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CANADA

IN THE

MARKETS OF TOMORROW

McGILL UNIVERSITY
1944



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CANADA

in the

MARKETS OF TOMORROW

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CANADA

in the

MARKETS OF TOMORROW

A SERIES OF LECTURES DELIVERED

AT McGILL UNIVERSITY, MONTREAL,

OCTOBER 12, 1943 – DECEMBER 20, 1943

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THE SCHOOL OF COMMERCE *and*
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McGILL UNIVERSITY - MONTREAL
1944

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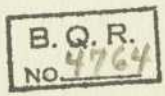


TABLE OF CONTENTS

PAGE

I. TOMORROW'S WORLD TRADE,
F. CYRIL JAMES 11

II. THE FUTURE OF AIR TRANSPORT,
L. WELCH POGUE 22

III. DEVELOPMENTS IN LAND AND WATER TRANSPORTATION,
ROBERT V. FLETCHER 50

IV. POSSIBILITIES IN THE CANADIAN MARKET,
FLOYD S. CHALMERS 63

V. NEW MATERIALS FOR TOMORROW'S PRODUCTS,
L. F. LIVINGSTON 78

VI. EXPORT OPPORTUNITIES FOR CANADIAN PRODUCTS,
WALTER D. JONES 83

VII. FOOD PRODUCTS IN NEW FORMS,
CLARENCE BIRDSEYE 96

VIII. NEW MERCHANDISING TECHNIQUES,
LEE H. BRISTOL 119

IX. ADVERTISING AS A NEW TECHNIQUE FOR MANAGEMENT,
JAMES WEBB YOUNG 130

X. SALES MANAGEMENT TOMORROW,
K. B. ELLIOTT 139

XI. THE SCIENCE OF PUBLIC RELATIONS,
JOHN P. SYME 155

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FOREWORD

NOW that we can see rifts in the clouds of war, it becomes important to analyse our present position in an attempt to plan the future.

As told time and again in this series of lectures, the war has tested and verified the success of our scientists and engineers in their attack upon the problems of designing and producing goods and services. The war lessened some of the difficulties of distributing these goods and services, while at the same time it raised new perplexities. As we enter the post-war period, we must anticipate return of some of the old problems of distribution, and a continuance, perhaps, of some of the new demands.

These lectures on "CANADA IN THE MARKETS OF TOMORROW" are timely discussions of this subject. They were delivered to audiences which crowded Moyse Hall; audiences of professional, technical, business and advertising men and women who were so interested that they often kept speakers over their time to answer questions.

The lectures were planned with care, and the lecturers are outstanding in their respective fields. Most of them came from the United States, but our countries are so closely allied that the methods of doing business are essentially the same, and the opinions, ideas and outlook of these speakers apply in an America-wide sense.

McGill University is happy to submit this evidence of co-operation with business men in an attempt to make our economic system work as effectively as possible in meeting the needs of victory. We thank those who collaborated to make this series of lectures so successful, and it is to be hoped that continued collaboration will bring forth increasing benefits.

MORRIS W. WILSON

McGILL UNIVERSITY
FEBRUARY 1, 1944

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Tomorrow's World Trade

OCTOBER 12, 1943

DR. F. CYRIL JAMES

Before I begin my address this evening, I should like, on behalf of the University, to extend a very cordial, as well as an official, welcome to the Advertising and Sales Executive Club of Montreal and to the McGill Associates, both of whom have joined with the School of Commerce in sponsoring an exceedingly timely discussion of the problems that will face Canada after the war. I also want to inform you that we may have a blackout later this evening, but if the lights go out I shall do my best to carry on.

"Tomorrow's World Trade" is a fairly large subject to cover, and at the very beginning I want to emphasize that I do not regard myself as a prophet, nor do I have any inside sources of information that would enable me to give you definitive statements about the subject of this address. All that I can attempt is a careful statement of some of the factors that will be of critical importance in developing the pattern of Canada's future economic relationships to the rest of the world.

I need not emphasize the fundamental fact that, prior to 1939, the prosperity of this Dominion always depended upon the existence of foreign markets at satisfactory prices for the exportable surpluses of raw materials and foodstuffs. There is no other country in the world which has in the past been more dependent on foreign markets, an active foreign trade and widespread world prosperity, than this Dominion. As in the case of other trading nations, Canada's foreign trade was triangular. We exported to a group of countries different from those that supplied us with imports, and the broad pattern involved the export of Canadian goods, chiefly foodstuffs and raw materials, to Great Britain and Europe; the sale of sterling and continental currency balances which we received in exchange for U.S. dollars, and the importation from the United States of those things that we desired to consume in Canada. We therefore needed not only markets, but a freely functioning monetary mechanism, by means of which Canada could exchange its exports for the things it needed.

Nor need I emphasize the equally important fact that if the promises of the Atlantic Charter are to be realized, if we really mean what we say when we talk about creating freedom from fear and want throughout the post-war world, the total value of production, agricultural and industrial, as well as the total volume of international trade, will need to be fabulously larger than it was before the war. The people of China, South America and Southeastern Europe, as well as the hundreds of millions in India and Africa, are so far below what we now regard as a normal subsistence level that the mere effort to raise them to this minimum would require tremendously increased quantities

of food and other consumer goods. If we come closer to home, it is apparent that, even within our own borders and within the borders of other highly developed countries, we have not yet obtained a satisfactory standard of living for all our people. There are slums in Canada, there are undernourished children, and there are families that are inadequately clothed. The average annual income of many farming people in this country prior to 1939 was so low that the statistics are shocking, but the same situation existed in the great country to the south of us, in Great Britain and in Western Europe. Though we know, as realists, that it will take many years, perhaps generations, to attain the finely-phrased ideals of the Atlantic Charter, it is apparent that we shall require steady expansion in the total production, and in the exchange, of goods throughout the world. The post-war markets of the world will be of tremendous dimensions if we measure them in terms of basic human needs, and there is little prospect that all those needs will soon be satisfied.

But, if we are realistic, we know perfectly well that freedom from want and freedom from fear are not going to be attained solely by international discussions; they will not be attained by pleasant phrases adopted during pontifical international conferences. These freedoms will only be attained if individual business men, and individual governments, tackle seriously and continuously the various specific problems that need to be solved in order that mankind may move into a post-war period of greater trade and freer markets.

This evening I propose to begin by analyzing the actual impact of the war on Canada vis-à-vis the rest of the world, because it is perfectly apparent to every thinking individual that the patterns of domestic economic activity and world trade at the end of this war will be substantially different from those which existed prior to 1939. The most obvious characteristic of modern war is its insatiable demand for certain types of manufactured goods, such as tanks, guns, ships, airplanes, bombs, shells, rifles and dozens of other artifacts, all of which require a high degree of skill and large amounts of raw materials for their production in appropriate quantities, but all of which enjoy a very short period of use. In normal times some of us used our automobile tires for two or three years, and not long ago I saw the first Rolls Royce car ever to come out of the factory in England still carrying its passengers around after thirty-two years of work. But in war, the life of an airplane is numbered in weeks, the life of a tank in months, the life of rifles or guns is comparatively short, and of explosive munitions the effective life is a fraction of a second. If you sit down and study the information that Secretary Hull gave us a little while ago regarding the costs of that rather short, and not too severe campaign, in Sicily, you will get some picture of the incredible quantity of goods that must be produced each year if modern war is to be carried on.

It is natural, therefore, that industry should have expanded. Canadian industry has never expanded so rapidly or on such a tremendous scale, so that the total national output is now twice as high as it was in 1939 and more than three times as high as it was at the

bottom of the depression. We are now spending on the war alone more than the total national income of Canada in 1939. Our people are employed, our factories are active, we are producing all sorts of goods which a few years ago it was thought that Canada could not produce. In 1940, for example, we could not get machine tools from the United States on which we had always depended for them. We set out to make them ourselves; we built up an industry, and today we are able to supply quantities of machine tools greater than the whole of our immediate needs, vast as these are. We have expanded our chemical industry and our non-ferrous metals industry, as well as the basic iron and steel industry itself. We have expanded greatly the supply of skilled industrial labour, by recruiting men from the farms and women from the homes and training them to carry on skilled and semi-skilled factory operations, so that at the present time five out of every eight Canadians over the age of fourteen are either in the Armed Services or war production, according to the latest figures of the Department of Labour.

That is a significant change in the pattern of Canadian life. But, before we grow too jubilant about it, we must remember that Canada has developed precisely the same industries that almost every other country has developed. We have read so much about it in the newspapers that I need not comment at length on the industrial expansion in the United States, which in two short years has achieved miracles comparable to those of Canada. We know that in Great Britain, in spite of bombings and the large number of able-bodied men in the fighting services, the total production of munitions of war was, until a few months ago, greater than their total production in the United States, while the total output of all British industry has risen to a peak far above the pre-war levels. We have less information on Russia and Germany, but we know there has occurred in those countries a comparable industrial expansion, while in India and China there have been built up engineering and fabrication industries that are many times larger than those which existed before the war. It is also probable (although the information is not very clear) that there has been a substantial expansion in all neutral countries of those industries that produce peace-time goods, for the simple reason that those neutral countries have not been able to import such goods during the period of the war, while we know that Sweden and other neutrals have increased the capacity of their war industries.

At the end of the war, therefore, Canada will have an industrial plant that will enable it to produce a very large number of the things which were previously imported, and many other nations will have a similar excess of industrial capacity in terms of the pre-war pattern of trade. In such circumstances some Canadians may desire increased tariffs for the protection of our domestic markets, but if we desire the creation of a world economy that will provide export markets for the products of this Dominion, we dare not start out by erecting tariff walls that exclude foreign products from our domestic market. If we are to find a constructive solution to the post-war problems of industry, it is apparent that Canada, Great Britain, the United States,

and other countries, will need to consider seriously whether any of the existing industrial plants should be scrapped, and if so what—the problem that haunted us for twelve years after the end of the last war. The question of national industrial specialization, on the basis of comparative costs, will also have to be considered, since the problem of post-war industrial development is not only of factories, machines and labour but one of human intercourse, of obtaining goods at the cheapest possible cost, of providing by our demand for foreign goods the markets for those Canadian products that we shall wish to export. I am not minimizing the problem. There are very few post-war problems that are going to be more difficult to solve than the international question of industrial reconversion, complicated as it is by the differences between countries, and by the fact that some countries will, in all probability, be able to start conversion before others. The one thing that stands out is that industrialists will need to discuss their problems not only on a national but on an international basis, if they are going to succeed in finding effective long-range solutions.

But industrial reconversion is only one aspect of the Canadian picture. During the past four years Canada has greatly increased its agricultural output, and we are often apt to overlook that fact. With very little increase in acreage, and an actual reduction in the number of men and women employed on Canadian farms, we are producing a great deal more food than we produced before the war. In wheat and most of the other cereals we have held our own, and in addition we have quadrupled our exports of bacon, more than trebled our export of dairy products, and greatly increased our export of eggs. Tremendous improvements have taken place in the methods of food processing and preservation, and at the present moment the farmers of Canada are more dependent on foreign agricultural markets than they have been at any previous time.

Once again, however, it must be remembered that that Canadian effort parallels a comparable effort in many other countries. The United States picture has not changed much; but the United States is still, on balance, an agricultural exporter of many important products. In Great Britain, one of our largest pre-war markets which before the war produced only one-quarter of the food necessary to feed its population, there has been a stupendous agricultural expansion, and, on the basis of the last figures issued by Lord Woolton, it would appear that they are now producing about two-thirds of the total food required by the people. We have less knowledge of Continental Europe, but such as we do obtain through Sweden and Switzerland suggests that Germany has stimulated comparable activity throughout the whole of Western Europe. To be sure, at the end of the war the cattle herds will be depleted and the fertility of the soil greatly lessened, while many agricultural areas will be devastated during the war, but it seems highly probable that the general direction of international trade in foodstuffs after the war will be substantially different to what it was from 1929 to 1939.

From the viewpoint of Canada, excluding for the moment the question of post-war relief and rehabilitation (which I shall come back

to later) it is perfectly clear that in the secondary post-war period we can only avoid a critical agricultural depression, which would go far to neutralize any other efforts to attain prosperity within the Dominion, by finding export markets larger than those which existed before the war, or by a very comprehensive reorientation and diversification of agriculture. Such an effort at diversification would have to be carried out under carefully developed plans, and subsidized by the government, while the third option (the development of something like the American AAA) would require an even larger measure of government control over agriculture and a greater expenditure. The third of these options, which demands the payment of farmers for refusing to grow food is obviously fantastic; the attainment of our post-war ideals demands more, not fewer, goods. Some combination of the first two alternatives is therefore necessary but it can confidently be predicted that no satisfactory prosperity can be attained for Canadian agriculture excepting in terms of larger foreign markets than those which existed before the war. This element must not be overlooked in any appraisal of the place of Canada in the post-war markets of the world.

Turning to the brighter side of the post-war picture, there is apparently growing up, here and elsewhere, a substantial backlog of demand for goods of all kinds. Producers' equipment is not being replaced in many plants and is being worn out more rapidly than usual; inventories are declining; improvements in construction are being postponed. Even at the present time, many large industrial concerns are already planning the physical reconstruction of their plant and equipment after the war is over. In the field of consumers' durable goods, a similar cumulation of unsatisfied demand is apparent. There is a shortage of houses in Canada amounting to something like 100,000 dwellings at the present time, and a shortage of automobiles. refrigerators, electric toasters, sewing machines, electric light fittings of all kinds, and most of the other things that people like to buy when they have a little money. There is a shortage of clothing, and to a certain extent there is even a shortage of food, in the sense that people hope to enlarge their consumption of products that are now difficult to get and that retailers will probably wish to build up larger inventories.

That shortage, that backlog of demand, is not peculiar to Canada; it is world wide, but there are two facts that must be remembered in regard to it. First, that although the demand for goods is intense, it may be of comparatively short duration. There will definitely be a sellers' market when the war comes to an end, but how long that sellers' market will last depends in large measure on the extent to which industrial reconversion is carefully planned before the end of the war and also on the extent to which we succeed in avoiding an inflation which would seriously restrict people's ability to buy. In the second place, it must be remembered that the intensity of the post-war demand will vary considerably among the different areas of the world. It will not be as serious in Canada and the United States as it will be in Great Britain, where severe rationing and physical

devastation under aerial bombardment has greatly increased the number of things that the Britishers need. It will probably not be as serious in Great Britain as it will be in Germany and the occupied countries, where we can be sure that fighting will be carried on as long as there are any resources left, where rationing is very much more severe than anything we have dreamed of, and where the new methods of aerial bombardment are producing results much greater in the extent of their devastation.

Wherever one looks, then, in belligerent or neutral countries, there is steadily growing up an unsatisfied demand for all of the things that are produced by farm and factory, the things which people have been deprived of during the steadily lengthening years of the present war. But it is quite obvious that this demand for goods is only important to the business man insofar as the potential buyers are able to pay for them. On the whole, the outlook in regard to capacity to pay seems to be good for the immediate post-war boom (by which phrase I mean the period of some 24 to 30 months immediately following the conclusion of hostilities in Europe). During that short post-war period, within Canada, the quantity of spending power should be adequate to provide good markets for industry and agriculture, provided that we are able to maintain our price controls and prevent serious inflation. There is a steadily growing volume of savings in the hands of individuals, in savings bank deposits, checking accounts, victory bonds, war savings certificates, and so on; there is a growing fund accumulating for many individuals in the unemployment insurance scheme, a fund which will be available to provide benefits for workers who become temporarily unemployed; while under P.C. 7633 there will be available substantial payments to demobilized men and women. In regard to purchase of inventories and producers goods it is also likely that financial strength of Canadian business will be greater at the end of the war, so that for the immediate post-war period the prospects are quite bright and a strong sellers' market is likely to develop within Canada.

In the international field the situation is different. Some countries will have gold and foreign balances adequate to pay for almost all of the things they want to buy from Canada. The United States is the outstanding case in point, and in the immediate post-war period the United States may want to buy more from Canada than before the war—particularly certain types of foodstuffs. The same comment holds good for Norway and Holland, and I imagine it is true of Russia, although accurate information is not easily obtainable in this case. A second group of countries will have practically no gold, and very little in the way of foreign exchange resources, but their industrial and agricultural systems will be in good shape, so that they will be able to pay by the export of their own products for the things they want to import. An outstanding example, of course, is Great Britain, while it seems highly probable that Italy may also be in that category if the war goes on eighteen months more, because reconstruction in Italy is likely to start sooner than elsewhere. The rest of the countries European and Asiatic will have very little to export. Economically

speaking, they will be flat on their backs, and facing such problems of public health and nutrition as will create a state of acute distress. It does not need any deep logic or refined economic analysis to prove that Occupied Europe and Occupied China will not be left by the Nazis or the Japs in any state to pay cash down for things that are needed, nor to realize that the people of these areas will have but little in the way of productive capacity. The people who will be in the greatest need during the immediate post-war period will have to be supplied, if they are supplied at all, by some organized scheme of international philanthropy and that will mean spending of the Canadian taxpayers' money. An exporting country will have to pay for the goods and services sent to these countries, if it is to play any realistic part in the process of international relief and rehabilitation.

It would seem, therefore, in the light of that analysis, that the post-war marketing problems of Canada are fourfold:—

First, there is the domestic problem of raising the standard of living throughout the Dominion, and thereby enlarging the domestic market for goods.

Secondly, we must provide for the speedy conversion of Canadian industry, in collaboration with the rest of the world, for the dual purpose of providing employment opportunities and augmenting the supply of goods.

Thirdly, we must maintain a high agricultural output if we are to play our part in the field of international rehabilitation and relief.

Fourthly, more perhaps than any other country, in our own self-interest we must cooperate actively with the other nations of the world in the creation of a world economy that will stimulate the development of enduring international trade.

Obviously, one could for a long while talk about each of these four problems, but tonight I shall put aside the whole of the first three. They are not immediately related to the subject that has been assigned to me in the same sense as the fourth problem—the responsibility of Canada for cooperating with the rest of the world in the development of a functioning world economy out of which all can derive prosperity.

It is apparent from my comments, and from your own knowledge of conditions in Europe and Asia, that the first and most vital problem is that of providing for international rehabilitation and relief. This offers a market of a peculiar kind. There are some 393 millions of people in the area of Europe now occupied by Germany and 175 millions in the area of China and Indonesia now occupied by Japan, hundreds of millions of people, starving, without adequate clothing or shelter, without medical attention, without many of the fundamental necessities of life. It is not only a matter of philanthropy to provide a speedy first-aid for their needs, because if those needs are not met there arises the immediate physical danger of epidemics that might sweep across the world, and the longer-range fact that no sound post-war world can be built upon mass suffering, misery and devastation. International first-aid is essential as a prelude to any long range planning: it purchases security and good will. But the problem

of relief is fundamentally one of first-aid: it does not solve any long-range problem, and history sadly teaches us that men grow cynical after a war is over and they become involved in the task of reconstructing their own affairs. It is easy to be idealistic during the course of a war and very hard to remain idealistic after it is over. If our international rehabilitation is going to be effective, it is important therefore that at this time, before the war is over, there should be careful international discussions regarding such things as the duration of the relief, the precise nature of the relief, the exact cost of the relief, and the way in which that cost is going to be shared among the several contributory countries. We cannot leave those problems for consideration at the end of the war. We must face a commitment signed and sealed, but definite, both in its impact on the taxpayer and in its commitments for the Canadian farmer and industrialist. Those discussions are going forward.* But it is vitally important in any such discussions to remember that the development of any satisfactory policy of international relief depends upon the existence, in all the contributing countries, of an enlightened public opinion which appreciates the nature of the problem and is willing to make sacrifices for its solution. The development of such an enlightened public opinion is an essential part of the economic planning by means of which Canada's overseas markets, and the overseas markets of every other country, may be developed after the war.

Of greater long range significance is the working out of a satisfactory mechanism of international payments. This is a problem that is much in the public eye at present. Its importance has been apparent since 1939, when the breakdown of the gold standard threatened international chaos and gave rise to exchange controls, bilateral agreements, and other obstacles which seriously diminished Canadian trade and that of other countries. It is not, however, necessary that we should go back to a gold standard, in spite of the urgent pleas for such a return that are now being voiced in some quarters. I would admit readily, and I am sure most of us would admit, that the world never saw a more satisfactory monetary standard than the 19th century gold standard; it was as nearly perfect as anything that had been developed up to that time. But the essence of that gold standard mechanism was not the five dollar gold piece, the British sovereign or the 25 franc piece; its essence lay in the fact that a foreign balance could be exchanged by the owner at any time, at a practically constant price, for any other foreign currency that he desired. If you sold goods in England and held pounds sterling, you could go down to your bank and get dollars, francs, or any other currency, so that the export of goods to England enabled a Canadian business man to buy for cash, with a minimum of difficulty, the commodities of any country in the world. The heart of the gold standard machinery was found in the London money market. Because London was the great money market

*Since this address was delivered, steps have been taken in this direction during an international conference at Atlantic City, and the machinery of the United Nations Relief and Rehabilitation Administration is now at work on the problems discussed in these paragraphs.

of the world, it was always possible, through the use of sterling bills, for the overdrafts of any country to be temporarily financed by the surpluses of the other countries, and as long as the London money market functioned smoothly the gold standard worked. London did not need large gold reserves; it relied upon the fact that it was the world's clearing house and upon the fact that it was always in a position to make long or short term loans to nations that were in difficulty. In a word, therefore, the efficiency of the nineteenth century gold standard was due to the fact that London was "the conductor of the international gold standard orchestra."

That international monetary mechanism broke down in 1914, and it was not effectively restored after the Armistice of 1918. London was no longer able to assume its old responsibilities, since its own resources had diminished and those of other centres had increased, but no other money market was willing to assume the responsibilities that London had previously carried. An international monetary system, consciously formulated, seemed to offer the only practical solution to the problems that faced the world, and all of the recent proposals (Keynes, White and Rasminsky) stem back to discussions that have been going on for more than two decades. The Brussels Conference of 1922 fired the opening gun, which was followed by general discussions at the Genoa Conference in the following year. After that, the world returned to a pseudo-gold-standard, but no further attack was made on the basic problem until that gold standard of the 'twenties began to reveal its inherent weakness. The Reparations Conference in 1929 then gave rise to the Bank for International Settlements, which was formally agreed upon at the Hague Conference in 1930—but by that time political events had created an unfavourable atmosphere for international economic cooperation. The Tripartite Monetary Agreement of 1936 certainly accomplished something, but it was no more than a desperate effort to stem the tide of economic nationalism in its twin forms of foreign exchange control and competitive currency depreciation.

The proposals for monetary reform that have recently appeared in Washington, London and Ottawa must be interpreted against this background. Naturally they differ from one another in minor details, but, from the viewpoint of this course, the significant thing is not the minor differences between the proposals, but their uniformity. Three groups of people widely separate from one another, with different backgrounds and problems, have all arrived at formulations which provide the four necessary ingredients of an international pattern. First, all three provide for an international institution to take over the functions that used to be performed by the Bank of England and the London money market. Second, all provide, with some minor modifications, that membership in that international institution must be open to all countries willing to satisfy certain purely economic conditions. Third, they all agree that this international institution, by a majority vote of its members, must have control over foreign exchange parities; that no country on its own account shall at any future time be able to change the official quotation of its currency

in terms of gold or other currencies, without the consent of an international group. Fourth, that the operations of this institution must make available the idle balances of wealthy countries for the purpose of meeting the temporary deficits of poorer countries during the post-war period of transition.

These four ingredients are absolutely essential for post-war monetary organization—and practically nothing else is essential. Any one of the three plans has outstanding merits, and careful analysis of the three shows that the divergences are due to national eccentricity but are not really important. I would add one further word. There is a group of people, more frequently encountered in the United States than in Canada, which is desperately worried about that fourth provision—that the idle balances of wealthy countries must be made available to meet the deficits of poorer countries. That is not, however, a surprising demand when you remember that the size of such idle balances is determined from day to day by the policy of the wealthy country and its citizens. A country has a large idle balance in foreign exchange only because it is exporting heavily and not importing. If it wants to reduce the balance it either cuts down its exports or increases its imports, of securities, commodities or services. It is obvious, therefore, that no country is compelled to have a large idle balance of foreign exchange if it does not want it, so that the balances which the wealthy countries would be asked to make available to poorer countries are determined, as to size, by the wealthy countries themselves and not by anybody else.

