supplies

Everything in Metal

Private Exchange—MArine 4164-5-6

General Construction Co., Ltd.

J. BOYD, President

ASPHALT AND CONCRETE PAVING

ROAD SPRAYING

DITCHING AND DYKING

PUBLIC WORKS CONTRACTORS

GRANVILLE ISLAND VANCOUVER, B.C.

GENERAL EQUIPMENT LIMITED

REPRESENTING

NASH ENGINEERING COMPANY
ARMSTRONG STEAM TRAPS
MUELLER PRES. RED. VALVES
RED HEAD HEATERS
CENTRIFIX PURIFIERS

COPPUS FANS AND TURBINES
TROY STEAM ENGINES
WESTERN BLOWER COMPANY
VENTURI METERS
FRUIT DEHYDRATERS

317 W. Pender Street Pacific 5932 Vancouver, B. C.

DREDGING . . . HARBOR WORKS

BRITISH COLUMBIA BRIDGE AND DREDGING CO.

CONTRACTORS TO THE GOVERNMENT

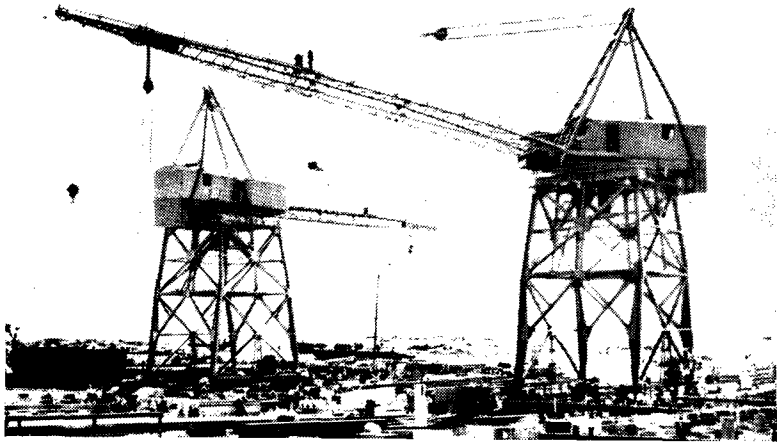
British Columbia Bridge & Dredging Co., Limited

GENERAL CONTRACTORS

W. G. McKENZIE
President

MArine 6451

540 HOWE STREET
VANCOUVER, B. C.



COLBY CRANES

NOW MANUFACTURED AND SOLD IN CANADA BY

HEAPS ENGINEERING (1940) LTD.

Weight-Lifting Giants for Canadian Industry

Shown Above

Full revolving Luffing Boom Crane

In service throughout Canada, this type of crane is used extensively in lumber yards and shipyards.

Send for detailed description of performance, installation and cost.

HEAPS ENGINEERING (1940) LIMITED

NEW WESTMINSTER ★ BRITISH COLUMBIA

A Complete National Electrical Service

In war or in peace, a "National Electrical Service" means a trained personnel, imbued with the spirit of service—supported by the facilities and the organization to deliver electrical goods where and when required. Through its research department—its engineering and manufacturing divisions—Northern Electric will again be a leader in the peace-time production of electrical supplies and household appliances of all kinds.

Northern Electric
COMPANY LIMITED
A National Electrical Service

150 ROBSON STREET VANCOUVER, B.C.

E. R. Taylor Construction Co. Ltd.

E. R. TAYLOR, President

• ■ •

ROAD AND STREET PAVING

• ■ •

71st AVENUE and HUDSON STREET

Phone LAngara 0411

VANCOUVER, B. C.

CAMPBELL & SMITH LTD, *Effective Printing*