Let me emphasize, too, that such an international monetary organization is not a panacea; it is a vital, and logical, first step from which to start on long-range economic planning, but it will not solve all our problems and we should wreck it if we tried to use it for such a purpose. At the end of this war the poorer countries will urgently need to borrow from the wealthier for immediate rehabilitation. That will be serious, because excessive foreign loans may produce inflation in the creditor country, and may cause other difficulties in a period when commodities are in short supply. But special machinery can be created to meet this special problem if the underlying problems of monetary policy have been solved. Many of you, I am sure, saw the recent American suggestion of an International Development Corporation—an idea based upon the earlier proposals of Emil Francqui and the late Lord Stamp. Such a corporation, if it were effectively organized by cooperative action on the part of several wealthy countries, would admirably supplement the normal monetary mechanism and make it possible to meet the immediate problems of relief and rehabilitation without endangering future monetary stability. Canada must play a part in such developments, even if they originate outside her borders, since trade will tend to follow the movement of capital. Unless Canada recognizes her creditor position, unless she plays her part in any programme for international capital movements, she will reduce to that extent the foreign markets for her goods.

In a completely different segment of the field, we must find solutions to transportation problems (important to human intercourse as well

as to the movement of goods), but I shall not dwell upon these, in view of the fact that experts will discuss them in later lectures. There are also important tariff problems ahead of us if the ideals of the Atlantic Charter, more clearly defined in the Lend-Lease Consideration Agreements, really imply the removal of all major obstacles to trade and of discriminations among countries. Most of us, I think, feel that immediate world free trade is impractical, and that the complete removal of tariff barriers is not likely to occur for some time, but it is definitely true, as one looks back on the decade before the war, that we must consciously, and by international consultation, reduce substantially the handicaps that then prevented the international movement of goods. The incredible development of obstacles to trade from 1929 to 1939 must indeed be counted as one of the fundamental factors responsible for this war, and if we let ourselves slide back into comparable chaos we shall not lay the foundations of the enduring peace for which the world is fighting. Yet this question of tariffs, even in terms of the local Canadian situation, will not be easily solved. The whole question of the attitude of the United States toward reduction of its tariffs, like the future of Imperial Preference and the Ottawa agreements, is something to which the citizens of Canada must give a great deal of attention long before the war comes to an end, and I hope that these lectures may begin some fruitful discussions within this field. Nor must we forget the significance of agricultural exports to Canada in the post-war period, since such exports have always been an important determinant of Canadian prosperity and are particularly sensitive to tariff obstacles or transportation costs.

These are but a few of the post-war problems of Canada, and I am aware that each of them could itself be the subject of a lecture. From this brief review, however, two fundamental conclusions emerge: we shall forget them at the cost of peril to ourselves and distress to our children. In the first place, it is apparent that the prosperity of Canada depends, and will always depend, upon world prosperity. In the second, the extent of the foreign markets for Canadian goods is dependent upon the extent to which Canadians are willing to take the securities, services and commodities that are offered by foreign countries. These two facts must be deeply graven upon our minds, and during the months that lie ahead we must endeavour to think out lines of policy appropriate to the future of this Dominion which are consonant with fundamental realities.

The Future of Air Transport*

OCTOBER 19, 1943

L. WELCH POGUE

In studying "The Markets of Tomorrow," McGill University and Montreal are continuing their traditional alertness and progressiveness. The McGill Associates, the Advertising and Sales Executives Club, and McGill University are to be congratulated for joining in the organization and sponsorship of this serious study of postwar problems. This action results in another of those commendable unions of business enterprise and educational institutions for the purpose of developing intelligent solutions to the problems of our economic life.

I am deeply appreciative of your invitation to me to participate in your studies, and I am greatly honored. Your invitation and my pleasure in accepting it is another of the countless symbols of the friendship between Canada and the United States. This friendship has grown out of the common interests and the common good will of the citizens of both countries; it has produced an exemplary history of relations between nations.

Situated at the confluence of the Ottawa and Saint Lawrence rivers, beneficiary of canals, within sight of the first railway in Canada, and the headquarters of your present two great transportation systems, Montreal has grown to be the largest city in Canada and one of the great ports of the world. You are in a position to understand the significance of transportation. It is natural for you to be impressed with the airways leading to and from your city. The airplane is initiating a new era in the life of Montreal. The growth of air transportation means a new Canada and a new world.

To speak of the future of air transport, we must "look into the seeds of time, and say which grain will grow and which will not." Only forty years ago this coming December, the first successful airplane flight went almost without mention or notice in the public press. There was little recognition of the seed which had started its growth.

But time brought recognition and prophets. In 1910, an effort was made in the United States to secure an appropriation in furtherance of an air mail route. An influential commentator, speaking of air mail, said, "It may serve to amuse somebody. It will be about a two days' wonder, and, in my judgment, that will be the end of it."

Nineteen years later, in 1929, 26 years after the first flight, and only 14 years ago, the airplane had ceased to be a source of amusement. It had played an important part in World War I. There were transcontinental routes. The ocean had been crossed. Passenger, mail,

*Acknowledgment with thanks is made of the assistance of R. B. Adams, of the Civil Aeronautics Board's staff, in the preparation of this paper.

and express services were being widely established. In that year, the new *Encyclopaedia Britannica*, in an article on "Transport by Air,"[1] remarked "that close observers (in the United States) felt warranted in recognizing . . . (air-transport) as of equal importance with terrestrial transportation." But it went on to say that:

> "With the long trunk line systems fairly established in practically every country there remained the establishment of short haul or feeder lines; and considerable progress was being made in that direction in all countries. The linking together of all communities within a nation's boundaries was promised for an early date. That would make air transport a distinctly national institution.
> "Following that there must develop international routes connecting all countries. Expert opinion holds that the airship must become the common carrier for all long distance routes over the water, principally because it can carry heavy loads at a greater net profit; also because it can remain in the air, supported by buoyant gas, even when the engines fail. For shorter distances over water and routes overland within a radius of 1,000 miles the aeroplane is superior and more profitable. There is every indication that the two types, heavier and lighter-than-air, will be employed together within the next five years, airships and planes being used to link all countries in one vast system affording a continuous world-wide service travelling at an average of 100 miles an hour or even better in any kind of weather."

In the following year, a textbook,[2] in a section devoted to air transportation, quoted Alexander McAdie as follows:

> "Though subsidies now support aerial transport in every direction, and propaganda seeks to popularize it, eventually civil aviation must be left to fly by itself; and, while economic factors will then determine its scope, the aeroplane will remain a vehicle of emergency and quick transport under conditions favorable to its use, reasonably safe for comparatively short distances, perilous on long flights, with a freedom of route denied to other vehicles of transport, yet governed in its incomings and outgoings by the inconstant wind. But the force of gravity, ever pulling the plane and its load to earth, will ever set a limit to the achievements of aircraft and be the insurmountable barrier to commercial success in the air."

The student was assigned a consideration of "the adaptability of the airplane for (1) mapping, (2) exploring, (3) patrolling for fire, (4) policing, (5) insect control, (6) transport in inaccessible regions, (7) timber-cruising (taking inventory of forests), (8) serving as 'eyes' for the army and navy, (9) emergency service, e.g., in cases of accidents or epidemics, (10) hunting, (11) recreation."

These are some of the expert opinions, some of the glimpses of the future, which were given to us scarcely more than a decade ago. Unforeseen technological developments and a failure to comprehend the significance of the speed and flexibility of the airplane have been the cause of many errors in prediction.

Today, the conservatives are still with us. There are others who go beyond the bounds of reasonable optimism; figuratively, one might expect to see surface transportation disappear and the sun hidden from the sky by fleets of planes in peaceful commerce. Air transportation has an expanding field of economic utility; it will undergo tremendous expansion and development, but its destiny is

1. *The Encyclopaedia Britannica*, Fourteenth Edition, 1929; Volume 22, pages 418 and 419.
2. Blanchard, W. O., *Geographic Aspects of Transportation*, Henry Holt and Company, New York, 1930; page 79.

not the mere supplanting of other forms of transportation. Surface facilities will yield traffic to the airplane to the extent that some social, economic, or other real benefit or value can be added by the increased speed and flexibility of flight. This should not be regrettable; it has been the yielding to something better which has made for progress.

But the singular characteristics of the airplane will also create new traffic. The proximity in time which will be established between the developed and the most undeveloped portion of the earth, however distant or geographically inaccessible, will result in new national and international travel and commerce. The airways will become the permanent but flexible channels through which new social and economic activity will flow. Surface transportation will participate in the generally increased movement and prosperity arising from this stimulus. Air transportation will become a new element in the life of the world; the trade and travel which it will develop will act as a catalytic agent in our whole society and economy.

No one can make a comprehensively detailed prediction of the future of air transport with the expectation that it will have a precisely timed accuracy. Present knowledge is not sufficient for the task. It is nevertheless necessary, despite the present difficulties, to plan and prepare intelligently for the opportunities which are certain to be presented at the close of the war. This requires some estimate of reasonable probability in air transportation development in the immediate future. The view I take here is of the decade following a successful end of the war.

The predictions made are in the light of present and foreseeable technological achievements; they are made with the knowledge that unpredictable rates of shift and development in travel and shipping habits may take place. Sudden and revolutionary advances in technology might so improve the operating characteristics of aircraft that new appraisals would have to be made of their effect upon the growth of air transport. Similarly, there is something unpredictable in travel and shipping habits; it has been so in the past in other forms of transportation. The effect of the speed and flexibility with which we are dealing may be more profound and swift than in any available precedent in transportation history. The full strength of the forces at work have yet to be measured.

For the most part, I shall have to measure the effect of the influences of air transport in the United States because I have more relevant information about the United States than I have about other places. But the same influences will be at work everywhere. They will produce similar results in Canada and the world.

Fundamental to an intelligent study of the future of any influence at work in human affairs is an examination of its history—its importance, the direction which it has taken, the restraints despite which it has grown, and the momentum which is behind it.

Transportation is Civilization

So far as transportation is concerned, Kipling, the poet, perceived the essence of the matter when he said, "transportation is civiliza-

tion." The history of society, trade, and culture has been one of expanding horizons brought about by increased and speedier means of intercommunication. Facilities for extensive travel and for the interchange of large quantities of goods are a purely modern development. A product of the Industrial Revolution, they are clearly the channels through which all its benefits flow.

At first an isolated individual, man has expanded in many ways the scope of his life to embrace a knowledge of the world and intercommunication with all people. Transport has been the main highway of this achievement.

The waters of the earth were the first major roadways over which moved the stimulating influence of intercommunication and trade. It took a longer time to conquer the land. But for thousands of years, the conquest of both produced nothing in the way of speed. A long journey took a sizeable portion of a man's life. Trade over long distances was limited to articles which time would not deteriorate nor depreciate. The difficulty of travel and the time which it required divided the world into remote regions. With the advent in the nineteenth century of the most notable improvements in transportation facilities in recorded history, the life of the world took a new direction.

The resulting increase in intercommunication, trade, and commerce, domestic and foreign, created our modern economic and social structure; it produced a growing interdependence of communities and nations and initiated a cosmopolitan influence which will resume its operation at the close of the war. Economic depressions were no longer local; they had their national and international repercussions. The goods used by an individual were not all his own products; they were the products of another locality, or the people of another nation. National and world societies and standards of living were in the making. A unifying economic and social influence was in process.

For a long time in human history, the waters of the earth were the chief roadways of the world. The early centers of population were usually located along river banks or lake and ocean fronts. The cradles of civilization were along the Tigris and Euphrates and the River Nile. Caravan routes for inland commerce were established, but they could not match the comparative facility of water transport. With numerous horses, many thousands of camels, and one to two thousand persons,[3] they did well to carry a hundred tons.[4] Their progress was slow. From the Chinese ocean to the sea coast of Syria, laden with cargoes of silk, it was 243 days.[5] Inland there was the difficult desert, the formidable mountains, or the denseness of an unexplored and inhospitable forest. Internal commerce was relatively unimportant and the early commerce of the ancient world was largely foreign, conducted over the seas and oceans. The Phoenicians and the Carthaginians established great commercial empires traversing the Mediterranean.

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3. Lindsay, W. S., *History of Merchant Shipping and Ancient Commerce*, Four Volumes, Sampson Low, Marstan, Searle & Rivington, London, 1883, Volume 1, page 91.
4. *The Encyclopaedia Britannica*, Ibid., Volume 6, page 107.
5. Lindsay, W. S., Ibid., page 178.

Grecian civilization spread throughout the Aegean and the Mediterranean. The conquests of Alexander carried its influences throughout the known world. The fall of Greece has been commonly attributed to the inability of the Greeks to unite, a circumstance in turn said to have been caused by the disruptive geography of the land in which they lived and their failure to develop and maintain intercommunication. But the Greeks, too, traded over the Mediterranean, or as they called it, *Ho Pontos,* the Passage or Road.[6]

Practically all the early commerce, however, was made up of articles of high value, such as silk, linen, glass, porcelain, white copper, brass, iron, hatchets, adzes, knives, daggers, wines, gold, silver plate, tin, rhinocerous horns, tortoise shells, myrrh, odiferous gum, frankincense, arber, spicery, and balm. In the days of Rome, grain was brought from Egypt, but the great trade was in luxury articles to satisfy the demands of the wealthy class.

In the process of consolidating her empire, Rome not only maintained a fleet, but also built the famous Roman roads. It was over these channels of transportation, as well as over the sea routes, that the influence of her civilization was sustained. With the fall of Rome these roads declined, and as her mastery of the sea disappeared, the oceans were again infested with piracy. Intercommunication throughout the whole of Europe became difficult. Life became local. The medieval society within walled towns grew up. Most of the areas were self-sufficient. There was very little trade over land. Travel was accomplished on horseback and internal trade, for the most part, was achieved with pack horses. Relatively, foreign trade was greater and more important. Even this trade, however, was limited to luxury items. No other class of goods could stand the difficulties and exorbitant costs of transport.

Small as this trade in medieval Europe was, the coastal and foreign commerce which was carried on by Europe brought a stimulus to the people. Attention has been drawn to the fact that Europe has one linear mile of coast to 174 square miles of area, as compared to Asia's one to 490 and Africa's one to 700; it has been asserted "that this geographical configuration was largely responsible for the greater degree of intercommunication which developed among the peoples of Europe—and hence for the quicker rate of social progress—than in any other part of the world."[7]

The first great disruption of the staidness of medieval life by contact with a world remote from its own came with the Crusades. Their influences upon the life of Europe are strikingly illustrative of the effect of intercommunication and trade. The Crusaders brought with them new ideas with respect to housing and furniture. They brought with them the customs of shaving and bathing. They discovered and brought back with them to Europe many new plants, expensive textiles, perfumes, precious stones, spices, and the luxuries of the East.[8]

6. Durant, Will, *The Life of Greece,* Simon and Schuster, New York, 1939; page 4.
7. Horrabin, J. F., *The Opening-Up of the World,* Methuen & Co., Ltd., London, 1936; page 44.
8. Horn, Paul V., *International Trade Principles and Practices,* Prentice-Hall, Inc., New York, 1935; page 82.

The discovery of the new world, prompted by the search for new and shorter sea routes to the wealth of the Indies, marked the beginning of a new era in world trade and commerce and a new epoch in human history. Through the courage of man and the establishment of transportation facilities the parts of the whole globe were becoming known to each other. The process of discovery has continued to modern times. Until the middle of the nineteenth century, for example, almost the whole of Africa remained unexplored; it remains undeveloped to this day. The process of new development will continue.

At first the early trade and intercommunication which resulted from the opening-up of the world was limited largely to the production, both manufacturing and agricultural, near the coast or located on inland waterways. It was not, as a matter of fact, until the improvement of land transportation, until the development of a railroad network in the growing industrial nations of the world, that the hinterland of ports was extended to draw in full upon internal continental resources and place them at the disposal of the world. These internal resources were being developed by rapidly growing nationalist states, their citizens molded together by means of transport which permitted the physical intermingling of people and the exchange of the products of their labor.

These transportation facilities have wrought a profound transformation in human life as well as commerce. For thousands of years the pace of man's progress over the earth had been about the same. The speed of travel in ancient Persia or Rome was practically as great as that attainable by Napoleon. Life and trade were local. Travel in any volume was largely a matter of colonization. In 1790, in the United States, the conditions of roads were such that if a community was more than fifty miles from a market it was expedient to be industrially independent.[9] It has been asserted that in 1860, "For the first time the internal commerce of the United States exceeded her foreign trade."[10]

It is with this brief general background of the influence of transportation upon civilization that I should like to discuss with you some of the details of the future of air transport. Here is a facility for transportation which represents as great an improvement over other present means of movement of people and cargo as did the railroad and the steamship at the time they made their appearance. It has an unprecedented speed; it is highly flexible. It translates distance into terms of hours—it has conquered time. It has the power to go anywhere over the earth—it has destroyed all barriers of land and water.

Passengers

It seems to be a well-established American custom for the prophets of the future of air transport, in making their predictions of passenger travel by air, to take current statistics relating to surface travel,

9. United States Department of Commerce and Labor, Bureau of the Census, *A Century of Population Growth*, Government Printing Office, 1909, page 26; quoting Wilbert Lee Anderson: "The Country Town," page 20.
10. Horn, Paul V., Ibid., page 479.

both on land and water, and to assign a certain percentage of this present travel to the air. There have been only a few exceptions to the method. I hope that you Canadians have not fallen into this error. It arises out of the failure to consider the history or to recognize the character of volume passenger travel.

Travel, as we know it today, is a purely modern phenomenon. Its history has been written largely within the memory of living men. Early travel was on foot. Later, man traveled over the water or on the back of some animal. It was a long time even before he was drawn in coaches. The chief objects of his travel were trade, conquest, or colonization. Regardless of his purpose, by whatever means he chose to travel, it was a long and dangerous journey. People traveled only as a result of the most urgent necessities or the most compelling curiosity.

The earliest traveler was probably a man lost from his home or his tribe. He continued to travel as a trader. Extended travel for pleasure was practically unknown. There was no pleasure in it. Non-existent or poor roads, the risks of the sea, the time involved, and the lack of a medium of exchange made it hazardous and difficult. Herodotus, as well as being the father of history, was certainly one of the first world travelers. As empires were established in the world, government officials found it necessary to move between their various posts of duty. Religious pilgrims constituted a still later class of traveler. But for the most part, pleasure travel was limited to that between nearby houses and villages. Distant travel was almost unheard of. In the thirteenth century Marco Polo had taken three and one-half years to get to China. In some places, travel was even restricted. In China, in 629 Yuan Chwang traveled in the face of an imperial edict forbidding foreign travel.[11]

Travel in Europe, when undertaken at all, was by foot or by horseback. The Emperor Frederick III had the first rude coach in 1474. Seventy-six years later there were only three coaches in the whole of France, all belonging to the royal family. The first coach was not used in England until 1555. Queen Elizabeth rode to Parliament in a coach on April 2, 1571. As coaches became more widely used, much opposition to them was voiced by the public boat owners. They employed a press agent who declared in some of his propaganda that "coaches are mere moving houses of sin, used chiefly by the most depraved and abandoned women."[12] In 1663, stage coaches were extended beyond London and were called "Hell Carts" by the Londoners. They were considered "as a dangerous innovation likely to cause injury to the public at large, (and) there was some demand that they should be prohibited." Even with coaches, however, people still rode horseback whenever speed was an object. Commercial travelers still went on horseback, carrying their samples in bags.[13]

11. Wells, H. G., *The Outline of History*, Two Volumes, The MacMillan Company, New York, 1926; Volume 1, pages 366 and 367.
12. St. Clair, Labert, *Since Time Began, Transportation, Land . . . Air . . . Water*, Dodd, Mead & Company, New York, 1934; pages 38, 40, 41, 43, and 44.
13. Kirkaldy, Adam W., and Evans, Alfred Dudley, *The History and Economics of Transport*, Fourth Edition, Sir Isaac Pitman & Sons, Ltd., London; pages 15 and 16.

Speed in travel began to be important, and in 1754 a group of Manchester merchants inaugurated the services of the "Flying Coach." The promoters advertised that, "However incredible it may appear, this coach will actually (barring accidents) arrive in London in four days and a half after leaving Manchester." The distance was 188 miles.[14]

On the North American continent travel was similarly difficult and slow. On foot or horseback was the usual method. Coaches were few and schedules infrequent. The rough character of the land made travel difficult. The crossing of the mountains between Philadelphia and Pittsburgh, in 1784, in a chaise, was described as a feat "which till now had been considered quite impossible."[15]

The steamboat was launched on inland waterways far in advance of the time that it secured wide usage in transoceanic service. The first steamboat on the Saint Lawrence river was launched in 1809. *The Quebec Mercury* reported, "On Saturday morning, at eight o'clock arrived here, from Montreal, being her first trip, the steamboat *Accommodation*, with ten passengers."[16]

The ten to twenty-four passenger accommodations which were provided in the packets in the period 1815 to 1830[17] for overseas travel were not conducive to a development of passenger traffic. The accommodations were not comfortable, and at best the trip across the North Atlantic took a couple of weeks. The thin line of traffic (exclusive of immigrants) which crossed the oceans was undoubtedly created by urgent business and family affairs.

Such was the passenger travel of the past. The radius of man's personal familiarity with the world beyond his doorstep was determined by the amount of hardship he was willing to endure and to the portion of his brief span of life which he was willing to spend to visit a place beyond his home. The amount of travel was strictly limited by the facility for travel and by the reluctance to spend one's life in getting from place to place.

It was not in fact until the beginning of the nineteenth century that passenger travel received its first stimulus of any consequence. The Industrial Revolution, with its decentralizing economic influences and its creation of new wealth, was establishing a demand for travel facilities. The roads, canals, and steamboats on the inland waterways were responding and were providing new opportunities for business and pleasure travel which were quickly seized upon. But the facilities to take care of the demand remained inadequate. Man could not yet travel as much as he would like.

A visitor to the United States, who traveled 10,430 miles between December 24, 1838, and January 14, 1840, gave a composite picture of the means of travel just prior to the opening of the modern travel era. He traveled 3,329 miles on steampower railroads, 215 on horse-

14. St. Clair, Labert, Ibid., page 48.
15. Hulbert, Archer B., *The Paths of Inland Commerce, A Chronicle of Trail, Road, and Waterway*, Yale University Press, New Haven, 1921; page 66.
16. Lindsay, W. S., Ibid., Volume 4, page 58.
17. Hutchins, John G. B., *The American Maritime Industries and Public Policy, 1789-1914*, Harvard University Press, Cambridge, 1941; page 215.

power railroads, 2,220 on steamboats upon rivers, 813 on steamboats upon lakes and the sea, 2,949 on stages and sleighs, 375 on canal-boats, 136 on a sailing vessel, 293 in private conveyances, and 100 on foot and horseback.

This itinerant was in a travel status for 1,835 hours—1,381 hours for travel and 454 hours for stoppages. His greatest average speed was fifteen miles per hour on the steampower railroads. Steamboats averaged nine and ten miles per hour, canal-boats three and nine-tenths, and sailing vessels two and one-half. Stages and sleighs averaged four and nine-tenths miles per hour. His average speed for his various modes of public transportation was seven and a half miles an hour for the time actually traveled, and 5.1 miles an hour for elapsed travel time.[18] His actual travel time was 56 days. On the modern railroad, it might have been cut to seven days. The airplane would have reduced it to two and one-half days. Such has been the acceleration of transportation in the last century.

The railroad and the steamship had an almost simultaneous development, the widespread use of the steamship lagging only a little in point of time. Here were relatively luxurious travel facilities, providing, especially in the case of the railroads, comparatively breath-taking speeds. The effect of these innovations was almost instantaneous. The travel habits in the United States changed overnight. The growth in travel was unprecedented. Modern travel was inaugurated.

Some of the significant data on the growth of travel on the railroads in the United States are set forth as follows:—

TABLE I

Yearly Average Railroad Passenger Statistics

Period[a]	Estimated Average Population[b]	Passenger-Miles[c]		Average Length of Journey (Miles)[c]
		Total (Millions)	Per Capita[d]	
1882-1890	56,551,749	10,005	176.92	25.26
1891-1900	69,471,145	13,623	196.10	25.56
1901-1910	83,983,421	24,710	294.22	31.43
1911-1915[e]	95,406,855	33,768	353.94	33.14
1921-1930	114,242,833	34,358	300.75	38.63
1931-1940	127,222,162	20,722	162.88	43.43

[a] Railroad passenger and passenger-mile statistics are not continuously available prior to 1882. The United States Interstate Commerce Commission, Bureau of Statistics, in *Railway Statistics Before 1890*, Statement No. 32151 (File No. 323-A-1, 10 pages), reports various statistics of the railroads for 1830-90. A footnote reports 37,815,810 passengers carried in 1855, this comparing with 289,030,783 reported in 1882. Obviously, an almost incredible growth in passenger traffic had taken place between 1855 and 1882, paralleling the increase in number of miles of road operated from 18,374 to 114,677 during the same period.

[b] Computed from *Statistical Abstract of the United States*, 1941, United States Department of Commerce, Government Printing Office, Washington, 1942.

18. *The American Almanac and Repository of Useful Knowledge for the Year 1841*, Boston, Published by David H. Williams.

(c) Source: See notes *a* and *b*; also *Statistics of Railways in the United States for the year ended December 31, 1941*, United States Interstate Commerce Commission, Government Printing Office, Washington, 1943.

(d) Computed. During these same periods, the average miles of track, while increasing from 114,677 in 1882 to 246,739 in 1940, remained about the same on a per capita basis from 1882 to 1910, decreasing slightly thereafter.

(e) Because of the influence of World War I, 1911-1915 averages used; 1911-1915, 168,839 millions of passenger-miles; 1916-1920, 212,740 millions of passenger-miles.

In 1855, 38,000,000 passengers were carried by the railroads in the United States. In 1882, only a little more than a quarter of a century later, the number had increased nearly eight times to 289,000,000. The average passenger-miles per capita increased from 114 in 1880[19] to a yearly average of 177 in the period 1882-1890. In the decade 1901-1910, the increase was to a yearly average of 294 and in the five-year period 1911-1915 to a yearly average of 354 passenger-miles per capita. During this same period of less than three and a half decades, from 1882 to 1915, when the yearly average passenger-miles per capita were increasing from 177 to 354, the average length of journey was increasing from 25 to 33 miles. Man had been released from his bonds; he was traveling twice as much and a third again as far.

This was travel only on the railroads. A new mode of travel made its appearance at the turn of the century. In 1900, there were 8,000 passenger cars, buses, and taxis in the United States; in 1910, 459,000; and in 1915, 2,310,000.[20] Even during this period, the automobile undoubtedly took some traffic from the railroads, and its absorption of some short-haul traffic may have contributed to the increase in the average length of passenger journey on the railroads. The influence of the automobile in both respects, however, was probably at a minimum. Suitable roads were not extensive and did not form the present intercity network. In any event, the automobile had not yet kept the railroads from increasing their yearly average passenger-miles per capita.

It was not until the decade 1921-1930 that the yearly average railroad passenger-miles per capita decreased, dropping to 301. In the decade following and just now passed, they decreased to a yearly average of 163. During the same periods the average length of journey had increased to 39 and 43 miles, respectively. This decrease in passenger-miles per capita and the now extraordinary increase in average length of journey on the railroads were indications that the automobile had achieved a high level of economic utility, leaving the railroads to a more limited field of usefulness. Extensive systems of intercity roads became available. The number of passenger cars, buses, and taxis had grown from 2,310,000 in 1915 to 8,226,000 in 1920; 23,059,000 in 1930; and 27,435,000 in 1940.

But the railroad traffic flowing to the automobile in the process of its expansion and development was only a small part of the auto-

19. *The Encyclopaedia Britannica*, Ibid., Volume 18, page 937.

20. *Statistical Abstract of the United States*, 1941, United States Department of Commerce, Government Printing Office, Washington, 1942.

mobile total. The automobile had created new traffic. In the decade 1931-1940, the railroad passenger-miles per capita dropped to a yearly average of 163. It was estimated,[21] however, that the intercity bus traffic in 1933 amounted to 3.4 billion passenger-miles and the intercity private automobile traffic to 184.9 billion passenger-miles, a total for the two of 188.3 billion. This number, based on the average population between 1931 and 1940, amounts to 1,480 passenger-miles per capita a year. Including the railroad traffic, the yearly average passenger-miles per capita in the continental United States had increased over ninefold in a period of approximately fifty years.

In overseas travel, the growth has been equally remarkable. Even very early there were many immigrants, but few were the ordinary citizens who yielded to the urge of business or curiosity to hazard and suffer a sea voyage. In the United States in 1820, one United States citizen to every 5,000 of the population returned from abroad. The ratio had dropped to one to 3,665 in the decade 1841-1850. It was during this decade that vessels crossing wholly under steam made their appearance on the Atlantic.[22]

In the period 1851-1860, the ratio was one citizen arriving from abroad to every 983 of the population. This was the decade of the *Great Eastern*, although in 1856 only 5,000 of a total of 142,000 passengers arriving in New York were carried on steam vessels; 22 of the 574 passenger vessels arriving at that port were classified as steam vessels. Thirteen years later, however, in 1869, 443 of 597 passenger vessels arriving at New York were steamers, and they carried 229,000 out of a total of 257,000 passengers.[23] The growth in number of passengers continued.

In the decade 1891-1900, during which the percentage of all the world's steamer shipping first exceeded its sailing tonnage, the ratio of citizens arriving in the United States was one to 742 of population. Between ten and fifteen years later, in the five-year period 1911-1915, the ratio had dropped to one to 350. The total number of citizen arrivals had trebled in this period. This was the era of the *Mauretania*, *Olympic*, and *Aquitania* types of steamer ships. Although the gross amount of travel has since continued to increase, on a per capita basis it has remained about the same. It may be that the steamships have reached their maximum power of passenger attraction. They have provided comfort; they have introduced regularity; and they have reduced the time of travel. But it may be they have not been able to conquer time to an extent which will permit the rapid upward growth of per capita foreign travel.

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21. *Technological Trends and National Policy*, Report of the Subcommittee on Technology to the National Resources Committee, United States Government Printing Office, Washington, 1937, page 177, quoting the reports of the Federal Coordinator for Transportation.

22. *Oversea Travel and Travel Expenditures in the Balance of International Payments of the United States, 1919-38*, United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Government Printing Office, Washington, 1939; page 11.

23. Ibid.

In this measurement of per capita overseas travel, the average number of citizens arriving in the United States has been used, instead of total citizen departures and arrivals, because departure data are not available prior to 1868. The data are, of course, exclusive of immigrant traffic and alien travelers. Somewhat more detail appears in the following:

TABLE 2

United States Citizens Arriving from Abroad
1820-1938

Period	Average Population[b]	Yearly Average Citizens Arriving by Sea from Foreign Countries[e]	
		Number	Ratio to Population
1820	9,638,453[c]	1,926[f]	5,004
1821-30	11,252,237	2,272	4,953
1831-40	14,967,737	4,096	3,654
1841-50	20,130,665	5,492	3,665
1851-60	27,317,599	27,647	988
1861-70	35,630,885	29,213	1,220
1871-80	44,987,116	47,577	946
1881-90	56,551,749	79,840	708
1891-1900	69,471,145	93,602[g]	742
1901-10	83,983,421	178,507	470
1911-15[a]	95,406,855[a]	272,540[a]	350
1921-30	114,242,833	352,271	324
1931-38	127,222,162[d]	344,010	370

[a] Because of the influence of World War I, 1911-15 averages used; 1911-15, 1,362,698 passengers; 1916-20, 575,810 passengers.

[b] Computed from *Statistical Abstract of the United States*, 1941, United States Department of Commerce, Government Printing Office, Washington, 1942.

[c] 1820 census figure.

[d] Based on average of 1930 and 1940 census.

[e] *Oversea Travel and Travel Expenditures in the Balance of International Payments of the United States*, 1919-38, United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Government Printing Office, Washington, 1939.

[f] 1820 figure.

[g] 1896 and 1897 figures unavailable; based on 8-year average.

This is the current of travel activity into which air transport was cast. Up to the present time, the number of passenger-miles carried by air has been almost infinitesimally small when compared with the total number of passenger-miles carried by other forms of public transportation. This has been because the facility for air transportation is new. Not since Minerva sprang full grown from the head of Jove has anything been born mature and possessed with its full strength.

Many errors of prediction have been made because of the failure to recognize the absolute newness of air transportation. Look back only to January 1929 at your air service between Montreal and New York; that was the first month in which the Official Aviation Guide for the Airways was published. There was one round trip a day; the fare was $50, or approximately 15 cents a passenger-mile; and the time for the trip was four hours, an average speed of 83 miles per hour. Ten years ago this month, in October 1933, you still had only one trip a day; the time had been cut by 25 minutes, the plane now averaging 93 miles an hour; and the fare was now only 7c a passenger-mile. Five years ago, in October 1938, you had two schedules a day; the trip took only 2 hours and 5 minutes, the planes now averaging 164 miles an hour; and the passenger fare was only 5.34 cents a passenger-mile.

In November 1939, there were 247 passengers traveling into and out of Montreal on the airway to the United States, producing a total of 122,000 passenger-miles; passengers started or ended their journeys in twenty-one cities in the United States. In September 1940, the number of passengers had increased 384 percent to 2,677 passengers, and the number of passenger-miles had increased 709 percent (exceeded by only one city in the United States) to 984,000; the number of cities contacted in the United States had increased to 43.[24] The war has interrupted further normal developments.

Air transportation in Canada—with its long distances and great opportunities for development—has just begun its growth. It was not until December 1, 1938, that you had a daily transcontinental air service from Montreal to Vancouver. It was not until March 1, 1942, that night schedules could be flown over the entire route, and not until May 1, 1942, when service was extended to Saint John's, that it could be said you had a complete transcontinental service. The number of passengers carried on Canadian Airways grew from 141,158 in 1937 to 235,860 in 1942.

In the United States, in 1926, there were only 5,782 passengers carried on the domestic airways system; only 8,661 in the year following. In nine years, in 1935, however, the number of passengers had jumped to three-quarters of a million. Revenue passenger-miles increased 267 percent in the period 1936-1941, from 321,000,000 in the fiscal year ended June 30, 1936, to 1,178,000,000 in 1941.

Air travel from the United States to overseas destinations has likewise continued its growth. Before the war, from 1929 to 1938, straight through business depressions, the departures from the United States to overseas destinations increased from 4,000 to 25,000 per year.

The details of this growth are shown in the following quoted table:

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24. *Origination and Destination Airline Traffic Survey*, September 1940, United States Civil Aeronautics Board, Washington, 1941.

TABLE 3

Air Travel from the United States to Overseas Destinations[25] *(Principally Bermuda, West Indies, and Central and South America), 1929-38*

Year	Citizens	Aliens	Total	Year	Citizens	Aliens	Total
1929	4,000[a]	...	4,000[a]	1934	9,608	3,439	13,047
1930	5,140[b]	622	5,762[b]	1935	9,315	3,087	12,402
1931	5,853	984	6,837	1936	14,780[c]	4,467[d]	19,247
1932	5,910	1,171	7,081	1937	18,902[e]	4,816[f]	23,718
1933	7,930	1,854	9,784	1938	20,319[g]	4,751[h]	25,070

[a] The figure is approximate.
[b] Includes 9 departures for Germany.
[c] Includes 373 departures for Germany and 28 for the Philippine Islands.
[d] Includes 156 departures for Germany and 4 for the Philippine Islands.
[e] Includes 192 departures for the Philippine Islands and 116 for China.
[f] Includes 28 departures for the Philippine Islands and 24 for China.
[g] Includes 93 departures for the Philippine Islands and 63 for China.
[h] Includes 8 departures for the Philippine Islands and 20 for China.

All these growth trends will resume at the close of the war. The growth in passenger travel by airplane will be prompted by the facility and the speed with which it can be undertaken. A comparatively small common carrier unit for passenger travel, the airplane can establish a number of schedules within the hour rather than within the day; a number of departures for overseas points can be had within the day rather than within the week. This convenient frequency is to be added to a speed which will place passengers across a continent or from one side of the ocean to the other overnight. This frequency and speed will bring nations and the world together in point of time. The airplane will supply man's desire for an expanding horizon of pleasure and business activity.

As I have just suggested, the most striking domestic contribution which will be made by air transport to Canada and the United States, and to every other nation having great distances which enhance the speed value of air transportation, will be the development of long-haul traffic. Internationally, its greatest contribution will be to the strengthening and development of new communities of interest between nations remote in miles but close in hours.

I have not meant by these statements to imply that the growth of the use of the airplane will be limited to long journeys. In the United States, in September 1940, the average length of a journey by air was only 464 miles. Half the passengers traveled only 250 miles or less; three-quarters traveled less than 400 miles and nine-tenths less than 750 miles. The growth of traffic between the closely situated metropolitan centers was tremendous. The number of passengers traveling less than 150 miles had increased 177 percent

25. *Oversea Travel and Travel Expenditures in the Balance of International Payments of the United States, 1919-38*, Ibid., page 40.

over November 1939; growths such as this weighted the average. The average length of journey had nevertheless increased in the case of two-thirds of the cities.[26] The short-haul growth is additional evidence of the overwhelming importance of time, of speed in travel; the airplane was being used increasingly to save every precious moment.

On the other hand, neither should this description of the tremendous increase in short-haul traffic be construed as an indication of belief on my part that a major field for the development of air passenger transportation exists in a mass invasion of the extremely short-haul market. This market is at present definitely not within the sphere of air transport's greatest economic utility. Until airplanes can make landings in the centers of cities, both the convenience and time advantage of air transport would be lost in frequent-stop travel between cities only a few miles apart. Surface transportation, especially the private automobile, is more convenient and speedier in the short journey to a nearby city. When air transportation is extended to the small cities, for many years the traffic which will be absorbed and developed will be that which secures advantages of convenience and time from the use of the airplane over relatively long distances; these advantages will not exist over extremely short distances on routes where speed-delaying stops are frequent.

In short, I believe that the most significant social and economic effects of the airplane will arise from the extension of the average length of pleasure and business journeys. The trend is an historical one, its pace set by the facility and speed of transport.

If a business trip can be made across the continent overnight, or across the ocean in only a slightly greater length of time, markets, distant in miles, are as close in point of the business man's time as only eight hundred or a thousand miles by rail. This propinquity will result in more business travel and a stimulus to trade. Social and pleasure travel may also be accomplished within a nation or the world in the same or a shorter span of time than it is now by surface transportation in many provinces and states. The cultural centers and the vacation grounds of a nation or the world can be at every man's feet within a matter of hours. This will develop new passenger travel just as did the railroad and the automobile.

The fact that probably nearly fifty percent of foreign travel has been for pleasure[27] holds great promise for the future use of the international airways to Canada, a land of great scenic beauty, full of historic interest, rich in religious shrines, possessing an invigorating climate, with opportunities for summer and winter sports of all kinds. The airplanes flying to and from your country should be filled with travelers who have sought and found recreation, pleasure, and cultural stimulus in a world that is free.

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26. *Origination and Destination Airline Traffic Survey*, Ibid.
27. *Oversea Travel and Travel Expenditures in the Balance of International Payments of the United States, 1919-38*, Ibid., page 48.

More travel for business, more for pleasure, this is the future of air passenger travel at the close of the war. We will travel farther distances in our own countries. We will travel abroad more frequently. We will increase and extend our business contacts across our nations and into foreign lands. We will know the farthest reaches of our own continent and will spend two-week vacations in Europe, Africa, South America, and the Orient. Daily and multi-daily air transport services throughout the world will continue the unifying trends of national and world intercommunication.

Mail

Another important aspect of this unifying trend is mail. The post office has been called the "right hand of commerce." The swiftness of the posts has been an aim of government from time immemorial. In describing the posts in ancient Persia, Herodotus gave a motto to the efficient postal services of the modern world, when he wrote, "Neither snow nor rain nor heat nor gloom of night stays these couriers from the swift completion of their appointed rounds." It will be a naturally progressive step for the mail to be carried by air.

When the airlines in the United States were carrying four and five billion pound-miles of air mail annually, the additional 150 billion pound-miles of non-local first-class mail in the United States undoubtedly looked like a formidable load. But from 1936, when they carried 9,772,000,000 pound-miles of air mail to 1941, when they carried 22,559,000,000 pound-miles, they took a 144 percent increase in their stride. In the following fiscal year they increased their load to 31,729,000,000 pound-miles, and in the twelve months ended June 30, 1943, they carried 56,731,000,000 pound-miles, an increase of 79 percent. This latter increase was accomplished with only about fifty percent of their former equipment. For the fiscal year ended June 30, 1942, the latest period for which the data are available, there were only 148,261,000,000 pound-miles of additional non-local first-class mail carried in the United States. With a little more time, popular usage may come close to transferring the greater portion of first-class mail to the air at rates twice those of ordinary mail. Such is the value of speed with mail.

But the volume of mail transported by surface means should not be taken as a final criterion of what the volume might be if the carriage of all mail were accelerated by the speed of air transport.

In 1790, the year of the first census in the United States, the postal receipts in the United States were one cent per capita. In the period 1931-40, they averaged $5.25 per year per capita. Slightly more than half of this expenditure was for letter mail. Correspondence, too, is a modern phenomenon. An index reflecting growing social and business activity, the volume of correspondence was made possible and stimulated by adequate and increasingly speedier transportation facilities. With mail also, opportunities for transport create traffic.

A more complete picture of this growing postal expenditure per capita is presented as follows:

TABLE 4

United States Postal Receipts Per Capita

Period	Average Population	Yearly Average Gross Revenue	Yearly Average Postal Revenue per Capita	Percent Increase	
				Period	Cumulative
1790	3,929,214	$ 37,935	.010		
1791-1800	4,618,849	169,544	.037	270.0	270
1801-1810	6,274,182	425,388	.068	83.78	580
1811-1820	8,439,167	912,470	.108	58.82	980
1821-1830	11,252,237	1,400,123	.124	14.81	1,140
1831-1840	14,967,737	3,431,160	.229	84.68	2,190
1841-1850	20,130,665	4,390,581	.218	−4.80	2,080
1851-1860	27,317,599	6,798,169	.249	14.22	2,390
1861-1870	35,630,885	13,895,067	.390	56.63	3,800
1871-1880	44,987,116	26,702,241	.594	52.31	5,840
1881-1890	56,551,749	47,259,622	.836	40.74	8,260
1891-1900	69,471,145	81,637,611	1.175	40.55	11,650
1901-1910	83,983,421	163,480,038	1.947	65.70	19,370
1911-1920	98,841,443	323,077,520	3.269	67.90	32,590
1921-1930	114,242,833	609,272,038	5.333	63.14	53,230
1931-1940	127,222,162	668,287,736	5.253	−1.50	52,430

Source: Post Office Department. It should be noted that the above includes all revenues. Letters were first registered July 1, 1855; domestic money orders were first issued November 1, 1864; international money orders were first issued September 1, 1869; and insurance and C.O.D. service were inaugurated July 1, 1913.

To say that potential mail for the air is limited to what is now carried by surface means would be similar to having said in 1860 that the potential mail for the first transcontinental railroad in the United States, which was not to be completed until 9 years later, was the amount of mail which was carried on the famed Pony Express from Saint Joseph, Missouri, to the Pacific Coast, advertised to make the trip in 10 days, although actually usually requiring more. On the first trip, on April 3, 1860, 25 letters were carried. At first service operated every Tuesday. Later it was increased to twice weekly. The average number of letters per trip gradually grew to 90.[28] In a week in June 1940, the number of pounds of air mail alone moving only from New York City to California averaged over 1,100 pounds per day, or over 33,000 letters.[29]

On a yearly average, the Pony Express mail from the east to the Pacific Coast was about 25/1000 of a letter per capita for the 1860 population of California; only the New York City to California air mail referred to was over 1.5 letters per capita for the 1940 population of California; this is an excess of approximately 6,150 percent. It was not, of course, the mere provision of transport facilities which

28. Hafen, LeRoy R., *The Overland Trail*, Arthur H. Clark Co.
29. *Air Mail Survey*, June 16-22, 1940 United States Civil Aeronautics Board, Washington, 1941.

developed this traffic, it was the community of interest which those facilities made possible and stimulated. And air transport, strengthening old and establishing new communities of interest, will in its turn stimulate and create new mail traffic.

It is difficult to measure the past volume of foreign mail. In the early days, it must have been very small. Writing in 1895, a former Postmaster General of the United States said: "The amount of foreign mail carried has increased enormously. In 1840, when the *Great Western* brought it over, the British mail amounted to two sacks; at the present time it amounts to five or six truck-loads."[30]

In his annual report for the year 1859, Postmaster General Joseph Holt remarked, "Could we maintain even daily postal communication with Trans-Atlantic nations, it would be a subject of congratulation on the part of the whole country, and would be as grateful to our social relations as it would be promotive of our best commercial interests. Dispatch is the highest element in the mission of this department." Mr. Holt was correct. As greater facilities for the transport of mail abroad were developed, as transportation provided the means of increasing intercommunication and trade, the volume of mail grew. In the last eighty years the number of letters per capita dispatched by sea has increased in the United States by over seven hundred percent.

Certain available data on the growth of foreign mail from the United States is set forth as follows:

TABLE 5

United States Overseas Mail[a]

Period	Estimated Average Population	Yearly Average Letters[b]		Percent Increase	
		Number	Per Capita	Period	Cumulative
1864-1870	36,251,624	5,715,193	0.16		
1876-1880	47,631,957	8,842,679[c]	0.19	18.75	18.75
1881-1890	56,551,749	20,687,862	0.37	94.74	131.25
1891-1900	69,471,145	32,809,345	0.47	27.03	147.37
1901-1910	83,983,421	62,168,002	0.74	57.45	362.50
1920	105,710,620	147,882,875	1.40	89.19	775.00
1921-1930	114,242,833	193,372,964	1.69	20.71	956.25
1931-1940	127,222,162	168,731,738	1.33	−21.30	731.25

(a) Source: Annual Reports of the Postmaster General, United States Post Office Department.

(b) Pounds converted to number of letters at 38.73 letters per pound, the average number of pieces per pound shown for foreign mail in the Appendix to the Cost Ascertainment Report for the fiscal year ended June 30, 1941, United States Post Office Department.

(c) Grams converted to pounds at 453.592 grams per pound for years 1877-78.

Speed is unquestionably of the utmost value in the movement of communications, both nationally and internationally. People in Washington will spend $1.20 to send a ten-word telegram across the

30. *One Hundred Years of American Commerce*, Two Volumes, Edited by Chauncey M. Depew, D. O. Haynes & Co., New York, 1895; Volume 1, page 36.

continent to Los Angeles or sixty cents to send a similar message to Montreal. Before the war, people in the United States were sending and receiving an average of around 35,000 messages a day to and from foreign countries all over the world.[31] Air mail will supply a demand to carry social and business letters, contracts, newspapers, magazines, and parcels with a speed that will mean next day delivery to a large portion of the world.

The greatest advantage of the speed of the airplane for mail is realized in the transportation of mail over long distances. In the United States, over twenty percent of air mail in a week in June 1940 was carried 2,300 miles and over. More than 21 percent, however, was carried less than 600 miles,[32] and during the past ten years, one of the characteristics of the growth of air mail has been its increasing absorption of the relatively short-haul traffic. This is evidenced by the decrease in the average haul of air mail from 1,715 miles in 1931 to 1,382 miles in 1942.[33] This absorption of the short-haul traffic is simply another evidence of the incalculable value of time.

The increase in the mail which will be carried long distances will be the most significant, socially and economically. Nationally, people will be knit more closely together by the ties of social correspondence. Business will lengthen its points of contact within national borders. As improved surface transportation facilities created the widely-read national weekly magazine, so will the speed of air transportation make possible widely-read national daily newspapers. With an air parcel post, the selling and buying of merchandise by mail will receive a new stimulus. Figuratively speaking, it will be possible to complete a sale across the counter of the distant or foreign store within a few days at most of the time the consumer fills out his order on his side of the counter at the writing table in his home.

Internationally, an exchange of personal correspondence between people on different parts of the earth, all within a matter of a few days, will promote a feeling of friendly proximity. The sales letter which can make contact anywhere within a matter of hours will promote business. The contracts which can be executed within a few days by mail between business concerns of nations remote from each other in point of distance will facilitate and stimulate international trade. The "right hand of commerce" will reach around the world.

Air Cargo

Canada has taught the world a great deal about air cargo. You have used it to develop otherwise inaccessible regions. Many of your oil fields, mining centers, and fur communities owe their very existence, as well as development, to air cargo. You transported over 4,000 tons of freight, with such a diversity of character as livestock

31. Based on Statistics of International Telegraph Traffic Reports by United States Carriers for September 3, 9, 13, 14, 22, 25, and 26, 1937, to the Federal Communications Commission.
32. Appendixes to the Cost Ascertainment Reports of the United States Post Office Department for the fiscal years ended June 30, 1931-42.
33. *Air Mail Survey*, Ibid.

and tractors, in the development of your million-horsepower plant at Shipshaw on the Saguenay river. Some of your primary industries, such as paper, lumber, and fisheries industries, are serviced to a large extent by air at certain seasons of the year. All this is good. But the permanent developments in air cargo are yet to come, here, in the United States, and abroad.

In no field of air transport development are the opportunities so great and so ultimately unpredictable as in air cargo. The airplane can almost overnight place into the channels of trade the resources of the hitherto inaccessible regions of the earth. The expense and delay attendant upon making them accessible by other forms of transportation, with their requirements for highways, roadbeds, tunnels, and bridges, may stimulate immediate postwar developments in this direction which might assume larger proportions than even the most enthusiastic now anticipate. The airplane might reach out to an increasingly large number of markets, the size of which might not warrant the capital cost alone of the establishment of ground transportation facilities, but the value of which individually and in the aggregate would warrant tapping by air cargo. The airplane might well create large as well as new hinterlands for national and world trade.

The most controversial issues which have arisen concerning the future of air cargo arise from debates over the amount of freight traffic which airplanes will absorb from other carriers and will be able to create in regions where surface transportation facilities are already highly developed. Here, too, what seems to many the impossible might take place. Speed may become a commercial habit and necessity. What one shipper dares to do in shipping by air, others may, by his successes, be compelled to follow. The flexibility of the airplane in scheduling and frequency of service and the speed of air carriage are factors the full force and possible effect of which have not yet been measured in peacetime commercial practice. They will certainly result in a reorientation of our economic life.

The value of the airplane's speed and flexibility in freight carriage has not yet been tested because the airlines, like the railroads, started off as passenger carriers. Ringwalt relates, "One of the noticeable features of early operations on northern lines (in the United States) was the small amount of freight traffic. It was, relatively, easier to attract passengers than to obtain consignments of merchandise or staple products, except on roads that traverse coal-mining districts or cotton-growing regions. Of a prominent Massachusetts road it was reported that a motion was made at an annual meeting to let the privilege of carrying freight on its lines to some responsible person for $1,500 a year."[34]

In 1941, the passenger revenues of the railroads in the United States were only approximately ten percent of the total of passenger and freight revenues, but this relationship is of comparatively recent

34. Ringwalt, J. L., *Development of Transportation Systems in the United States.* Published by the Author, Railway World Office, Philadelphia, 1888; page 105.

origin. As late as 1848, passenger revenues exceeded freight revenues, and as late as 1890 they were over twenty-five percent of the total passenger and freight revenues.

The Camden and Amboy Railroad, serving New York and Philadelphia, two of the most populous cities in the United States, carried 109,908 passengers in 1833 and 6,043 tons of merchandise. In the succeeding 6 years the growth of the respective classes of traffic was as follows:[35]

Year	Number of Passengers	Weight of Merchandise (Tons)
1834	105,418	8,397
1835	147,424	10,811
1836	163,731	12,508
1837	145,461	10,642
1838	164,520	11,765
1839	181,479	13,520

In 1848, there were roughly 844 miles of railroad in Massachusetts, over which the lines operated 2,389,000 miles of passenger service and 1,329,000 miles of freight service, a total of 3,718,000 for the two. 7,360,000 passengers and 1,964,000 tons of merchandise were carried. Of 20 of the 21 railroads reporting their passenger and freight revenues, only 5 had freight revenues in excess of their passenger revenues, and in those instances the passenger revenues ranged from 42 to 48 percent of the total of passenger and freight revenues. Of the 15 remaining railroads, the passenger revenues ranged from 50 to 87 percent of the total of passenger and freight revenues. For all the 20 lines, the passenger revenues were $3,126,000 and the freight revenues were $2,541,000, or 55 percent and 45 percent of the total, respectively.[36]

In New York, in the same year, 22 railroads reported a total income of $3,953,000, $2,452,000, or 62 percent, of which was received from passengers, and $1,501,000, or 38 percent, of which was received from "Freights, etc."[37]

In 1851, the passenger revenues of the railroads went below the freight revenues and were only 49 percent of the $39,566,418 total of the two. By 1871, the passenger and freight revenues of the railroads had grown to $403,329,000, and passenger revenues were only $108,899,000, or 27 percent of the total. There was a fluctuation in the next 19 years, with the percentage of passenger revenues to total of passenger and freight revenues ranging from 24 in 1881 to 28 in 1885, but in 1890 the percentage was approximately the same as it had been in 1871.[38]

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35. *The American Almanac and Repository of Useful Knowledge for the Year 1841*, Ibid.

36. *The American Almanac and Repository of Useful Knowledge for the Year 1850*, Charles C. Little and James Brown, Boston, 1849.

37. *The American Almanac*, Ibid.

38. See Table 1, note *c*.

Any discussion of the future of air cargo ultimately comes to the vital question of rates. The problem of rates was also one of the early difficulties of the railroads.

"In 1837 the superintendent of motive power of the Columbia and Philadelphia Railroad reported that the following charges were imposed on (by) the railroads named:[39]

Freight Rates on Railroads in 1837

Railroad	Per Ton Per Mile Cents
Baltimore and Ohio	4½
Baltimore and Washington	4
Winchester and Potomac	7
Portsmouth and Roanoke	8
Boston and Providence	10
Boston and Lowell	7
Mohawk and Hudson	8
Petersburg	10"

On March 14, 1835, Messrs. John B. Jervis, Holmes Hutchinson, and Frederick W. Mills, "civil engineers of large and varied experience," submitted an "able and exhaustive report" to the New York Canal Commissioners upon the "Comparative Cost of Transportation on Early Canals and Railroads." They found that, "taking the facts we have obtained as a basis . . . the ratio of the entire cost of transportation and tolls is (2.5 to 1) two and a half to one in favor of canals . . . We are, therefore, led to the conclusion that in regard to the cost of construction and maintenance, and also in reference to the expense of conveyance at moderate velocities, canals are clearly the most advantageous means of communication. On the other hand, where high velocities are required, as for the conveyance of passengers, and under some circumstances of competition for light goods of great value in proportion to their weight, the preference would be given to a railroad . . . The facts and reasonings presented, we believe, clearly show that both canals and railroads are highly important means of internal communication; that each has its peculiar advantages, and will predominate according to the character of the route, and the trade for which it is intended to provide."[40]

We hear today the same sort of thing about rates and the freight-carrying possibilities of the airlines as the railroads did a hundred years ago. In 1895, Edward A. Moseley, Secretary of the United States Interstate Commerce Commission, pointed out, "As late as 1850 there seems to have been little conception of the influence which the railways were to wield in the development of the interstate traffic of this great country, and of the country itself. It was thought that

39. Ringwalt, J. L., Ibid., page 110.
40. Ibid., page 49.

they could not successfully compete with waterways and canals, except where a speedy carriage was essential."[41]

But air cargo rates are coming down and coming down rapidly and drastically. Let us examine some of the economic aspects of the movement of freight and their relation to air cargo so that we may better appraise the effect of these reductions.

As the movement of passengers and mail in large amounts over long distances is a modern phenomenon, so also is the movement of freight in great quantities. Early commerce between distant markets was largely foreign commerce. In the early colonial days in the United States, the commerce was with England, with a small amount of intercoastal shipping. Although we read of large amounts of traffic being carried before the days of the railroad, these were only appraisals of relative volume. In terms of the present day, they would be considered small.

The date of the beginning of regular inland freight traffic between New York and Philadelphia, and some idea of its volume, can be gained from a letter written by the Governor of New Jersey in 1707, in which he says, "At present, everybody is sure, once a fortnight, to have an opportunity of sending any quantity of goods, great or small, at reasonable rates . . . and . . . by this means . . . a trade has been carried on between Philadelphia, Burlington, Amboy, and New York, which was never known before."[42]

Even with the extensive building of early roads, freight shipments were small by modern standards. "Within five years" after the opening of the Cumberland Road from Cumberland, Maryland, to Wheeling, West Virginia, in 1818, "one of the five commission houses doing business at Wheeling is said to have handled over a thousand wagons carrying freight of nearly two tons each." This road was one of the two great thoroughfares of American commerce in the nineteenth century.[43]

The railroads did more than increase the volume of freight carried; they increased its average haul. The growth of both these economic factors has been astounding. Canada has led the world in the ton-miles of freight transported per capita. The United States has been second. Both Canada and the United States exceed the rest of the world by several times. In the United States, the average ton-miles of freight transported per capita increased from 644 in 1880[44] to a yearly average of 993 in the period 1882-1890. From that point they grew, with downward fluctuations in depression years, to a yearly average of 2,402 ton-miles per capita in the decade 1931-1940.

Equally significant is the fact that during this same period, the average haul of freight increased from 112 to 191 miles. Not only did it require the movement of a greater tonnage of freight per capita to satisfy the demands of commerce, but it was necessary to travel an increasingly longer distance to meet them.

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41. *One Hundred Years of American Commerce*, Ibid., page 27.
42. Hulbert, Archer B., Ibid., page 48.
43. Ibid., pages 116 and 121.
44. *The Encyclopaedia Britannica*, Ibid., Volume 8, page 937.

Some of these facts are presented statistically as follows:

TABLE 6

Railroad Ton-Miles of Freight in the United States and Average Haul

Period[a]	Estimated Average Population[b]	Yearly Average Tons Carried One Mile[c]		Average Haul[c]
		Number	Per Capita	
1882-1890	56,551,749	56,144,515,941	993	111.50
1891-1900	69,471,145	99,827,500,000	1,437	127.43
1901-1910	83,983,421	198,325,500,000	2,361	134.93
1911-1920	98,841,443	333,944,000,000	3,379	156.00
1921-1930	114,242,833	402,889,000,000	3,527	171.54
1931-1940	127,222,162	305,545,149,250	2,402	191.23
1940	131,669,275	373,253,197,000	2,835	202.49

[a] 1882 is the first year in which total revenue tons and tons carried one mile are available. See note *a*, Table 1. The Interstate Commerce Commission, however, reports 5,000,000 tons of freight carried for 1851; 23,319,449 for 1855; 55,073,072 for 1861; and 72,000,000 for 1870.

[b] Computed from *Statistical Abstract of the United States*, Ibid.

[c] Source: See notes *a* and *b*; *Statistics of Railways in the United States*, Ibid.

It would have been desirable in citing average haul figures to give system average haul, which is based on tons originated, rather than individual line average haul, which is based on total tons carried. The difference in average haul computed on tons originated and total tons is very great. For the railroads in 1941, for example, the average haul, based on tons originated, is 386.98 miles, while on the basis of total tons transported, it is only 208.34 miles. On the airlines, whereas the average haul is shown at around 550 miles in a similar period, actually it is probably 950 or 1,000 miles. Comparability of data could be secured only for total tons carried, however, and the trend of increase in average haul appears to be approximately the same whether it is computed on total tons or tons originated.

The internal transportation of freight in volume which developed with the railroads reflected revolutionary changes in economic life. The extraordinary extension of the average length of haul—far beyond the short haul imposed by the limited range of utility of the pack horse and the early freight wagons—and its continuing growth, are evidences of the unprecedented exchange and extensive dispersion of the products of man's economic activity. This exchange and this dispersion are trends which have momentum behind them and which will not be stopped; rather they will be accelerated by the speed of air transportation.

Each new facility for transport has sought the level of its greatest usefulness. It has absorbed traffic and created traffic in the fields in which it could serve best. The motor vehicle, more useful for short distances, has taken much short-haul traffic from the railroads. It has also created traffic which has been turned over, in some instances, to the longer haul of the railroads. The airplane will not only take a

portion of the long-haul traffic from the railroads, but, as did the railroads, it will constantly extend the length of the average haul by the creation of new long-distance traffic. Its flexibility and speed fit it for this economic service.

The average haul of freight will be extended by air transportation, particularly in countries having a large area and in international commerce. The average haul of United States domestic air express was 547 miles in 1941. While it had dropped from 589 in 1936 and from a recent peak of 622 in 1938, the future trend will be to a longer average haul. The recent drop undoubtedly reflects the attraction of frequency of service on short-haul traffic and the weight of its influence in a total volume of traffic which has been small because of the lack of development of air cargo.

The reality of the greater "reach" of air transportation is illustrated by an examination of the average-haul characteristics of air and rail express. While it is not possible to make a precise comparison between the average haul of less-than-carload rail express shipments and air express shipments, a comparison can be made between the percentage of weight of less-than-carload rail express shipments in various distance bands with the percentage of air express revenue received from shipments in those same bands. It is indicated that in 1939 while only about 12.3 percent of the total weight of less-than-carload rail express shipments moved 950 miles and over, 58.59 percent of the revenue received from air express came from shipments moving 950 miles and over. 56.6 percent of the weight of rail express shipments moving within a 349-mile distance band compares with only 8.7 percent of revenue from air express shipments in that band. The percentage of rail express weight and air express revenue shipments moving within a 350 to 649-mile distance band was 18.0 and 12.50 percent, respectively. But 20.14 percent of the air express revenue was within the 650 to 949-mile distance band compared with only 13.1 percent for rail express weight. It is extremely significant to note that in the 2,150-mile-and-over distance band only 1.7 percent of the total rail express weight appeared, but 26.97 percent of the air express revenue was received from shipments in this distance band.[45]

The speed of air and surface freight facilities stand in sharper contrast than do air and surface passenger services. While the average speed of the freight train has increased from 11.5 miles per hour in 1921 to 16.5 miles per hour in 1941, it still takes about three days for less-than-carload shipments of freight to go from New York to Chicago and about 8 to 9 days to go from New York to San Francisco; with rail express the times are 18 hours and 84 hours, respectively. These are to be compared with air cargo times of five or six hours and approximately 20 hours, respectively.

This greater speed of air transportation has already demonstrated a part of its value. The number of pound-miles of air express carried in the United States increased 194 percent in five years before the

45. S.A.E. Journal, New York, Volume 51, Number 6, page 212, June 1943, Article by C. G. Peterson, Chief Engineer, Railway Express Agency, "Packaging and Handling of Air Cargo."

war, from 2,822,000,000 pound-miles in 1936 to 8,300,000,000 in 1941. The rate paid was from five to six times higher than the highest rates of any other form of transportation in the United States.

Speed draws a premium rate in surface transportation also. Many railway express rates average in the neighborhood of 15 cents per ton-mile, and a considerable amount of rail and truck less-than-carload freight moves at rates above six cents per ton-mile.[46] It has been estimated that the average gross revenue or charge to the public for rail express is eleven cents per ton-mile for all classes of less-than-carload traffic; rail express full carload charges have been estimated at 3½ cents per ton-mile.[47] These rates, because they promised speed, have drawn volume traffic from previous lower-cost forms of transportation. If air cargo rates were the equivalent, there would be little reason for the cargo to move other than by air; when they are only a little above, the greater speed will serve as a magnet to draw much of it to the air. In both cases, the increased speed in the air will create new traffic.

Water transport provides, of course, the cheapest means of freight movement in the world. Of 14,400,000,000 pounds of cargo shipped from the United States to the United Kingdom in 1938, only about half a million pounds, or .003 percent, bore rates of more than five cents a ton-mile. Over a third of the 14,400,000,000 pounds was shipped at less than half a cent a ton-mile. It is true that it will be a long time before air cargo will be able even to approach most of the ocean rates.

But the contrast between air and steamer shipping times is sharper than between air and the fastest modern land transportation. Never before have the markets of Europe and the North American continent, for example, been within the range of a day's exchange. Never before has the most distant market been within a stone's throw of time away. Some of the greatest and most significant developments in air cargo will be in the international field. Products which until now could not be shipped across the ocean because of their perishability will find their way into international trade.

Speed in transportation has many definite, as well as intangible values. Writing on the subject, Harold A. Osgood points out: "Inventories need only be sufficient for a few weeks, where months were formerly necessary; goods are in transit a few days instead of a matter of weeks; a tremendous amount of capital formerly locked up in these items is now released. Investment of capital in storage facilities may be diminished; the cumulative processes of converting raw materials into finished goods are steadily being speeded up. Carrying less stock, stores become decreasingly vulnerable to changes in style and to whims of public fancy; with less money tied up in their inventories, manufacturers are more ready to modify their products to suit chang-

46. *Transportation and National Policy*, National Resources Planning Board, May 1942, United States Government Printing Office, Washington, 1942; page 66.

47. S.A.E. Journal, Ibid., page 214.

ing demands."[48] Change days to hours and hours to minutes, and you have some of the contributions of air transportation to business.

A decrease in packing and handling costs will also be a characteristic of air cargo shipments; damage will be less. Insurance and interest charges will be reduced. Overhead will be less and turnover more rapid. The air distance between points is only about 85 percent of the rail distance, a fact which should be remembered when we speak of ton-mile costs as well as when we speak of speed. Flexibility will obviate much trans-shipping. To or from factory landing strip the airplane can take or leave its cargo. While there will still be perishable shipments, there will be no perishability in shipments traveling with the speed of air transportation. These are only a few of the many advantages of air cargo, a portion of the foreseeable factors which will give direction and by their cumulation go to make up the power of the impact of intensive efforts to develop air cargo. These are indications of the extent of the economic revolution which will be caused by air cargo.

Thus have I presented my view, my conviction, of the future of air transport. My conviction arises from an appraisal of the significance of transportation in human affairs and of the characteristics of air transport.

We are at the very beginning of a new era of transportation—of air transportation—development which will have a profound and revolutionary effect in our social and economic life. As previously indicated, air transportation will draw from but it will also supplement other forms of transportation; more important, it will create traffic. Its speed and flexibility will permit and encourage the commingling of our social life and the expansion of our economic life. These developments will go forward in the decade after the war.

In the United States, the airplane will become the preferred common carrier for intercity travelers. As aircraft and operating efficiency improve, rates will certainly drop from the present five cents a passenger-mile to four cents; there is every reason to believe they will continue their downward trend to a level of approximately three or possibly two and one-half cents. This economy of travel will develop a volume of business and pleasure traffic that will require frequencies of service spaced only a few minutes apart between an increasingly large number of cities which will grow closer together in point of time.

The direct benefits of air transportation will be extended to many comparatively small cities; there will be a growth of community of interest and traffic between them. This route expansion will contribute to the flow of travelers along the main lines; and the new regions which will be served will be the sources of increased foreign travel.

I feel that it is a safe prediction that the present per capita overseas passenger traffic will be doubled within this ten-year period and that the airplane will ultimately carry the major portion of these travelers. This volume of traffic and the improvements in airplane performance

48. Harold A. Osgood, Vice President, Fulton Iron Works Co., Saint Louis, Missouri, writing on "Transportation"; *Technological Trends and National Policy*, Ibid., page 207.

promise to level present air rates almost immediately to about seven and one-half cents per passenger-mile; it is more than likely that they will continue to decrease at a lesser rate to five cents and proceed more slowly to within a close range of four cents.

All domestic and practically all international first-class mail will be carried by air. Air rates will be established for second-class mail, consisting of newspapers and magazines. An air parcel post will be created. The volume of mail will increase by reason of the development of new social and business relations between people with hundreds and thousands of miles but only a few hours between them.

Air cargo will contribute to a more rapid development of now industrially inactive and remote areas. As we move into this era of development, it is reasonable to expect that domestic rates will be cut in half to thirty-five or forty cents per ton mile; that they will decrease comparatively gradually to around fifteen cents a ton-mile; and that they will continue to press slowly downward. It is also probable that the revenue from air cargo will exceed that received from passengers. Transoceanic cargo rates will naturally tend to be slightly higher than domestic rates and the growth of traffic volume will be slower.

The world-wide developments in air transportation will create new patterns of living. Travel for pleasure will be oftener and reach farther away from home; business travel will be more frequent to more distant markets. Social and business correspondence will follow the travelers. The interchange of goods will be between more remote regions. Airports will become the centers of intercity and international traffic. Provincialism will yield to the unifying influence of air transportation.

The tide of history and the present momentum of our life are moving toward these ends.

Mankind's progress is again spurting high in a geyser of discovery. This time, the discovery is of the new size of our world. For thousands upon thousands of years man walked, or used animals for transportation. Then suddenly, in one brief century, a golden historical minute of transportation discovery unlocked man's pent-up thirst for travel. The railroad, the steamboat, the automobile opened the world to economic opportunity. But the self-satisfaction flowing from these discoveries is eclipsed and fades out by the real coup in transportation history—the development of the airplane in 40 years—a more twinkling—to the point where it has arrested our minds in our breath-taking pace and is compelling a re-appraisal of the future. It brings a world radically different from anything in history. It is now a small, closely knit world. Economic, political, and social relations must be reoriented in men's minds. Exploration—not alone of new mountains and plains beckons, but also of markets, pleasures, cultural improvement, and greater political understanding and security. When this great stimulus to life is felt fully, I have confidence that man will rise to meet his new opportunity in accordance with his destiny. I am thrilled to live now and to stand on this high point in history.

Developments in Land and Water Transportation

OCTOBER 25, 1943

ROBERT V. FLETCHER

I do not speak the language of ordinary courtesy when I say that I am grateful indeed to Dr. Beach and others who have arranged this program for the privilege of making some contribution to the series of talks on "The Markets of Tomorrow," sponsored by this great University, interested as it always is in economic problems of the greatest importance. I rest under the obvious disability of being only to a very limited extent familiar with transportation problems and developments in the Dominion of Canada. I am the servant of the railroads of the United States and while your two great systems of railroad transportation are members of the Association which I serve, yet that is largely by reason of the ownership by the Canadian roads of certain railroad mileage in the United States. I cannot, therefore, speak with any authority and I fear with only a limited amount of knowledge upon aspects of the transportation subject which are peculiar to the Dominion. I have an idea, however, that the subject I am undertaking to discuss is of interest to students of transportation, wherever they may be located, regardless of features peculiar to any country.

At the outset, permit me to say that, in my opinion, the policies which prevail in Canada, looking toward a coordinated and integrated system of transportation, are wise and may well be emulated by your neighbor on the south. I shall perhaps have something more to say on this phase of the question as my argument develops.

In the United States, as elsewhere, at the beginning of the twentieth century railroad transportation had supplanted, to a large degree, every other form, except the operation of ships on the Great Lakes. There was, of course, some movement of freight on the inland waterways of the United States, of which the Ohio and Mississippi may be taken as typical. Occasionally, there was some movement of passengers on these rivers, largely, however, of persons who were travelling on vacation or some other recreational mission. At that time the Panama Canal had not been constructed and the movement of traffic by water between the East and West Coasts was limited to shipments where time was not important or of a nature that could, with due regard to commercial aspects, be loaded and unloaded and transported by the Panama Railroad across the Isthmus.

The decay of water transportation on the inland waterways did not result from the ownership of boats by the railroads. It resulted, rather, by reason of the fact that the railroads gave superior service, at competitive rates which were adjusted to meet water competition. I lay emphasis upon the fact that no instance can be found where either

water or motor transportation suffered by reason of the fact that the owners of the boats and trucks were railroad companies. Much has been said in my country about the importance of holding railroad companies to the business of transporting on the rails, the theory being that if railroads are permitted to engage in highway, waterway and air transportation, the result will be to retard their orderly development. No such view prevails in Canada, or at least I am so advised.

The Panama Canal, a great enterprise, was completed in the early years of the twentieth century, so that by 1914, the first year of the First World War, a great deal of traffic was being moved by the steamships operating through the Canal, transporting freight in large quantities between the Atlantic and the Pacific Coasts. This was the first serious development affecting the diversion of traffic from the rails to other forms of transportation.

As a result of opening the Panama Canal and almost coincident therewith, the Congress of the United States saw proper to enact the Panama Canal Act, which provided in effect that from and after July 1, 1914, it should be unlawful for a rail carrier or any corporation controlled by a rail carrier, to own, lease, operate, control or have any interest whatever, directly or indirectly, in any common carrier by water operated through the Panama Canal or elsewhere with which the rail carrier does or may compete for traffic. It was provided that the Interstate Commerce Commission might, after hearing, permit a rail carrier to continue operating a water carrier, provided the Commission should find that such control did not prevent the water line from being operated in the public interest and would not exclude, prevent, or reduce competition on the route by water. However, there could be no ownership or control whatever if the water movement was through the Panama Canal.

The Interstate Commerce Commission, inquiring into the situation, permitted certain railroads to continue their interest in water lines, where it appeared that the steamship line was little more than a continuation of the rail line. As an example of this type of operation which the Commission permitted, mention may be made of the ownership by the Southern Pacific Railroad of steamships operating from Gulf ports to North Atlantic ports, the Southern Pacific lines ending at New Orleans and some of the Texas ports. Another instance was the permitted operation of the Ocean Steamship Company between Savannah on the south and New York and Boston on the north by the Central of Georgia Railway Company, which in turn was owned by the Illinois Central.

However, the Panama Canal Act had serious effects upon transportation on the Great Lakes. Prior to the enactment of this statute, most of the railroads operating between Boston and New York on the one hand and Chicago on the other owned steamships on the Great Lakes and these ships were very active in the handling of package freight and miscellaneous freight of all kinds between the eastern lake ports, such as Buffalo and Cleveland, and the more westerly lake ports, such as Chicago and Milwaukee. The Interstate Commerce Commission, after hearing, concluded that potential competition as between

the rails and their controlled water lines was sufficient to call for an order which would require the railroads to divest themselves of ownership of the steamship lines. Prior to this order, these railroads owned ships had operated regularly and busily during the period of navigation, making very low rates competitive with other steamship lines. When the railroads, in obedience to the Commission's order, sold their lake vessels, no similar service was established under private ownership, so that the movement of traffic on the Great Lakes subsequent to the enactment of the Panama Canal Act had been largely that of bulk traffic moving from the head of the lakes to the eastern lake ports. I mention this matter of history to show that the decrease in water transportation on the Great Lakes was not due to ownership of the lake vessels by the railroads, but to the fact that the railroads were not permitted to own and operate these useful servants of industry.

Several months after the United States entered the First World War, in fact late in 1917, acting under a statute passed in 1916 so authorizing, the President took over the control and operation of practically all of the railroads in the country. There has been much academic discussion as to whether such action was justified. Certain it is that there was great congestion on the railroads, due as I think to lack of intelligent handling of shipments on the part of the Government authorities and to lack of organization among the railroads themselves. From the time war was declared, practically every officer and employee of the Federal Government connected with the Army and Navy had authority to demand priorities for certain shipments and the railroads themselves did not have an effective central organization for the handling of traffic. As a result, cars were piled up in huge quantities at ports where there were no vessels to receive the cargo and this congestion at the ports backed up far into the interior, so that in cities like Pittsburgh there was hopeless confusion. The railroads remained under Federal control, operated by a Director General, from January 1, 1918 until March 1, 1920. Federal operation resulted in huge operating deficits and the service was far from satisfactory, particularly in the movement of civilian goods and the transportation of passengers. When the railroads were returned to their owners on March 1, 1920, there was a very general feeling on the part of the public that Government operation had not been successful and that it should not be repeated, if at all possible to avoid such result.

The railroads came back to their owners with a large amount of deferred maintenance, due to the intense use of the facilities in the war period and the inability to make all the current repairs that were required. In the war period, wages had been substantially increased, without a corresponding increase in the rate structure. It was obvious to Congress that the railroads should not be returned to private ownership without certain adjustments, made necessary by the experience of the war. The railroads were guaranteed, for six months after the conclusion of the war, the same level of compensation that they received during Government operation, that compensation being based upon the average earnings for a test period.

Furthermore, Congress, preparatory to the relinquishment of Government operation, enacted the very comprehensive Act of 1920, which departed in many respects from theories and principles once widely accepted by the public. This Act recognized the evils of unrestricted competition and laid emphasis upon the desirability of consolidating the railroads into a limited number of systems, in the hope that this would solve the problem of the strong and weak railroads. The Interstate Commerce Commission was required to adopt a plan for such consolidation and Congress directed that the systems should be so arranged as not to destroy competition and should be further so set up that each system would earn practically the same return upon the value of the property in that system. Furthermore, Congress set up what came to be known as the recapture system, under which the earnings of any railroad over and above a fair return should be devoted one-half to additions and betterments and one-half to be paid into a fund to be administered by the Interstate Commerce Commission through loans to weak railroads for the purchase of equipment. Railroad consolidation and cooperative action were thus the keynotes of the legislation.

Shortly after the return of the railroads, in view of the wage increases imposed by the Director General and the increase in the cost of materials and supplies, the railroads found it necessary to invoke that provision of the law which required the Commission to fix rates on a basis which would provide a fair return upon the value of the property. This much discussed feature of the 1920 Act did little more than to give statutory sanction to a constitutional principle, namely that persons who devoted their property to public purposes had the right, under the Constitution, to demand rates which would yield a fair return on the value of property devoted to public service. This constitutional right could, of course, have been invoked only by an individual railroad and the statutory provision in the Act of 1920 extended this familiar principle of constitutional law to the railroads as a collective body. The Interstate Commerce Commission, acting under the mandate of the statute in 1920, permitted very substantial increases in freight and passenger rates, amounting, so far as freight rates were concerned, to increases varying from 25% to 35%. One-half of these freight increases was taken off in 1922, during a period of serious business depression.

In the war period, a considerable impetus had been given to a revival of water transportation on the inland waterways, notably the Mississippi and Ohio Rivers. Prior to the war, the railroads had had in effect low rates to and from the river points, these low rates being competitive with the water lines and in many cases below the level of intermediate rates. The Director General of Railroads, while the matter was under his control, abolished these relatively low water-competitive rates and lined the rates up, so to speak, with due regard to mileage and in accordance with the provisions of the long and short haul clause of the Act to Regulate Commerce. That is to say, the Director General, to use the common language of the traffic men, put these points on the navigable rivers on a dry land basis. Congress also

authorized the establishment of Federal owned barges on the Mississippi River, absorbing out of the public treasury the deficits which resulted from the operation of these Government owned vessels. Private barge lines came into existence on the inland waterways and are still engaged in handling very considerable amounts of traffic which once moved by rail.

In the early part of the decade extending from 1920 to 1930, the railroads found themselves unable to handle all of the traffic which was offered and there were serious car shortages for the transportation of coal, grain and other essential commodities. Railroad managements, alive to the necessity for improving the service and mindful of their public obligations, came together and agreed that they would expend a very large sum of money in increasing the amount of their equipment, improving the capacity of cars and engines, reducing grades, lengthening passing tracks and increasing the size and efficiency of terminals. Altogether, something more than $7,000,000,000 was expended by the railroads in the early 20's in the way of improving the plant and equipping themselves for enlarged traffic.

Also, in this period, the railroads encouraged the organization of what are known as Shippers Advisory Boards, covering the entire United States, consisting of shippers and shipping organizations, the purpose of which is to cooperate, to a greater extent than ever before, with the railroads. These Shippers Advisory Boards hold regular meetings and one of their principal functions is to make estimates as to the amount of traffic which will be offered to the railroads in successive three months' periods, extending over a year from the time the estimate is made.

The American Railway Association, an operating organization which had been in operation for some years, the chief function of which was to supervise the exchange of cars, undertook the task of arranging with the proper departments of the Government for better cooperation in the handling of military and naval traffic. All of these developments resulted in a railroad plant of unprecedented efficiency, with contacts and arrangements whereby, if there should be threatened periods of congestion, the cooperation of shippers and the cooperation of Government agencies could be depended upon for hopeful and sympathetic assistance.

In the meantime, in the 20's, highway transport began its sensational development, resulting in the diversion of considerable amounts of traffic from the rails to the highways. It is now commonly believed the railroads were not alert to all of their opportunities, in that they failed to visualize the extent of the growth of highway traffic, at a time when there were few, if any, restrictions upon the right of the railroads to engage in the movement of freight and passengers by motor. However that may be, motor transportation grew rapidly and this growth was immensely accelerated by the business depression which began in 1930.

It is commonly said that the era of the 20's was the Golden Age of railroad transportation. Unquestionably, in the matter of earnings, dividends and credit, the railroads were in very good shape in those

golden years. In 1929, for example, operating revenues of the Class I railroads totalled $6,200,000,000; net railway operating income amounted to $1,250,000,000 and the rate of return on property investment was 4.81%. The depression years followed, so that total operating revenues of the same carriers sank to a figure of little more than $3,000,000,000 in 1933 and in one year net railway operating income was as low as $300,000,000. If we look at the figure of net income, which means, of course, the amount left after the payment of taxes and fixed charges, it will be noted that in 1933 there was a deficit of $5,800,000 and in 1938 a deficit of $123,400,000. Dividends in 1929 amounted to $490,000,000. In one year (1938) only $82,700,000 was paid out in dividends. Indeed it can truthfully be said that the era of the 30's and particularly the years from 1932 to 1938, inclusive, were the Dark Ages, so far as railroads are concerned, and, of course, the same observation may be made as to industry generally.

This was the period of railroad bankruptcies, with substantially one-third of the mileage of American railroads having to go into reorganization through the process of receiverships and bankruptcies. Many other railroads that escaped bankruptcy were able to do so only through loans from the Reconstruction Finance Corporation, a Government owned lending agency set up in the Hoover Administration to give aid to commercial enterprises in distress.

In 1933, when Mr. Roosevelt became President of the United States, there was inaugurated a policy of public aid to and control over the processes of recovery. You will remember that shortly after the termination of the bank crisis, the Administration advocated and secured at the hands of Congress legislation which set up the machinery of the National Recovery Act, commonly known as the N.R.A. The underlying theory of the N.R.A. was that business should be encouraged to organize, so as to prevent reckless competition in prices and practices, all under Government supervision and control. Those were the days when each separate industry was directed to adopt a code which would control prices and practices in such a way as to aid business and promote the public welfare by making sure that prices were reasonable and that discriminatory competitive practices should not be followed. Under the vigorous administration of General Johnson, business, large and small, undertook to organize in a way which ultimately proved to be extremely distasteful to the American public. The N.R.A. system was swept out of existence by decisions of the Supreme Court of the United States, holding that the essential features of the plan were unconstitutional.

At the very beginning of the N.R.A. period, there was general recognition by Government authorities that the railroads, being public service corporations under the control of the Interstate Commerce Commission, should not be subjected to the same process of regulation and organization as was attempted in the case of general business. Congress, upon the recommendation of the President, in 1933 passed the Emergency Transportation Act of that year, creating a Federal Coordinator of Transportation and providing for coordinating committees composed of railroad officers who should recommend to the

Coordinator plans for the common use of terminals and other measures which would tend to reduce competitive wastes and improve the service. At the same time, Congress repealed the recapture provisions of the Transportation Act of 1920, which had proven to be inoperative and impracticable. Mr. Joseph B. Eastman, who was appointed by the President as Coordinator of Transportation, labored faithfully for two years to bring about some needed reforms in the matter of competitive wastes. Coordinating committees were organized and a serious and earnest effort was made to bring about a better use of railroad facilities in the distressed period then prevailing.

The Emergency Act of 1933 was, however, rendered practically ineffective by amendments adopted by Congress in the interest of job protection, by reason of which few economies could be brought about, since the railroads were prohibited from dismissing employees or taking any action which would make their condition worse than before. Since it is obvious that the principal source of economy resulting from coordination must be the necessity for fewer employees and since the railroads were prohibited from reducing the number, not much, obviously, could be accomplished in the way of economy. As a result, the office of Federal Coordinator was permitted to lapse at the end of two years and it can hardly be said that the experiment was successful. However, Mr. Eastman, during the period of his incumbency, made a number of useful reports, including the results of careful research and much valuable statistical information.

In 1935, in the midst of the depression, Congress passed the Motor Carrier Act, which subjected motor carriers, both common and contract, engaged in interstate commerce, to the regulating authority of the Interstate Commerce Commission. Common carriers by motor were required to file their tariffs with the Commission and observe these tariffs and contract carriers were required to file their minimum rate schedules with the Interstate Commerce Commission. This change in the law was advocated not only by the railroads but by the more responsible motor carriers as well, these important agencies of transportation having come to the conclusion that chaos resulting from destructive competition can be avoided only by submitting to regulation of rates and practices by the Commission.

It may be interesting to note that in 1939, the steam railroads of the United States handled 62.1% of the freight traffic, the regulated trucks 8%, the inland rivers and intracoastal canals 3.7%, the Great Lakes vessels 14.1%, the oil pipe lines 12% and the air lines and electric railways something like 0.1% This percentage is based upon ton miles. In this connection, it may be noted that in 1943 the steam railway percentage had increased to 71.3%; the rivers and canals tonnage fell to 3%; the Great Lakes tonnage to 13.5%; the oil pipe line tonnage to 8.5%; the truck tonnage 4.4%; and all others, including electric railways and air carriers, 0.1%. This does not mean that the water carriers and motor carriers had suffered reduction in actual tonnage. The figures are relative and reflect the tremendous growth in railway transportation.

Going back, however, to our historical review, it should be stated that the railroads from time to time in the depression period made repeated applications to the Interstate Commerce Commission for increases in rates, these increases being deemed necessary by reason of the steadily advancing wage scales and the fall-off in traffic, due to depressed business conditions and the growth of highway transport. It would be a vain parade of research to deal in detail with these various applications, some of which were granted in part and some denied. It is perhaps sufficient to say that, as a result of action by the carriers and by the Interstate Commerce Commission, increasing and decreasing the rates, the railroads entered the war period with a rate base which was lower than in any period since the termination of Federal control at the close of the First World War. The Interstate Commerce Commission, in a proceeding known as Ex Parte 148, allowed an increase of something less than 5% in freight rates, to take care of a large increase in wages which came along in the latter part of 1941, but more recently this modest increase has been taken away, leaving freight rates no higher than they were at the beginning of the war. In fact, measured by rate per ton per mile, due to the increase in the length of the haul, the average is somewhat lower than in the pre-war period.

It can readily be understood that in the depression years 1930 to 1939 there were available no funds for increasing the amount of railroad equipment. There was little occasion to expand the plant, due to the shrunken volume of traffic. In fact, there was some criticism from public authority by reason of the expenditure of huge sums of money in the 20's in expanding the plant. It was stated in many quarters that the railroads were not justified in expending huge sums of money for improving the plant, when they should have known that traffic would diminish in volume. It was said that the public should not be called upon to pay a return upon money which was thus wasted as a result of chimerical dreams. However, everyone is now agreed that this money was wisely expended, in view of the war demands which have been made upon the railroads and in the light of their splendid performance in the handling of both military and civilian traffic at the time of the nation's greatest need. It is a fact that the railroads of the United States entered the war with 600,000 fewer freight cars than they had in 1929 and with 16,000 fewer locomotives. Passenger equipment had diminished in substantially the same proportion.

In the spring of 1939, when it became evident that the clouds of war were thickening over Europe and there was present in the minds of everybody the possibility that the United States might be involved, the President of the United States called into counsel two veteran railroad executives in whom he had confidence and asked them to make a report to the Secretary of the Treasury as to whether the railroads would be able to transport the traffic necessary for a well developed national defense program. These gentlemen, out of the wealth of their experience and after consulting all available authorities, reported to the Secretary that, in their opinion, the railroads could, with the equipment then available, handle traffic equal to that of the First World War.

When war broke out in Europe, with the resulting increase in traffic, due in part to the European war and in part to the determination of the American people to improve their defenses, freight traffic increased almost overnight to proportions which were far in excess of anything which the railroads had been called upon to handle in recent years. They responded satisfactorily to the demands upon them and in the autumn of 1939 gave evidences of the really stupendous effort which they were able to accomplish when war broke out between the United States and the Axis allies. The figures having to do with the amount of transportation performed by the railroads are almost incredible.

I have mentioned the fact that they entered the war with a much reduced number of cars and locomotives. The War Production Board, charged with the duty of conserving materials for war, has not permitted the railroads in the United States to add any new passenger equipment to their pre-war supply and they have been greatly restricted in the number of freight cars and locomotives that could be built with the limited amount of steel and other material available.

In spite of these drawbacks, the railroads, in the first 20 months of the war, handled to ports for overseas shipment 26,688,000 measurement tons, whereas in the First World War they handled, for the same purposes, only 8,883,000 tons. In the last World War, the highest figure for shipments during any one month reached 1,263,000 tons. In July, 1943, the number of shipments amounted to 2,860,000 tons. In the First World War, the Quartermaster Corps shipped overseas 3,730,000 tons of freight. In this war, this department has shipped 8,652,000 tons. In the First World War, the average cargo shipped overseas per man amounted to 32.4 pounds. In this World War, the comparative figure is 64 pounds. In the first 19 months of this war, the American railroads carried in organized movements 21,754,000 men. In the first 19 months of the last war, they handled only 8,874,000 men. From December, 1941 to July, 1943, organized movements have required 359,253 passenger coaches and sleepers, while in the period from May 1, 1917 to November 10, 1918, they required only 136,367 cars. In this war 20% of the total railroad passenger miles has been for troop movement, while in the First World War, only 8.6% of the passenger miles consisted of troop movement. Army railroad freight in this war has been about five times greater than in World War I. The average monthly movement during this war has been 4,323,000 short tons, compared with a monthly average of less than a million tons in the last war. Freight traffic of all kinds, military and civilian, in the year 1942 exceeded the peak traffic of 1929 by more than 40%. Passenger traffic has increased in even greater proportions and 1943 promises to be heavier in volume of traffic than 1942.

I appreciate the fact that I am supposed to cover not only rail transportation but make suitable references to the performances of the highway and waterway carriers in the war period. Highway traffic has steadily increased, not in the same proportion as rail traffic, but in a way which indicates that the public is using the highway carriers wherever it is possible to do so. Trucks have labored under the disadvantage of tire and gasoline shortages, but in spite of these handi-

caps, they have done their full duty in the matter of handling the essentials of both war and civilian traffic.

On the other hand, with rather unimportant exceptions and curiously enough, waterway traffic has shown a tendency to decline, relatively. The Federal Barge Line, for example, had a deficit in 1942, the first year of the war, substantially greater than its deficit in 1941. Its 1942 deficit amounted to approximately $800,000, as compared with a deficit from operations in 1941 of $190,500. The great difficulty with the Federal Barge Line was its unbalanced traffic. For the system as a whole, 70% of the tonnage was upstream and 30% downstream, a situation which could only result in an unfavorable earnings condition. The private barge lines have done better than the Federal Barge Line, for the reason that these private barge lines are engaged principally in the transportation of bulk commodities, whereas the Federal Barge Line undertakes to handle miscellaneous cargo, involving a much heavier operating expense. To many it would seem reasonable that in time of war the waterways would be heavily patronized, but by reason of the necessity for accelerated movement, the contrary has proven to be the case.

A word should be said as to the relationship of Government to transportation agencies. Shortly after the outbreak of the present war, the President of the United States created the Office of Defense Transportation, placing Mr. Eastman in charge as Director. That gentleman has discharged his duties with distinguished ability, with eminent fairness and with a patriotic devotion to duty which characterizes him as among the most valuable of our public servants. He has cooperated with the transportation agencies in a way to be distinctly helpful, recognizing the fact that a tremendous task was to be performed and that these agencies could best perform this task if permitted to handle the traffic in their own way, without undue interference from public authority. Action taken by Mr. Eastman, with the cooperation of the Interstate Commerce Commission, has resulted in removing bottlenecks here and there, relieving the evil effects of restrictive State laws and otherwise smoothing the way for the functioning of the transportation machine.

Labor difficulties have arisen lately and now as I speak we are confronted with a very serious situation, of a nature so delicate that it would perhaps be inadvisable to discuss this situation in detail. Suffice it to say that the controversy is not so much between employer and employee as it is between employees and agencies of the Federal Government charged with the responsibility to check inflationary tendencies and prevent such a rise in wages as will disturb the stabilization policy of the Government. It is to be sincerely hoped, however, that some way will be found whereby the present critical situation will be eased and the nation spared the horrors of a general strike.

Obviously, one's mind turns to the post-war period as presenting problems of unusual difficulty. Thoughtful men everywhere are attempting to plan for the economy which will follow the declaration of peace. In the field of transportation, it is to be expected that highway, waterway, pipe line and air transport, much of which has been

restricted and hampered by shortage of men and materials, will resume operations on an enlarged scale. It is probable that the United States will embark upon an extensive system of highway extension, if for no other reason than to relieve unemployment. The experience of the pre-war period and indeed of the war period itself indicates that there is undoubtedly a place in our economy for highway transport. Certain lines of traffic can most conveniently and most economically be moved by motor on the highway.

It is true also that, by reason of the increase in vessels, water transport is likely to take on dimensions never before reached. From the very beginning of this war, there has been practically no movement of commercial freight through the Panama Canal, since all of the vessels available for that service have been requisitioned for war purposes. When the war is over, there will be a surplus of ocean-going vessels and these will be competing for business, coastwise and through the Panama Canal.

In the field of air transport, we may expect almost anything. You have recently had a discussion by an eminent airplane executive of the possibilities in this field. I have no doubt that the passenger traffic of the airlines will increase substantially and the movement of air cargo will gradually rise in volume. It must be remembered, however, that no one well informed on the subject has ever reached the conclusion that freight can be moved by air for much less than 20c per ton mile. This figure should be contrasted with the average cost of railroad freight traffic of less than a cent per ton per mile.

The railroads furnish the only means whereby any article of freight traffic can be moved to any part of the country on any day of the year, at rates which are relatively below the cost of any other form of transportation. I have no doubt that in the post-war period the railroads will be in competition with the trucks, with the waterways and with the airlines. The railroads cannot hope to compete with the airlines in the matter of speed. On the other hand, the airlines cannot compete with the railroads in the matter of cost. If the railroads are able to furnish a fair degree of expedition in the movement of traffic and at low cost, no reason exists why they should not continue as the principal agency of transportation, all of the products of the country being taken into consideration.

It is obvious to me that the public interest would be furthered immensely by the adoption of a policy which would look at the transportation problem as a whole, which would ignore, to a certain extent at least, the question of the welfare of the railroads or the airplanes or the motor trucks, and should regard the public interest as paramount. Each of the forms of transportation has its advantages and its disadvantages. Each form of transportation can function economically and advantageously in certain particular fields. If a shipper wants a small amount of goods moved for a short distance with quick delivery, the trucks should be at his command. If he must have light articles in a great hurry, air cargo will be available. If he happens to live in a section of the country where water transportation is open to him and he desires to move traffic in bulk without much regard to speed, he

should be allowed to, and will, patronize the waterways. If he is concerned with the transportation of petroleum, obviously pipe lines are at his command. On the other hand, if he is interested in the movement of traffic at low cost, with the necessity for reasonable expedition, he will use the railroads.

If one of these agencies undertakes to invade the province of another through the medium of rate wars and competition leading to the handling of traffic at less than cost or with less than a fair profit, certain individuals may gain a temporary advantage, but in the long run, the result will be to weaken the transportation system and bring chaos into an economic area where order should prevail.

We are advocating, therefore, in the United States a policy which would permit the organization and functioning of transportation companies, privileged to use the rails, the highways, the airlines and the waterways in such a way as to move the traffic as the shipper may desire, meeting all of the needs of commerce in a way which would add immeasurably to the sum total of efficiency and economy. My understanding is that in the Dominion of Canada an arrangement of this kind is permissible under your law. I sincerely hope that the United States will take a leaf out of the experience of our northern neighbors and make such changes in legislation as will lead to an orderly development of all of the transportation agencies, thereby contributing to the public welfare.

I should say a word in conclusion with reference to the plans which the railroads are making for the post-war economy. Almost every railroad has a research staff, diligently exploring the possibilities for an improved railroad service. The Association of American Railroads has created what it calls the Railroad Committee for the Study of Transportation and this committee has been busily at work for more than a year. It has created fifteen or sixteen subcommittees, each charged with the responsibility for carefully studying every aspect of particular phases of the problem. We have, for example, a subcommittee on motor transport, one on air transport, one on pipe line transport, and one on waterway transport, to mention those dealing with railroad competition.

We have a Subcommittee on Economic Study, which is undertaking to ascertain the amount of traffic which will be available to the railroads in the post-war period. Offices have been set up in various parts of the country for the purpose of contacting those who are producing commodities for shipment, to ascertain, if possible, what we may expect in the way of traffic in the post-war world.

The railroads are also giving attention to the possibility for technological improvements in the construction of locomotives and cars. Only recently, the Association of American Railroads has authorized the organization of a Department of Technical Research and a competent Director will be employed to superintend studies of basic or fundamental problems in the field of engineering and mechanical development. It is more than likely that large sums of money will necessarily be expended in the construction of new freight cars of lighter weight and greater capacity. Experiments are going forward as

to the relative merits of steam and Diesel power. An intensive re-examination of the terminal problem is under way.

The railroads in 1942 collected $7,500,000,000 in revenue and of this amount, after paying all expenses, taxes and fixed charges, $900,000,000 was available for dividends, additions and betterments and reserves. Of this amount, only $200,000,000 was paid out in dividends. I mention this to show that the railroads of the United States are likely to come out of the war period with a very substantial amount of cash. I think probably their cash resources will amount to at least $1,500,000,000. They will be confronted with a very considerable amount of deferred maintenance and funds will be needed not only to improve equipment, a matter which I have just mentioned, but to improve the track structure as well. The process of eliminating grades and curves, constructing new passing tracks and improving terminals must go on.

The railroads will survive only if they are able to meet the demands of the public in the matter of service and cost. They must convince the public in peace time, as they have demonstrated in the war period, that in the field of distribution they will remain as the backbone of transportation, giving the public efficient service, at costs sufficiently low to permit the free movement of traffic.

Possibilities in the Canadian Market

NOVEMBER 1, 1943

FLOYD S. CHALMERS

There are more people at work in Canada to-day than ever before.

They are producing more goods than ever before. Yet the proportion of this vast production that the civilian population is permitted to consume is something under half the total.

In terms of production we have great activity and the appearance of great prosperity.

In terms of consumption we are living on a thin diet of material satisfactions.

There is one customer who has a quadruple A priority: War.

His insatiable demands are sufficient to keep our farms and factories busy. But he sees to it that he gets not only the increased production but some share of the normal production.

My title is "Possibilities in the Canadian Market." The possibilities in the Canadian market are apparently unlimited when the One Big Customer stands at the counter scooping up the merchandise and paying for it out of a bottomless purse, filled with tax money, public savings and even some small change in the form of bank credit inflation.

Nowadays you hear people say: "Before the war hundreds of thousands of people were out of jobs. Whenever anyone suggested we build new homes, new canals, new highways to employ these people, we were told we couldn't afford it; there wasn't enough money. There isn't any shortage of money now, and no shortage of jobs. If we can spend billions for waste surely we can spend billions for peace." And so on ad infinitum.

In appraising our possible normal scale of national activity, we must not overlook the circumstances surrounding our present employment, our present large-scale production and our present national income.

To-day, there is concentration upon a fixed national purpose, backed up with iron restraints upon individual liberties. Everything is rigidly, but rightly focussed upon the single job. There is no increase in the average standard of living—in fact a reduction. We are using up our assets, wearing out our machines, including the arteries of dollar-a-year men. We are not maintaining the national property. We are going into debt at a prodigious rate and piling up burdens for future generations to carry. Our jobs are assigned to us; our news is censored to us; our liquor is denied to us. To the extent of perhaps one dollar in six of our expenditures there is bank credit inflation.

This is not prosperity, and statistics cannot make it such. Remember too that we are not ourselves consuming this vastly increased produc-

tion; we are exporting most of it. Seventy per cent of our munitions of war are exported. So even in wartime we find that full employment in Canada rests upon our ability to find an outlet outside of Canada for much of what we produce.

* * *

What are the possibilities in the Canadian market when that one big customer, War, is no longer here to keep factory wheels spinning and farmers busy?

If you expect me to discuss possibilities in the Canadian market in terms of the number of automobiles, egg beaters, chesterfields, combine harvesters and mink coats that will be required and consumed in the Canadian market year by year after the war is over, you will be disappointed. I think some very interesting estimates and projections are possible along those lines. Undoubtedly each business concern and each trade association will in due course—if it has not already started—undertake such studies as they relate to its own line of business.

I should prefer to speak along broader lines: to attempt a modest appraisal of some of the factors that must enter into the calculation of every sales manager and every erudite economist in attempting to estimate what the national income, the rate of industrial activity or the volume of employment will be after the war.

* * *

One of the first and most important facts about Canada to-day is that, out of a population of 11.5 million people, we now have something over 5¼ million people gainfully occupied, either as workers or members of the fighting services.

The comparative figure for 1939 was 3.9 millions.

That is an increase of about one-third.

A second important fact about Canada is that we have a national income of over $9 billions. That is an increase of about 100 per cent over the pre-war figure. Most of it is a genuine increase in physical volume of production; not much of the increase in the figures is the result of changing the value of the counters, or price inflation.

What the post-war market will be in Canada may depend upon the level to which employment and the national income will return.

The aim, of course, is so-called "full employment."

Full employment does not necessarily mean continued employment of to-day's 5¼ millions.

Boys and girls will return to school. The elderly will retire. The biological urge will make a housewife out of many a Rosie, the riveter.

There will be fewer people who will want to work. The best estimate seems to be that—for so-called full employment—we shall require about 20 per cent more jobs than we had before the war: say, 4½ to 4¾ million jobs.

In addition to a reduction in the number of those seeking employment there will be a transfer of workers.

To-day one out of every 4 employed Canadians is in manufacturing industry, or about 1¼ million people. Before the war only one in

six of gainfully employed Canadians was in industry, or about 650,000 persons.

The present proportion is abnormal. In order to find 1¼ million people for factory jobs we have not only drawn upon young people, old people and housewives; we have drawn heavily upon the service trades. After the war many thousands of people will leave their lathes and benches to go back to positions as sales clerks, elevator operators, dyers and cleaners, domestic servants, bus operators, etc.

One way or another, though, when the transfers are completed, we shall need those 4½ to 4¾ million jobs of all kinds, including jobs on farms, in the woods and in the fisheries.

I shall not attempt my own estimate of what our national income must be to support full employment in those terms. Dr. James' committee, in its calculations, has assumed that the national income after the war ought to be $7½ billions. That is less than it is to-day but considerably more than it was before the war. I do not think any sales manager would have occasion to worry about maintaining a reasonable volume of yearly sales in a Canadian market built on the foundation of a national income of $7½ billions.

* * *

What prospects have we of creating and maintaining such a market?

If we measure the potentialities of the market simply in terms of what people require and will want—people in Canada and people abroad—we start with brilliant prospects.

Certainly, modern industrial society has not yet satisfied the hunger of people for the minimum elements of good living.

A war-torn world cries out for bricks and mortar, for motor cars and railway rolling stock and transport planes and ocean vessels. It needs clothing. It needs food.

But forgetting for the moment the laudable aim of providing every Hottentot with a bath tub and every Chinese with a plastic orange-squeezer, let us consider for a moment the more immediate prospects here at home.

* * *

In the field of capital goods there is very substantial room for investments that could, with benefit to all Canada and on the basis of well established social and economic need, proceed in Canada.

The James Committee has assumed that for the maintenance of a $7½ billions national income we shall require the annual capital investment of $1½ billions of new funds each year, whether of government funds or private funds. I believe they put about $1 billions a year of that under the heading of public or private construction. To give you an idea of the magnitude of that figure, may I note that A. S. Mathers, president of the National Construction Council regards it as about 67 per cent beyond the present capacity of our construction industry and twice as great as the industry's own estimate of the 1939 backlog for construction. It is true that Dr. Firestone, for the James Committee, puts the backlog at $5 billions—or 10 times as great as Mr. Mathers' figures—but there are backlogs *and* backlogs.

One man speaks in terms of projects people have planned; the other in terms of what they ought to plan.

It is not difficult to run up a very large column of figures if one sets down the major construction and developmental projects that could appropriately be undertaken in Canada. We need more highways and, if built on the right routes, they could be made self-sustaining in terms of travel and tolls paid by motor traffic in the form of gasoline and automobile taxes.

We need reforestation and land reclamation projects and they, too, can be made self-sustaining in terms of social and economic benefits.

My own city of Toronto is probably not alone in needing largely to be replanned and rehabilitated; new arterial thoroughfares, new rapid-transit and sewage disposal facilities, new public buildings, new green spaces, new hospitals and schools, all of which could be self-sustaining in the coinage of social and community benefit.

There are many tens of millions of dollars worth of public investment in construction and development that would have the effect, not of reducing property values and driving out private investment, but of stimulating private investment in houses, factories, power plants, etc., and of salvaging property values in shabby urban districts and mined-out rural or forest areas.

We need new homes. We have not enough in Canada to house our present population decently.

Even our present homes require large expenditures to bring them up to decent standards of livability. The 1941 census showed that 40 per cent of the homes on our farms are in need of external repair; that 30 per cent of the homes in the smaller villages and 20 per cent of those in the towns and cities are in need of external repair. On the average, more than one in four of the dwellings of Canada need repairs.

Or consider the needs of Canadian homes for the things that have become the basic amenities of life in Canada. Let us look at our farms:

On Canada's farms 83 per cent of the dwellings are of wooden construction. Wood is a good construction material but, if your AA coupons have permitted you to do any country driving recently, you can estimate for yourself the amount of paint that is required to preserve and brighten these 1,158,000 farm and rural dwellings.

Only 12 per cent of our farm homes have hot air furnaces.

Only 20 per cent have electric lighting; 7.3 per cent have a bathtub.

There is a refrigerator in 22.2 per cent; and only one farm home in 25 has mechanical refrigeration which we find in nearly a third of the urban homes.

There is an automobile on only 43.7 per cent of our farms and a telephone in 29.2 per cent.

Let us make a bold assumption here: that the average housewife would accept an electric vacuum cleaner as an index of a moderately high standard of efficiency in household equipment. Well, only one farm home out of 25 has an electric vacuum cleaner.

* * *

Such figures suggest the ultimate or maximum possibilities in the post-war market. But more reasonable estimates of early demand

for goods would be those based upon normal purchasing necessarily deferred by the war. I shall not attempt my own estimates for such deferred demand because they can be more intelligently made by industries and their trade associations. But in the United States the National Association of Manufacturers estimate that the accumulated demand for goods will amount to scores of billion of dollars; that by the end of 1943, for instance, there will be an accumulated demand for 10 million automobiles and 20 million radios; for 1 million private homes; that deferred maintenance on public and private property will amount to $3.5 billions.

All this demand will arise out of the domestic market and takes little account of the vast possibilities in foreign markets; in Europe, Africa, Asia and Latin America.

The need, then, for merchandise will exist after the war. I use the word "need" deliberately instead of the word "demand"; because demand implies not only a desire to buy but the ability to buy it. We are perhaps more certain of the need than we can be of the demand. In the latter portions of this talk I shall touch more directly upon some of the conditions that I regard as essential to the translation of need into demand; of potential markets into actual markets.

* * *

Having established need, and in part at least demand, we must consider ability to produce.

War is the most destructive operation yet devised by man in his more diabolical moments. Yet so far as Canada is concerned war has had the effect of greatly increasing our productive capacity. While our boys overseas have been completing the destruction of Germany's industrial facilities we at home have been increasing our own productive facilities at a fantastic rate. When peace comes, our capacity to produce will be at an all-time high and only a minor segment of it will not be readily convertible to the needs of a peace-time economy.

Both in our capacity to produce and in the variety of what we produce, the normal growth of a generation has been compressed into four years of dynamic development. We have increased our power resources by 23 per cent. Our manufacturing capacity is 30 per cent greater than the pre-war level; and in the metal industries, which are the real index of modern industrial society, 50 per cent greater. Actual production is twice as great, a reflection of the increased skill of workers.

While secondary industries have made these remarkable advances in Canada, our basic raw material producing industries have also expanded; nickel, copper, zinc, lead and some minerals new to Canada, so new that they are still on the secret list. We are producing magnesium on a substantial scale. Our production of aluminum is to-day close to the total world capacity of six years ago. In the new world of plastics, the wood pulp and plywood resources of Canada have in war-time laid the foundation of new and enduring industries.

* * *

In the realm also of agriculture—the production of food for people to eat—the war has stimulated expansion in Canada. But more

particularly it has brought about a broader diversification of agricultural production in Canada.

For example, the Prairie West is getting away from its one-crop economy. The average pre-war acreage of wheat in Canada was over 26 million acres, and we could not find a market for what we produced. This year, acreage is probably less than 19 million acres. Probably we have turned too far away from wheat and will swing back somewhat. Anyway, acrease in oats has grown from 13 million to 15.5 million acres; in barley from 4.5 million to nearly 8 million acres. Oats and barley are the basic raw material from which meat, milk products and poultry products are "manufactured." And so production of pork in Canada has jumped from an average of a shade under 500 million pounds to more than twice that figure; beef from 413 million pounds average to well over 600 million pounds; eggs from 242 million dozen to over a million dozen a day.

One would hope that the wartime broadening of the base of Canadian agriculture will be projected into the post-war period. It would provide a more secure basis for farm prosperity in the Dominion.

* * *

Some of our greatest net gains are in the field of the mind and the spirit; and these are qualities to be weighed in assessing a market.

The war has stimulated the imagination of the Canadian people and given them a clearer vision of their national destiny. The magnificent natural wealth of the country, strewn by Nature's prodigal hand across half a continent, has proven its present worth and renewed again the assurance of its future value. The war has hastened developments which were formerly not regarded as commercially feasible. The map of Canada has been further rolled back towards the north.

We are all familiar with the older concept of Canada as a nation 4,000 miles wide, with a few scattered pockets of population lying across the upper boundary of the United States. Canada was the nation that defied geography and was not always sure it was winning. Now geography is on our side. In the years between the wars, Canada's economic depth—north and south—had vastly widened through mineral exploration, development of waterpower and building of newsprint mills. In the war years the frontier has been pushed much further north. The Alaska highway begins on a parallel of latitude that is hundreds of miles north of where we sit; and it proceeds north several hundred miles further. Oil is produced over 1,000 miles north of here and is carried by a new wartime constructed pipe line to the Pacific Ocean. In one plant far north of here three times as much aluminum is produced as the whole United States produced before the war. The energy to operate the mill is obtained from the Shipshaw power plant, built during the war, that will produce more energy than the Boulder Dam.

Thus, the war has re-drawn the maps of Canada and, in doing so, it has inspired the Canadian people with a new faith in their northern inheritance. The East-West way of thinking has been further modified and the North-South projection is more in our minds than before.

Along with the development of new riches in the "frozen" north, there has been another influence at work to open wider the windows of Canadian minds. The position of Canada in the ocean of air over which the world now travels in this aeronautical age is unique. We are the aerial centre of 80 per cent of the world's population. Every direct air route of linking North America with Asia and Europe crosses Canada. The names Edmonton, Winnipeg, Montreal, Fort Smith, Whitehorse are written in large letters on the air maps of the new travel.

Thus, whether it is in our capacity and our ability to manufacture, in our capacity to produce food, in our capacity to provide raw materials or in our facilities to serve the traveller we have moved forward to a new milestone. We shall have productive capacity and skilled workers ample to meet vast domestic and world demands, if and as they are forthcoming.

* * *

An essential factor in translating need into demand is buying power in the hands of the public. Over the longer term it is continuing employment in Canada that will create consumer buying power; and it is the financial and economic state of the outside world that will determine the demand in export markets. But for the short term—for the first few years of transition and readjustment—we shall have the added benefit of accumulations of buying power in the form of public savings.

These savings in Canada are not relatively as great as in the United States. Over there public savings during the past three years are estimated at $50 billions, although prior to 1941 public savings never exceeded $10 billions in a single year. In Canada, the figures are relatively less but we have no need to reproach or commiserate with ourselves over that. The public in Canada has accumulated a smaller total of savings throughout the war period because we have taxed ourselves more heavily and paid a larger proportion of our war bills as we have gone along.

But despite the heavy burdens of taxation that we have assumed, despite the fact that we have paid about 50 per cent of the war bills out of current revenue, our people have accumulated a very respectable figure of wartime savings.

With allowance for the expected results from the general canvass on the Fifth Victory Loan the Canadian people have accumulated in war savings alone about $2.3 billions. This is for the purchases of ordinary folks; and does not include corporate or banking purchases. Add the figure, the increase in savings bank deposits and in the assets of Canadian life insurance, and a total of $2.8 billions is reached.

That is deferred buying power that will further increase and will be available for spending after the war.

We must consider also the improved credit position of the public. Debts have been paid off. Instalment obligations are at a low point. The general public will be very largely out of debt after the war and able to purchase freely whether for cash or on credit.

Thus we need not worry about immediate buying power after the war. It will be very large.

* * *

When we turn to the longer term picture, such a large area of discussion opens up, and so many fascinating subjects press for examination, that a process of arbitary selection is imposed by sheer time limitation.

I shall deal with only two of the many factors that must be weighed in any longer term appraisal of the Canadian market and its possibilities.

These two factors are those of population and of export trade.

* * *

What may we expect the population of Canada to be 10, 20 or 30 years from now?

If we project recent trends, we need not expect to see 25 million people in Canada within the life-time of any person here living.

In the most recent decades the rate of growth in our population has definitely diminished.

Take the last four decades:

In the 10 years to 1911 our population increased 35.4 per cent.

In the 10 years to 1921 it increased 22.1 per cent.

In the 10 years to 1931 it increased 18.2 per cent.

In the 10 years to 1941 it increased 10.1 per cent.

In the nearly 300 years for which records have been kept, there was never a previous decade in which our population increase was as small as 10 per cent.

The long term record of Canada's population growth is a continuous record of periods of economic expansion and prosperity during which population grew rapidly; followed by periods of economic depression during which both immigrant and native-born population drained off to the United States.

During the eight decades to 1931 more than 1¾ million native-born Canadians left this country to take up residence in the United States and they were accompanied by over 4 million of our immigrant population.

Our population in the last census decade grew at the rate of little more than 100,000 a year; actually at a rate less than the natural increase.

* * *

What are current trends in our population? The following have been very marked in recent years:

1. The Maritime Provinces have been little better than static in population.

2. The Prairie West, after five decades of rapid expansion and population growth, has been losing people to the East.

3. The rural population has been doing little more than hold its own. Our population gains are in the city. The war has further urbanized Canada.

In 1871 Canada was 80 per cent rural. To-day it is about 54 per cent urban.

Thus population growth in Canada is largely confined to the larger cities of Ontario and Quebec.

There is no reason to assume that these trends will be markedly changed in the next decade or so.

With our developing industrial strength, population will continue to concentrate in the industrial centres.

* * *

Why, you will ask, does not rural population increase as urban population grows? Do not city-dwellers have to eat? If there are more people in the cities surely we need more people on the farms to feed them?

And if we could look forward to increasing exports of food products would we not need more people on the farms?

Socially and aesthetically satisfying as it may be to promote the "Back-to-the-Farm" philosophy, we do not, it would seem, need more farmers in Canada to produce increasing amounts of food.

The average farmer is able to-day to produce more than his father and grandfather produced. The mechanized farmer tills a larger acreage, grows or raises more food, and does it with less help and less toil and trouble than the farmer of yesterday.

In the first 30 years of this century the value of machinery per person engaged in agriculture quadrupled; the acres of improved land per farmer more than doubled.

The Canadian market, then, of to-morrow will be more than ever an urban market; and it will crowd itself more than ever—so far as we can see—in the cities of Ontario and Quebec.

* * *

That does not mean, may I say in passing—that the farm market in Canada will be one that can be ignored.

The average farmer in Canada owns more property, is in a better cash position and owes less in debts than ever before in our history. More and more he is demanding the same amenities that make life so comfortable for the city man—electricity, inside plumbing, radios, pianos, rugs, linoleum, good furniture, refrigeration, central heating, etc.

We all hope that more and more he will be able to afford these things. That depends largely upon export markets. Before the war about 15 to 20 per cent of our farm production was exported. To-day well over half is exported. If foreign markets will absorb our export surpluses at profitable prices the farm market will be an abundant one.

* * *

The speaker at the first of these sessions made some reference to immigration as a factor in the growth of Canadian population. He suggested, briefly that immigration followed or accompanied prosperity in Canada; that we had never created prosperity by immigration.

Since Confederation there has been only one decade when we held in Canada as many as 50 per cent of the immigrants who came here. The immigrant withdrawals in other decades ranged all the way from 62 per cent to 116 per cent of those who entered and, as I mentioned

earlier, they always took a great many native-born Canadians with them.

This raises, then, the question of whether or not immigration will play any important role in the expansion of the Canadian domestic market over the term of, say, the next generation.

There is unlikely to be any shortage of potential immigrants. Europe and the British Isles are crowded with millions of people of good stock and high skill who are looking across the seven seas to-day for safer and happier homelands than they have known in these years of blood-letting. Canada is not the only land where opportunity to create a new home exists. Africa offers a greater area of rich and undeveloped arable soil and natural wealth. James J. Hill may have remarked that he wouldn't give a damn for a man that the snow did not fall upon; but the climate in this country, where the snow falls on everyone, is not the chief atrraction we offer to settlers. In any event, it does not appear likely that any large-scale movement of agricultural population to Canada is likely.

The migration of industry and its artisans may however afford a quite different opportunity to us.

For example, there is a substantial body of opinion in the British aircraft industry that Canada should be the centre of aircraft production and commercial aviation for the whole Empire. Those who hold this view feel that Britain is too hazardous a spot for an industry that is so vital in war as in peace. They suggest that British aircraft plants should be transplanted in Canada—bringing with them engineering staffs, machines and men to man them.

The prospect opened up by this kind of Empire thinking is engagingly unlimited. One's optimism should be tempered by a realization that someone has to stay in Britain to pay off the war debt. But immigration of communities, industries and bodies of skilled workers to Canada is a possibility not to be overlooked and is an objective to which high policy in this country might well be pointed. The British Empire would be stronger, and many of its citizens would live a richer life, if there were 10 million fewer people in the British Isles and 10 million more in Canada.

Any such movement would be dependent upon freer trading throughout the world. We cannot support our existing industry and employ our present industrial population without very large export markets. In one sense, British industries coming to Canada would bring their markets with them in the form of their world-wide trade connections. But there will be no prosperity for these industries, either in Britain or Canada, if international trade barriers curtail world trade too greatly.

* * *

And so we come to the second of the basic factors in our long term picture: export markets.

The final determinant of Canadian prosperity is the state of the world. One dollar in three of our national income normally rests upon world trade. To-day our trade has reached the fantastic total of $4.5 billions yearly. Since 1939 our exports have grown from $927

millions to over $2.5 billions. We stand far down on the list of nations in population, but we stand third in international trade.

We cannot find prosperity within ourselves nor adequately employ our new investments and our new skills in a purely domestic economy.

No nation will solve its post-war problems alone and unaided; certainly not Canada which has, as an American magazine once said, "one of the most precarious economies in the world." Canada can prosper only when the world is prosperous, and when it is willing to buy what Canada has to sell.

Even to-day, when our factories are at peak output, they are producing largely for export. We use only 30 per cent of the war material we produce. Seventy per cent is for other nations.

* * *

In agriculture as in industry, we depend upon export. For example, only a few years before the war our export of bacon to the British market was under 40 million pounds. This year we are committed to supplying the people of Britain with 675 million pounds of bacon, and the figures for the ensuing two years, which we hope, will include at least a year of European peace (or reasonable facsimile thereof) are not much less. The British market for bacon is now essential to Canadian agriculture. Yet we know that other nations, which ranked above Canada in supplying bacon to the British market before the war, will once again require markets for their own products. Will the British buy from Canada food that they can get from neighbours just across the English channel or the North Sea? Not unless we are able to compete in terms of quality and satisfaction of the British taste.

This fact we do know with respect to agriculture and it beckons to us challengingly: that not more than half the people of the world have enough to eat for decent health. At least half of the others do not get a balanced diet. There is not—and there is not likely to be within the next generation—more food than is needed to maintain the health of the 2.1 billion people who inhabit this globe. The need for Canada's food production does exist, but the need must be accompanied by ability and willingness to buy.

* * *

How can Canada find export markets adequate to support reasonable prosperity in the Dominion?

Let us consider some suggested methods:

The first is currency depreciation. This is undesirable in view of the efforts to bring about an effective stabilization of currencies on a world scale. And it has little enduring value, especially for a debtor country that does not raise citrus fruits, grow cotton or supply its own demand for oil, coal and iron ore.

The second is a continuation of Mutual Aid: giving away our surpluses. Some projection of the Mutual Aid plan into the post-war world is probably most desirable. We shall have to make a reasonable contribution towards rehabilitating the world that we have helped to save. But it is impractical for a country that is still a debtor

country to talk in terms of indefinitely giving to other nations on anything like our present scale of national generosity.

The third is a general lowering of wages, forcing our way into export markets on a price basis. Most of us, I think, would prefer—if it were possible—to maintain real wages and find our cost reductions in improved efficiency; both as represented in the increasing skill of workers and in technological advance.

There is a defeatism in all of these suggestions; defeatism which we are not forced to accept. There is yet insufficient evidence that the post-war world will be a "dog-eat-dog" world.

Let us look then at more constructive possibilities, first in reciprocity with the United States; then to preference within the British Commonwealth and finally to our relations with the rest of the world.

Our relations with the United States have, during the war years, been pretty healthy.

These last few years of close collaboration have proven that Canada cannot get along without the United States. They have showed, too, that in some directions, Canada is of vital importance to the United States.

That country has needed our nickel, our asbestos, our copper, our aluminum, indeed our newsprint to do its part in the war.

It has needed the Alaska Highway, the oil at Norman Wells, the use of naval and air bases on our coasts, for its very defence.

I hope that we have both learned the lesson of our interdependence. We have not always recognized it in the past. Closely linked as we have been in geography and spirit we have often been widely separated in economic action. Many a high explosive economic shell has been fired across our boundary lines while after-dinner speakers prated of 4,000 miles of undefended frontier.

I wonder if the American people realize how our very structure of nationhood has been shaken by American policy many times in the past.

Canada never started out to be a protectionist country. We wouldn't have been one if we had not been so often rebuffed in tariff matters.

Canada's first venture in high tariffs, under Sir John A. MacDonald, resulted from our inability to keep Washington interested in reciprocity between the two countries. From then onwards, we fought each other constantly with tariffs. After the last war, we tried to lower tariffs but Washington's response was the Fordney-McCumber and Smoot-Hawley tariffs. Those were not machine gun bullets; they were block-busters. One by one our products were shut out of American markets and darkness descended upon Canada. For many of us up here the very problem of existence became acute. That problem was "solved" for over a million Canadians in a simple manner; they moved to the United States. The same high tariffs that kept Canadian goods out of the United States forced Canadians to move to the United States to find jobs. There they worked in American plants to produce goods for the Canadian market—what was left of it.

A few years ago, if you had banded all the Canadian-born in Detroit together you would have had the fifth largest Canadian city. We in turn put up our tariffs against the United States to protect the Canadians who stayed at home. But we never fully succeeded, and as the world tariff war grew more bitter we sank deeper into depression.

To-day we read in the speeches of some American leaders, in the editorials in the American press, in our wartime partnership, and in the quite remarkable exchange of letters between our two countries a year ago a promise of a more generous attitude towards Canada. That same exchange of notes indicated Canada's acceptance of reciprocity as a basic tenet of our economic faith. In addition, a spokesman for our government has given the promise that Canada will never put on high tariffs against the United States unless the United States itself forces us to adopt such a policy for our very survival as a nation. I feel the majority of Canadians would like to second that promise.

In close trade association with the United States we could find useful employment for much if not all of our expanded industrial machine.

* * *

The second major aspect of our external trading relations relates to the British Empire market.

Whatever our trading relations with the United States, I hope Canada will pursue its policy of intimate trade association with the other British nations.

There is no conflict between our Empire trade aspirations and our hopes for closer dealing with the United States. There is room in our markets for both American and British producers and we need both the U.S. market and the Empire market for our maximum prosperity.

The British Empire has always been our best and largest customer. Most British markets complement our own production. Nearly a quarter of the world's people live in the British Empire. In the past, Empire markets have saved us when American markets were closed to us. If we now cast our commercial anchor to leeward in the United States, we have another anchor to windward in Empire preference.

This much we ought to ask of Empire preference, that it tear down rather than build up trade barriers between nations; that it be an instrument to expand the quantum of world trade.

* * *

But should we not look beyond economic regionalism even of these happy types to a whole world thinking in terms of exchange of goods on the largest possible scale?

We can keep our rendezvous with destiny in an expansionist world. So we ought to pray for a world in which the industrial and raw material resources of all the nations will be used to re-build the war-shattered regions, to feed people adequately, to house and clothe them decently, to raise standards of living, to bring not four but forty freedoms to the common man.

Such a concept is the basic promise of a secure and decent society—not only for the world at large but for Canada. Optimism as to what can actually be achieved in the realization of these objectives may vary; but the Anglo-Saxon nations must set their sights high upon the target; the noblest target man has ever aimed at.

Somewhere between the jungle savagery of world trading policies in the thirties and the rainbow's end of universal free trade the world will in due course come to rest.

Let us hope for a world in which the great nations will cooperate to create bigger markets than man has ever known, rather than quarrel among themselves over ever-contracting markets.

* * *

Of this much we can be certain, competition in post-war world markets will be keen. We must be prepared to compete in quality, cost and salesmanship.

We must produce efficiently and on a competitive basis of cost.

We must utilize to the full the new skills of our workers and develop new skills in other workers.

We must develop and use the most modern tool equipment and the most advanced industrial techniques.

We would be wise, too, to put the emphasis, in our export offerings, upon those products for whose manufacture or growth we enjoy unique advantages; products wherein our climate, our cheap power, our basic raw materials, or even Canadian "know-how" give us a head start over our competitors.

We should begin now to prepare for post-war selling in foreign markets. Our Trade Commissioner service needs to be reconstituted and expanded without delay. Many manufacturers already have under way studies of possible foreign markets for their goods and are training the men to open up those markets.

The maintenance of the national income and therefore the possibilities in the Canadian market are so largely dependent upon the size and character of our export markets that the development of those export markets might well be considered the first job of both government and business after the production of the materials of victory.

* * *

In summary, these are the facts that in my opinion stand out as we appraise the impact of the war upon the Canadian market.

The war has further industrialized and urbanized Canada.

We have greatly expanded our productive resources and our skills.

There is such a large backlog of deferred demand and such a substantial accumulation of purchasing power in the country that the immediate post-war period promises large-scale activity to ease the problem of transition.

In the long run, immigration does not offer us an easy panacea for unemployment but immigration may be very important, especially if it represents the migration of industry itself from Britain or other countries.

The most important factor in Canadian prosperity will be our ability to export our surplus production—industrial, mineral and agricultural. If we can find foreign markets, the purchasing power of the Canadian people will be high. They will in turn be large buyers of the goods of other nations. Our expanded industrial and agricultural resources will be used effectively.

The Canadian market of the post-war days offers every prospect of being a rich and fertile one to cultivate. The level of per capita buying power is high and promises to be higher. Canada has become a land of skilled workmen and proprietor-farmers, multiplying the value of their labours by the application of power and machinery and utilizing the most modern technique.

A friend of mine, a refugee Czechoslovakian industrialist, sometimes remarks to me "The Canadian standard of living is appallingly high." I think we may look forward to it being still higher—much higher—in the years to come. But certain conditions must be present. They include a policy of freedom of opportunity for all; honest and vigorous competition in enterprise; the encouragement of initiative and self-reliance in the individual; and the assurance of a fair return for a risk taken or a job well done. These things are in our own control. If we remain a hardy, self-reliant and resourceful people, we have no reason to stand shivering on the brink of peace.



New Materials for Tomorrow's Products

NOVEMBER 8, 1943

L. F. LIVINGSTON

I appreciate the honor of being here because I realize that you in this audience represent one of the most forward-looking groups in Canada. I want to congratulate you and those who arranged this series of lectures. It is groups like you who will make the aftermath of this war what it should be—a rather glorious affair, rather than the usual period of crisis.

The success in the past of both industry and agriculture is fundamentally due to research. Scientific research is responsible for more improvements in living conditions in the United States than any other one thing, and it makes no difference whether that research was directed toward the manufacture of a new plastic, toward the development of new machines or the manufacture of a new plane. The results of research have in the past benefited industry, agriculture and the American people generally, and by American people, I mean those on the North American continent. The results right now are helping us win this war. In the future they will help make this world a better place to live in.

The chemical industry is having a definite part in all this. It really has developed as a result of the last war, for it was during that war that we found ourselves lacking many of the essentials for prosecuting a war. In 1921 a high ranking army official listed those missing essentials—there were 42 items, including such things as rubber, silk and tin. Then research went to work. Late last year the Army and Navy Munitions Board revised that list in the light of scientific achievement. It now includes only 14 items. The other 28 had been removed because science had found a way to replace them either with a home-grown or a home-made product—the result of scientific research.

To show you how fast we are developing chemically—last year 46 percent (almost half) the gross sales for the du Pont Company were derived from products which did not exist 15 years before . . . new things brought into being to make your life and mine just a little better. Think of what that means both in war and later, in peace. Out of the test tube, one after another, have come chemical research's contributions, many after years of experimentation and elimination of hundreds, yes thousands, of compounds which did not quite measure up to the scientist's high standards.

During the last 25 years, through research, more than 10,000 new metal alloys and more than 200,000 chemical compounds have been brought into being. The utilization of only a few hundred of these

so far has revolutionized more than a score of industries, effected changes in millions of jobs, altered our food, clothing and homes, transformed our daily habits, given a new concept to medical research and has established our country in the forefront of scientific advance . . . only a few hundred of the potential compounds have done this.

Since I am a member of the du Pont Company's staff, I shall use illustrations and examples from that source. I should like to have you feel, however, that I am talking from the standpoint of the chemical industry as a whole, because the things I shall say are typical of other chemical concerns in this hemisphere.

Research is a slow, long-drawn-out process ordinarily. Our average at du Pont's is seven years from the origin of a research project in the laboratory to the consumer market. That is an average—seven years. I mention this because I am not one of those who believe that the day the war ends we shall have plastic automobiles or any such spectacular development. Things don't happen that way. They are not going to happen that fast, and those who expect it will be disappointed.

Not so long ago I sat in a conference of some of the greatest research men in the country. I learned just this from that conference—because of the pressure on research, it is expected that the next few years will duplicate the average development made in the previous 25 years. If that can happen, anything can happen.

I am a great believer in the chemurgic idea. Chemurgy means the combination of chemistry and agriculture. I am one of those who believe that if over a period of time we can increase, through research, the industrial use of agricultural products by using them as a raw material for industry, we can insure a more permanent success for agriculture. As you know, when the farmers of this hemisphere of ours are successful, so is the rest of the nation. Forty percent of the products manufactured in the United States are bought by the farmers in the United States. So when those farmers have buying power, so does the rest of the nation—and so I believe in the chemurgic idea.

I am *not* one of those who think that we can plough up fifty million acres and produce something that industry is going to utilize tomorrow. But a wealth of research is in progress, and there are many developments completed and many more about to materialize—we will be using more agricultural products.

The chemist today has fewer than 100 elements at his disposal. Four of the most important in chemical synthesis are carbon, hydrogen, oxygen and nitrogen, and these are found abundantly in such natural substances as water, the air and various forms of plant and animal life. In the laboratory the chemists combine elements to arrive at a desired result. When that result goes into production, manufacturing costs are lowered when natural products can be used as raw materials. Such is the case when corn, cotton, soybeans, potatoes, wood, vegetable oils, pine oils, turpentine and rosin are used as raw materials.

Take a number of specific products—smokeless powder, for example. Fundamentally it is nitrocellulose—nitrated cotton. The fibrous material of all plants is cellulose. Today more than 30,000 articles are made of cellulose and the field is still in its infancy. Cellulose today comes

primarily from wood and cotton, but there is no chemical reason why it should not come from other plants as well.

Another explosive, dynamite, is based on glycerine which can come from corn and cotton seed. Dynamite made possible concrete roads by blasting out limestone to make cement.

Camphor is used in manufacturing a nitrocellulose type of plastic, of which your fountain pen is a good example. All camphor originally came from the island of Formosa, Japanese-controlled. They had a monopoly and 10 years ago when they found that we needed a lot of camphor for plastic, they doubled their price, then quadrupled it and finally asked up to $3.65 a pound. Well, plastic cannot be made with camphor at that price. So research went to work. Ten years ago synthetic camphor was developed, made from turpentine. It sells for about 70 cents a pound for the refined medical grade and only about 40 for manufacturing purposes.

Chemistry has many achievements which point to still greater developments in the future. I shall give you a few concrete examples:—

Safety glass is made by putting a tough transparent layer of plastic between two layers of glass. This inner layer is strong, tough and elastic. Today it is doing a war job that is releasing rubber by coating fabric for army rainwear. The same fabric makes hospital sheeting and army water-bags today. For future civilian possibilities, use your imagination.

Chemistry has produced a cellulose sponge that floats in water, absorbs twenty times its weight in water and can be boiled. Uncle Sam is taking all of them. Many are being shipped overseas. To save space we compress them to one-quarter of their original thickness. Three-quarters of the space assigned for 100,000 sponges in the holds of ships has been saved. They come back to their original size when immersed in water.

Microfilm, a chemical development, is used to send V-letters across the sea. A hundred pounds of mail can be concentrated in less than an ounce and a half.

Rayon is a synthetic fiber made of cellulose, a basic raw material. It has been filling war needs by providing cords for tires, and fiber for flare and cargo parachutes. Our textile experts say that after the war we will see the greatest blending of natural and synthetic fibers we have ever known . . . combined from the angle of utility and of beauty.

"Lucite" is a plastic made from coal, air and water, often called the ace of plastics. Some research chemist probably will do something finer than this some day. It is very strong, carries light around curves and does not shatter. Today it is making transparent noses for planes, and it lights the wing tips of planes. Tomorrow it will return to the making of attractive civilian products.

Nylon, like "Lucite," is made fundamentally from coal, air and water. Today it is making parachutes instead of stockings. But what of post-war? Sheer, strong laces can be made that will go into curtains. Because nylon holds its original "set" or shape, these curtains will require little or no ironing.

Today nylon is making a very fine netting to keep out insects in tropical areas where our men are fighting. To what application will this be put after the war? Use your imagination!

We have nylon bristles for toothbrushes and *tapered* nylon bristles for paint brushes. The monofilament also is making surgical sutures. After the war it can make many things, including strings for musical instruments!

A cable of nylon rope, an inch in diameter, is towing gliders. It is 60 percent stronger than the best grade of manila and has 35 percent elasticity compared with 15 percent for the best grade of manila.

A chemical treatment called "Zelan" makes clothing water-repellent. Our soldiers are wearing garments treated in this way. For civilians, its present uses will expand especially in the fields of work-clothes and children's clothes, because the treatment also makes garments soil-resistant.

Camouflage cloth is being dyed fast color, treated against rot and deterioration and also made fire-resistant. It is soft and flexible at 40 degrees below zero.

A great deal of work has been done on wood. Some of the difficulties of this product were rotting, insect destruction, cracking and splitting and burning. Chemists have done things about that. Chromated zinc chloride keeps wood from rotting and burning. Synthetic urea, made by pulling nitrogen out of the air and fixing it into a chemical solid allows wood to be bent and twisted. This is a whole new industry in the making.

In an ordinary airplane there are about 40,000 rivets. Some of the great bombers have more than 3,000,000 rivets. Ten percent of the rivets in a plane are in spots hard to reach. Research developed an explosive rivet. An explosive riveting gun "explodes" the rivets into place from the outside. We can now put in millions of rivets at four seconds per rivet instead of five minutes per rivet.

I have tried to show you something of the future possibilities. I have tried to give you an impression, to stir your imaginations. For we are not going back to the 1930's when the war ends; we couldn't go back, even if we wanted to. Time never turns back, nor does science. The power ruling our destiny has launched our generation into a revolutionary epoch for which the past has been but preparatory. Our greatest achievements are yet ahead... when this great conflict has ended.

The huge new capacities for producing the finest agricultural products, plastics, fibers and countless other materials will be awaiting peaceful utilization. Old books of rules will be discarded; vast markets left unsatisfied. While automobile makers now produce tanks and refrigerator makers guns, they will meet new needs when this conflict has ended. Priorities will be removed, and the needs of today will become abundance tomorrow.

We can no more return to the economy of the pre-war period than we will go back to the horse and buggy, the hand pump and the coal oil lamp. We can't go back. Just as in this war, only one course is open to us with honor. So victory will leave us with only one choice. We

must go forward, not only to a military victory, but also to a great triumph that can be ours with the coming of peace.

The foundation of our future has been laid through scientific research; the girders of a new structure are now being cast; opportunities greater than ever before are present. Ahead is the ultimate goal for accomplishment. That has been our destiny from the beginning. We fight, not for the past, but for the future—a future without parallel in the life of man.



Export Opportunities for Canadian Products

NOVEMBER 15, 1943

WALTER D. JONES

First, let me say how much I appreciate the honour of being invited to address you, for it is indeed an honour to be included among the group of distinguished speakers who have preceded me and who will come after me to participate in this interesting series of lectures and to have the privilege of stirring your interest in the "Export Opportunities for Canadian Products."

If we were to review the first beginnings of the foreign trade of Canada in the early years of the 19th Century we would realize that the entrepreneur merchants of those days blazed the trail of Canada's future foreign trade.

Thus, in the new world tradition and heritage held true to form. The traders of Canada followed in the footsteps of the merchant-traders of England of the 17th and 18th centuries and sought adventure and profit where it could be found.

Their fleets of sailing ships plied between the ports of the Maritimes, the cities of Quebec and Montreal, to the ports of the New England States and the West Indies, taking their cargoes of wheat, flour, cheese and timber, and bringing back in exchange the manufactured goods of New England, together with the rum, molasses and sugar of the West Indies.

It is not my intention in this talk to trace through the years that followed the growth and development of Canada's Foreign Trade except to note in passing that it became an increasingly important factor in our economy and showed a steady and consistent increase up to the last two decades. During the past 20 years the Foreign Trade of our country has slipped a little. It has not kept pace, as in previous periods, with the increase in population and wealth.

But I am not at all sure that Canadian manufacturers missed very much. On the contrary, by keeping out of some of the hectic export markets, with their embargoes, quota restrictions and above all, shaky credits they perhaps showed a more astute judgment by default.

The non-exporters, at least, avoided the heavy losses that some of the export traders were compelled to take during the period of depression and as a result of the final outbreak of war. Whether these pre-war exporters will be able ultimately to profit from their past experience, no one can tell. It is to be hoped they will; they deserve to. But the answer to that question will depend on the form and structure upon which Foreign Trade will be built.

In my talk I propose to advance certain views which I hope will stimulate your thought. I shall not attempt to dogmatize in giving

expression to these views, for who knows, I shall probably change my mind many times if, as, and when our company re-engages in world export trade or even trading within the limited spheres that may be open when the pattern of world trade is re-designed.

So, whatever theses I advance must be hypothetical.

Neither the international trade of Great Britain nor Canada was built up by or through Government planning. The "foreign policy" was not formulated by far-sighted and astute Government leaders: the Government's policy merely followed the trade which courageous men discovered. They braved the perils of the sea in their tiny vessels to explore the unknown, for the love of adventure and profit. Government policies were formulated to protect the trade so built up and took form when it was of sufficient scope and magnitude to need protection.

These men had in their blood, as we have today, the heritage through the centuries of the Angles, the Jutes, the Danes, the Vikings, and the Normans who long before the Middle Ages, had left their homelands to settle in England, also for the love of adventure and profit.

This breed of men was not like the peoples of Europe who always lived in a fixed habitat within the confines of their countries. They were adventurers, pure and simple, and the legacy of their deeds impelled the mariners of England and Canada to look beyond the confines of their own land and seek trade where it could be found.

So much for the past. We can be reasonably sure that following the War and the lifting of regulations and rules which throughout its duration have limited and prescribed foreign trade, the goods of Canada, carried in Canadian ships *we hope*, will be exported to the five Continents and these same vessels will come back to Canada richly laden with the goods of other countries in exchange.

When the committee selected the subject for my address today they did me a favor which I greatly appreciate. For in order to evaluate the export opportunities for Canadian products one must appraise the resources and industrialization of Canada in relation to other countries of the world. One must review what Canada has done and one must also contemplate the trend of the future of Canada's production and trade.

I have been an enthusiastic student of Canada's progress and opportunities for many years. Yet I have been amazed at the picture presented by the facts as they have been assembled in this study of Canada's outlook for foreign trade. The opportunities for the individual in Canada in the post-war years will be equal to if not greater than in any other country in the world.

Canada's Agricultural Land

Canada has a land area of 3,466,000 square miles. Including Newfoundland and Labrador, as I believe we should in dealing with economic problems, the total land area is 3,619,000 sq. mi. No other country in the world except Soviet Russia is so vast.

Canada's land area (with Newfoundland and Labrador) exceeds that of the United States and Alaska combined by an area greater than that of Belgium, Denmark, Netherlands and Switzerland put together.

It is 10% larger than the combined land area of Australia, New Zealand and all other British Oceania.

It is 25% larger than China proper.

It is 61% larger than India, Malaya and all of the other British possessions in Asia put together.

It is a magnificent commonwealth, and one-third of it is Crown Land, the common heritage of our people.

Canada (without Newfoundland and Labrador) has 550,000 sq. mi. of agricultural land.

Less than half of that agricultural land has as yet been occupied (47%) and only 38% of it has been put to the plow.

The 338,000 square miles of Canada's agricultural land which has never been plowed comprises an area greater than the combined land area of France and Italy.

Where else in the world is there such opportunity for future development?

Canada's Forests

Canada has 1,220,000 sq. mi. of forest land, with a timber stand of 313,000,000,000 cu. ft. 91.6% of Canada's forests are on Crown land so that cutting is controlled on a yield basis to prevent its exhaustion. The forests of Canada constitute a priceless, inexhaustible natural resource, inexhaustible if we as a Nation protect this heritage by sound conservation and preservation measures.

Canada's Minerals

In 1900 the value of Canada's mineral production was valued at $64,000,000.

When World War I began, in 1914, Canada's mineral production was $129,000,000, having almost exactly doubled in 14 years. It doubled again in the next 14 years and it has doubled again in 13 years, having mounted to $561,000,000 in 1941.

Who can say that it will not double again in the next 14 years? I do not consider it too optimistic to believe that Canada's mining will be a billion dollar industry by 1955.

But the story of production is not the whole story. Despite enormous resources of coal in Canada, we have been importing about 50% of our requirements because it has been more economical to do so.

In 1940, we produced 301,000,000 gallons of petroleum and we imported 1,658,000,000 gallons of petroleum and petroleum products. Again we imported 85% of our requirements because it was convenient to do so and not because Canada is lacking in petroleum resources. On the contrary we have great untapped fields which with the greater manpower and capital of the future will be brought into production.

The same story may be told with respect to iron. In 1938 Canada produced little iron ore. In 1939 production was 124,000 tons

(Steep Rock). Data for more recent years are a military secret. But we do have large reserves of iron and the day will come when Canada will be a great producer of that metal.

Canada's Waterpower

Except for the United States, Canada has more developed waterpower than any other country in the world. Turbine installations amount to 8,845,000 h.p. yet that is only about 20% of the installation which we shall have when we have made full use of our waterpower resources.

Canada's Rank Among Nations

Measured by present population we are relatively a small country. Our 11½ million population is only about ½ of 1% (0.53%) of the world total. We stand in about the 29th place in the family of nations. But, in production, we supply, of the world total,

4.25% of wheat
7.26% of oats
4.04% of barley
6.16% of electricity
11.76% of copper
10.98% of lead
9.57% of zinc
88.71% of nickel
6.71% of cadmium
11.93% of gold
8.22% of silver
52.56% of platinum
57.44% of asbestos

Our one half of one percent of the world's population has—

5.46% of the railroads
3.18% of the automobiles
3.38% of the telephones

(Note—the above percentages are averages of the years 1937 and 1938)

Canada's Record of Foreign Commerce

Canada is one of the world's leading commercial countries. The value of our foreign trade in 1938, the last pre-war year, was $1,521,000,000 consisting of $677,000,000 of imports and $849,000,000 of exports.

Canada's foreign trade of 1938 was exceeded by that of only five other countries—United States, United Kingdom, France, Germany and Japan. Of these five countries which had a greater total trade, only one—the United Kingdom—had more trade per capita. Compared with Canada's trade of $136 per capita, the United Kingdom had $148; Germany, $60; France, $53; United States, $39; and Japan $16.

Of Canada's total imports in 1938 of $677,451,000, the United States supplied $425,000,000 and the United Kingdom $119,000,000 and the two countries supplied $544,000,000 or 80.3%.

Of Canada's total domestic exports in 1938 of $838,000,000 the United States took $270,000,000 and the United Kingdom $340,000,000 and the two together $610,000,000 or 72.8%. Thus 76% of Canada's prewar foreign commerce was with two countries—the United Kingdom and the United States.

One more fact, and I believe we shall have laid the groundwork for consideration of Canada's future trade. As previously stated, for the past two decades Canada's foreign trade has not increased in proportion to Canada's increase in population and wealth. In 1921 our total trade amounted to $1,600,000,000 compared with $1,500,000,000, the figure for 1938.

From 1921 to 1940 our population increased 29.5%, the value of our manufactures increased 82.0% and the deposits in our commercial chartered banks increased 40.4%. Our failure to record a proportional increase in our foreign trade has been an experience common to all commercial countries. For during the past two decades the trade of the world has been retarded by almost every conceivable political device—tariffs, quotas, inspection charges, quarantine regulations, and exchange controls.

A Look to the Future

From the record established it seems clear enough that Canada's prospects for future foreign commerce depend mainly upon three factors—

Relations with our two leading customers the United States and the United Kingdom.

World economic and trade conditions, generally and especially the extent of post-war trade barriers.

And, finally, the production of Canada in relation to her own needs and that available for Foreign Trade.

Relations with the United States—Economically, although not politically, Canada and the United States are being drawn closer together as allies in this war. Even before the war, events were moving in that direction. A reciprocal trade agreement between the two countries was made in November, 1935, was revised in November, 1938, and supplementary agreements were made in December, 1939, and December, 1940. The Alcan Highway which was constructed across Canada in 1942 by United States soldiers and engineers and at U.S. expense of $115,000,000 to become a part of the Canadian highway system after the war, is an unparalleled example in international relations.

It is hardly to be doubted that in the post-war years economic relations will be closer and trade will be freer and more voluminous between these two countries than ever before.

The United Kingdom—What I have to say of Britain has no bearing upon our relations, which could hardly be improved. But I do wish to take a long view and to present to you certain facts which seem to me important with respect to the future of Canada.

The United Kingdom has a land area of 94,281 square miles, only a little more than one-fourth that of the Province of Ontario, and a population of 47,735,000 or four times that of the whole Dominion

of Canada. That is a density of population of 506 per sq. mi. and compares with a density of 490 in Japan, 383 in Germany and 345 in Italy. Britain's density of population is more than twice that of India (248) and about 3½ times that of China (146). In Canada we have about 8 persons per sq. mi. in the Provinces or less than 2% of the British density. (3.3 per sq. mi. for the entire area).

Now consider the production of essential raw materials, keeping in mind our population of 11½ million and Britain's nearly 48 million. The United Kingdom has more sheep and produces more wool, about six times as much and somewhat more flax. But Canada produces 4 times as much wheat, more than twice as much barley and more than 20 times as much rye. In number of cattle we are about equal.

The United Kingdom produces more coal—about 20 times as much. But on the other hand, Canada has about 20 times as much developed water power.

Britain produces a considerable quantity of iron and a small amount of tin, of which we produce little or none. But her output of copper, lead, zinc, nickel, chromite, cadmium, gold, silver, platinum, and asbestos amounts to little or nothing while Canada is an important, and of several items the leading, producer.

I am certain that Britain can not much further increase the density of her population. I feel reasonably sure that economic pressure is growing which will divert the normal growth of British population and expansion of British capital to the Dominions, and that the major portion will come to Canada. In the 1920's emigration to Canada from the United Kingdom averaged nearly 54,000 persons annually but in the 1930's the average was only about 6,000 persons. I expect in the post-war years to see the restoration and expansion of the immigration of the 1920's. Canada, I am convinced, is on her way to becoming the most economically powerful and influential of the countries which make up the Commonwealth of Nations known as the British Empire.

Before we conclude this analysis of Canada's trade position in relation to the United States and Great Britain, let us draw an analogy between the position of the United States 75 or 80 years ago and that of Canada today. The United States was spreading to the west, the development of which was dependent upon the extension of the railroad systems and the opening up of those vast territories whose resources paved the way to that prosperous era which was to make the United States a powerful industrial and commercial state.

It is interesting to note that much of the financing of those vast enterprises was done with British funds which yielded immense returns to those farsighted bankers and industrialists who put their money out in this way.

I think you will all agree that we do not need any British capital to build more railroads in Canada!

But it is interesting to note that in recent years there are evidences of the same flow of capital from Great Britain into Canada. In one important respect, however, the Canadian immigration policy, as contrasted with that of the United States during the period referred

to, has been along lines of restriction and limitation rather than of encouragement.

Canada today is in a position comparable to that occupied by the United States after the Civil War, when immigration was encouraged and was the biggest factor in the upbuilding of the country.

All signs point to Canada's profiting by the United States' experience and following a similar policy when post-war conditions warrant it, because Canada has emerged from the status of a small power to a front rank position in the family of nations and needs this flow of immigration to realize its potentialities.

Industrialization of Canada

The index of the volume of Canadian production of manufactures in the first half of 1943 averaged 292.7%. As that index is based on the average of the years 1935 to 1939, it means that our factories after four years of war are now producing approximately three times as much as they were producing in the immediate pre-war years. It shows how great a program of industrialization is being carried on in this country. There is probably no such development anywhere else in the world.

Canada's Post-War Foreign Commerce

As I have already pointed out, the foreign commerce of Canada in the 1930's did not expand in proportion to the growth of population and wealth. This was due to the world system of trade barriers. Those barriers, I believe will be reduced after the war—the Atlantic Charter specifically provides for that policy—and Canada's trade should expand proportionally to her position in the family of nations.

In the process of rebuilding a devastated Europe, the products of Canada's farms, factories, forests, and mines will all be needed.

I shall be surprised if after the war Canada's foreign trade does not rapidly mount to double our best pre-war year, that is, to a total of imports and exports in excess of 3 billion dollars.

And I hope that in emphasizing the greatness of our own resources I have not created the impression that Canada even remotely approaches a condition of self-sufficiency. On the contrary, there are scores of commodities for which we need to trade.

There are many products of the tropics which are either downright essential or at least highly desirable, including rubber, sugar, coffee, tea, copra, palm oil, olive oil and a list of fruits too long to enumerate.

Rich as we are in metals, there are many we lack. We have no bauxite, which with our volume of cheap electric power can be used to advantage in making aluminum. We produce no tin, little tungsten, no vanadium and little molybdenum. We produce no diamonds, and aside from jewelry, we need diamonds for the cutting tools of our expanding factory system. We produce little mercury, and an inadequate supply of mica or phosphate rock.

In planning post-war Foreign Trade Canadian Manufacturers will have to consider the political implications of the Atlantic Charter. I accept the fact that both Mr. Churchill and President Roosevelt

intend to carry out the agreement which was signed in August 1941 when they met to discuss some of the problems that will face this war-torn world.

I have here a copy of the agreement and I shall read to you clauses 4, 5 and 6 (three of the eight clauses in the Atlantic Charter).

4. They (the United States and Great Britain) will endeavour with due respect for their existing obligations, to further the enjoyment by all States, great or small, victor or vanquished, of access, on equal terms, to the trade and to the raw materials of the world which are needed for their prosperity.
5. Full collaboration among nations in the economic field aimed at improved labour standards, economic advancement and social security.
6. After the final destruction of the Nazi tyranny, they hope to see established a peace which will afford to all nations the means of dwelling in safety within their own boundaries and which will afford assurance that all the men in all the lands may live out their lives in freedom from fear and want.

If these clauses mean what they say (and I, for one, believe they do) then if you agree with me, you will see that the political implications that enter into post-war export trade will to a very considerable extent, govern the direction of trade both in raw materials and manufactured goods which Canada is in a position to export. The markets that will be available to them may be regulated by world agreement as to distribution, sharing in, or zoning, of markets and tariffs.

The very fact that the Atlantic Charter specifically states that

(4) "They will endeavour, with due respect for their existing obligations, to further the enjoyment *by all States, great or small,* victor or vanquished, *of access, on equal terms, to the trade and to the raw materials of the world which are needed for their prosperity.*"

would indicate this.

Clause 5 aims at

> "Full collaboration among nations in the economic field aimed at improved labour standards, economic advancement and social security."

Both these clauses proclaim the desire to be fair and equitable and unselfish in planning post-war world trade, on such a basis as will also be conducive to the establishment of world peace by the elimination of trade rivalries and international jealousies.

On the assumption that these objectives will be attained, at least in part, we may now consider where Canada's export trading opportunities lie.

First, let me say that Canada's chief export trading opportunities exist in those countries from which we should be able to buy the most goods, i.e., raw materials as well as manufactured or partly manufactured commodities. That may sound paradoxical but it isn't.

We cannot hope to do all of the selling and none of the buying. This fact must be accepted by any nation interested in developing foreign trade.

The Germans were so stupid as to envision a world state of affairs, in which they expected they would do all the manufacturing and selling, and force the people of other nations to become "mere hewers of wood and drawers of water" for the self-styled Master Race.

That shows you how absurd and warped they had become in their thinking.

Assuming, however, the selfish monopolistic barriers to world trade are swept away, how shall Canadian manufacturers go about developing post-war export business?

Here, I can only tell you what I should advise if the problem were presented to me; and irrespective of whether I were talking to a manufacturer or a middle-man.

Assuming that he is familiar with the changes and innovations that have taken place in his line of goods as the result of chemical, metallurgical and chemurgical research during the war years, the first thing he should do would be to find out from the Department of Trade and Commerce those countries which would be most receptive to his goods. Then he should endeavour to find out the names of firms in those countries who would be the most desirable to contact either as direct buyers of his goods, or as importers of them for their own account for re-sale.

Then he should go himself or send his most competent salesman to that country and tell him to spend as much time as necessary to establish goodwill contacts with importers and consumers and to find out from them what they need and if he could supply it. Moreover if he were manufacturing a technical or engineering product, he should send with the salesman (who might not be an engineer or technician) his most competent engineer or technical advisor, so that he could give answers to all technical questions that might arise as distinct from the salesman who would, so to speak, be a diplomatic representative.

A top-flight engineering man would also meet the engineers in foreign countries and gain a knowledge of their requirements first hand. Take the simple matter of climate. Strange as it may seem, it is nevertheless true, that climate affects even machines and some products.

In our own business, we have found that card stock for use in tropical countries where humidity prevails must receive special treatment, even the ink used to print them and the packing has been adapted to meet the exacting temperature conditions of these countries.

I give you this simple example to point the need for close study of importers' requirements before attempting to sell to them.

Another point, if you don't speak the language of the country you want to do business in, take with you, if possible, a man who is thoroughly fluent in its language. In other words, don't depend upon your prospective customer's interpreter. Have your own. Interpreters are nearly always prejudiced and sometimes grafters. If you get a native interpreter, he is apt to be prejudiced in favour of his own nationality. And you may take it from me that this observation is based on a lot of experience, not only of my own but of other men who have spent half a business lifetime in opening up foreign trade.

The next thing necessary is to establish satisfactory credit arrangements. Importers, whether buying directly or for re-sale on their own account, are accustomed to receiving long term credit. If you want to get some of their business, you must be prepared to grant long term credits. On the other hand, it is nearly always possible to make satisfactory arrangements with the bankers in the country, for the discount of bills. These bankers have a better line on the credit of buyers than you have. In normal times, British, Canadian, Continental and United States bankers played a leading part in assisting their customers to develop foreign trade. One of the great chartered banks of England, Barclays, now has two branches in Canada and it would not surprise me to learn that after the war, they will open up other branches chiefly to cater to exporters.

Here may I pause for a few minutes to outline briefly the basis of credit structure?

The credit which a bank gives to an industrial concern, either in the form of an overdraft or a loan is predicated upon the normal turnover of a business, that is, the time element between the taking of an order, the buying of the materials necessary for manufacture, the elapsed time between the starting of the work and the completion of it, and the time element of distribution, that is, selling and collecting.

In ordinary business transactions this covers a period of 30, 60, 90, or even as much as 180 days based upon the essential factors in relation to the product.

When, however, credit is considered in relation to International Trade, the time element of the credit required may run into a period of a year or more. Credits given to the soviet union for much of their pre-war purchasing was 24 months and the Soviet never defaulted in a payment.

From this it will be seen that credit is not fixed but is apt to vary with conditions and circumstances which may either contract or expand in accordance with conditions.

Perhaps the shortest term of credit in commercial dealings is what is known in the "street" (Wall Street) as "face borrowing." This term is used when a broker, altogether solvent, finds himself temporarily embarrassed for want of cash. He then goes to a member firm of the Stock Exchange and borrows on his "face" fifty, or one hundred thousand dollars, or even more, as the case may be, with the implied and express obligation to pay it within 24 hours, in other words, on the day following. Such a transaction does not go on record.

Credit is based on character. J. Pierpont Morgan, testifying before the Pujo Money Investigation in 1912, when asked the basis of credit, stated that as between granting credit to a man of no character with collateral and a man of character with no collateral, he would lend every time to the man with character.

I would suggest to every young man that if time and opportunity present themselves you might put in an interesting and informative half-hour or so by interviewing the Foreign Exchange Manager of some bank on this subject in order to add to your fund of knowledge.

Let me repeat myself; before attempting to sell a dollar's worth of

goods in an export market, take the time and spend the money to study that market. You will find it worth all that it costs in the future avoidance of mistakes due to lack of knowledge.

Now, as to the markets in which Canadian manufacturers hope to sell goods. My observations must be very general because problems will vary according to goods and markets. However, the South American countries should be very receptive to Canadian products. I am not suggesting by this that we can expect to sell wheat or beef cattle to the Argentine. But Brazil, Chile, Bolivia, Colombia and Uruguay can use the product of our heavy industries and certain consumer goods as well, such as, refrigerators, washing machines, radios, farm implements, clothing, furniture, boots and shoes and scores of other things that they have previously looked to European shippers to supply. It is to be remembered that for some years after the war European countries will be so busy with their own rehabilitation requirements, that they will not be in a position to cater so well to export markets.

Australia and New Zealand will unquestionably be receptive to Canadian goods but the keenest competition in those markets will come from American manufacturers because the Australians and New Zealanders will have acquired many American ideas from United States troops now stationed among them.

India and China should be most fertile fields for trade because both countries are rapidly awakening to the fact that "the way of life" in the Western World has something to commend itself to them.

Consequently, I predict that the demand for labour saving devices and all else conducive to comfort and well-being will be phenomenal for generations to come. Between them, India and China have about 800 million people, nearly one-half of the world's population. What a market for goods!

Russia should be a good customer for Canadian goods. Canada should be a good customer of Russia. The Dept. of Trade and Commerce and the trade representative attached to the Russian Ministry at Ottawa would naturally be the clearing house from which to obtain information as to the goods each could sell to the other.

Africa is also a market that will well repay cultivation. The amazing things that have been done in Africa during this war are almost beyond comprehension. The natives have been given new ideas, new desires and are learning that work brings the reward in cash which provides the means to satisfy these desires. Air transport has opened and will continue to open up trade possibilities in Africa beyond the comprehension of all men twenty-five years ago.

In all these countries the soldiers of North America, those of Canada and the United States are found today. They are educating the people wherever they are, to want the goods to be found here. Can you not see in this phenomenon the nucleus of a missionary sales force, the like of which we have never witnessed before which will open up untold markets in the years following the war.

A vast amount of goods will have to be exported to Europe for the rehabilitation of the devastated areas and no country is better placed

in wealth of raw materials and manufactured goods to share in the trade that will be created by this need, than Canada. Nevertheless, there are factors that exporting manufacturers must take into consideration before embarking on plans to share in this business. In this connection I cannot do better than quote in part from a speech made by Viscount Cranborn, Secretary of State for the Colonies, in the House of Lords, June 2, 1942. He said "His Majesty's Government regard themselves as absolutely pledged to carry out all the articles of the Atlantic Charter." Then after referring to the readjustments that must take place after the war, he continued. "Plans are being hammered out . . . exchanges of view are already taking place and . . . all the various aspects of the post-war problem are being considered with the Dominions, with the United States, with Russia and with the other United Nations. The greater part of Europe will emerge from the war denuded of stocks of food as well as of raw materials, and with few financial resources. Not only must food be provided in order to prevent starvation, but agriculture and industry must be revived, so that the people of each country may, as soon as possible be able to support themselves. Unless steps can be taken rapidly to ensure supplies to the necessitous areas, a process of disintegration may set in which will create further dangers and political strain. Nor will this problem be confined to Europe. It may be equally necessary to provide relief for countries in the Near East and in the Far East. Steps will have to be taken on the basis agreed and effective machinery for distribution will have to be organized. It is an immense problem and the planning of the arrangements for these purposes cannot be left to settlement when the war is ended."

From what I have said you will understand how vast is the arena of trade opened up to those fortunate countries which, like ourselves, the United States, and the Americas, have not suffered from the ravages of war but are on the contrary better equipped to carry on post-war export trade than any other countries in the world.

And now, of course, you will expect me to say something about wheat because on our ability to dispose of our wheat will depend the economic prosperity of the West and in turn that of the manufacturers in the East. Canada is one of the greatest producers and exporters of it. And one of the most acute problems that will face us after the war will be to re-establish markets for Canadian wheat. I think, therefore, that the most enlightening observation I can make is to quote the Preamble of the Draft Convention, signed by the Governments of Argentina, Australia, Canada, and the United States of America, following upon the conclusion of the wheat discussions at Washington, April 22, 1942.

1. The prospects with regard to the production and marketing of wheat are such that accumulation of wheat surpluses threatens to result in grave post-war difficulties for the economies of the producing countries, and hence, because of the interdependence of nations, for the economies of all countries. It is also to be expected that, unless appropriate action is taken, such accumulation will recur.

2. A solution of the problem thus presented must be regarded as an essential part of any program of world economic reconstruction, and will call for cooperative action by all countries concerned in international trade in wheat. It will involve national and international measures for the regulation of wheat production in both exporting and importing countries, for the orderly distribution of wheat and flour in domestic and international trade at such prices as are fair to consumers and provide a reasonable remuneration to producers and for the maintenance of world supplies which shall be at all times ample for the needs of consumers without being so excessive as to create a world burden of unwanted surpluses.
3. Cooperative action is also necessary to meet the need for relief in the war-stricken areas of the world by the supply and distribution *of gifts of wheat.*

Thus, we see that Canada as a producer of an international commodity such as wheat is directly affected by the standards of living throughout the world which are to be aimed at by the international post-war economy. And Canada's ability to sell its wheat will thus be affected by international purchasing power and by the prevailing policies and practices affecting international trade generally. There can be no basic solution of the problem of export surpluses of wheat without a general reduction of import barriers, and no measure should be taken or maintained which has the effect of retarding such reduction or of preventing in any way the fullest possible development of international trade.

I could go on to discuss other export trade opportunities but my time is up. I hope, therefore, that in what I have said I may have stimulated thought especially among younger men who perceive in the development of Canadian Foreign Trade a great and useful career opening up before them.

I have no doubt that some of you have already chosen to devote yourselves to the furtherance of International Trade—a most interesting career for those to whom travel and adventure make a strong appeal. To those who have the qualifications, desire, and ambition, it offers great possibilities, whether it be in our own Departments of External Affairs, Trade and Commerce, or in private enterprise.

I suggest that many in this audience with a broad perspective of world affairs should put their knowledge into action in order to bring about an era of Canadian foreign trade in which the achievements and culture of our country will become known and respected throughout the world.

Food Products in New Forms

NOVEMBER 22, 1943

CLARENCE BIRDSEYE

Scope

I am going to talk to you today about man's first, most vital, and largest activity—the preservation and distribution of foods. With your permission I shall centre the discussion on the so-called "perishable" foods, embracing principally fruits, green vegetables, meats, poultry, seafoods, and the products prepared from them. Obviously this subject is almost limitless in scope and therefore can be dealt with only sketchily. I shall inflict very few statistics upon you and will try to hold my prophecies to a minimum.

Not so long ago the production, preservation, distribution, and consumption of perishable foods were strictly local affairs. Most such foods were eaten within a few miles of the point where they were caught, slaughtered, or harvested. Today, however, the perishable food industry is on a nation-wide basis; for tens of thousands of carloads of fresh and quick-frozen products are regularly shipped from distant, sparsely-settled harvesting areas to teeming industrial districts, whose food requirements could not possibly be supplied from near-by production points. Tomorrow the industry will become truly international, and only economic and political factors will prevent the world-wide distribution of a great number of perishables which have not heretofore figured importantly in international trade.

Because of the international nature of the perishable food business of the future, I shall not attempt to base my conclusions upon, nor limit my predictions to, either Canada or the United States. Instead, I trust you will ponder the facts, possibilities, and surmises put before you and apply them yourselves to the future of the Canadian food industry.

Perishable Foods are Perishable

The most important fact about perishable foods is their perishability. They begin to lose their freshness immediately after they are killed, caught, cut, picked, or otherwise garnered. Yet they are often harvested scores, or even thousands, of miles from consumption centres. A hundred acres of choice lettuce in the Imperial Valley of California, an immense school of mackerel off the New England coast, and a herd of fine cattle on some remote range are all without real value as food until they have been given place, time, and form utility—until they have been harvested, dressed, transported, stored, and cooked.

Importance of the Perishable Food Industry

The perishable food industry is one of superlatives. It is the most vital, the oldest, largest, most varied, and most widespread of all human activities. It will tower above all other industries as long as mankind remains on earth. Let me enlarge a little upon these bold statements.

Most Vital

Perishable food preservation is man's most vital industry, for without processed foods most of us could not have survived childhood. Without preserved milk, for instance, infant mortality would be shockingly increased. More and more babies are fed on canned milk, and several thousands of healthy school children are alive today only because refrigerated human milk was shipped to them by a Boston organization which in 1941 collected 10,900 pints of mothers' milk. About 700 pints are quick-frozen annually for shipment as far west as the Mississippi, and shipments have been made even to England and Germany. This frozen milk keeps at low temperatures almost indefinitely, the stock now being shipped having been in storage more than two years. A "bank" of mothers' milk is maintained in Montreal.

Oldest

The preservation of perishable foods is also man's oldest activity. In fact, it far antedates the earliest primitive man. During the "Insect Age" wasps, bees, and ants each developed their own superb processes for storing perishable foods. For instance, wasps developed a method which we humans have never been able even to approach: for they cause living grubs to remain alive for months in a state of suspended animation to serve as fresh, vitamin-rich food for the immature wasps until they are ready to forage for themselves.

In the Rocky Mountain regions there is a certain woodpecker which drills innumerable holes in the thick bark of dead pines and then laboriously fits an acorn into each hole. That stored food tides the bird over a tough winter very nicely—unless a hungry bear comes along, rakes the bark to the ground, and feasts on the hoard. Also in our Rocky Mountains, high above timber line, the tiny rabbit-like cony prepares for winter by curing and storing hay piles of generous size. Squirrels contribute largely to the reforestation of our burned-over areas by preparing huge caches—sometimes holding ten bushels or more of pine and spruce cones—which are robbed by forest rangers for reforestation seed. The pampered house dog's instinct to bury bones for a future need which will never arise is evidence that the ancestors of even "man's best friend" had their own method of preserving perishables.

Undoubtedly primitive nomadic human beings could not have existed outside the lush tropics if they had not sun-dried, salted, smoked, or frozen foods to tide them through lean months. Many of these primitive methods are practised even today in Canada and the

United States; for I have myself eaten sun-dried capelin in Labrador, smoked salmon and whitefish in the Northwest, and "jerkie" in our southwestern states.

That the preservation of perishable foods is no less essential to moderns than to primitives is proven by the fact that few large cities could exist for more than a few days without perishable foods which had been salted, smoked, canned, or preserved under artificial refrigeration.

Largest

Few people realize the tremendous size and scope of the perishable food industry. It is not only the largest human activity, but is as large as any other several industries combined. The automotive, communications, and steel industries, for instance, are mere pygmies compared with the preservation and distribution of perishable foods.

In the United States, in 1939, the production of processed food or kindred products, not including beverages, accounted for 25 per cent of all manufacturing plants, 9 cents of every dollar invested in such plants, approximately 10 per cent of all persons employed in manufacturing, and 17 cents out of every dollar's worth of manufactured goods. In Canada the figures on food processing were even more impressive: 34 per cent of manufacturing establishments, 12½ cents of every dollar invested in manufactories, better than 15 per cent of employees in such plants, and 22.6 cents of every dollar of manufactures. These figures, impressive as they are, include only processed perishables, and not those which were consumed as "fresh" foods after having been "preserved" temporarily under artificial refrigeration in railroad cars, trucks, warehouses, and retail establishments.

Most Varied

I have said that the preservation of perishable foods is man's most varied and widespread industry. That is true; for even today primitive peoples, as well as highly civilized populations, depend absolutely upon food preservation. The Eskimos keep seal and walrus meat for weeks by burying it in cold beach sand. Dried and smoked salmon and whitefish form the backbone of native winter diet in much of northwestern North America. Very completely rotten eggs, decomposed under carefully controlled conditions, are a great delicacy in parts of China. Capelin, a smelt-like fish, dipped in brine and sun-dried on the bare rocks of Labrador, ekes out the meager winter diet there. Winter-frozen fish are exported in volume from Canada to the United States. In some areas ice caves are still used for cool storage of perishables. Until very recently, venison, cut into strips and dried slowly over an open fire, was eaten as "jerkie" in the southwestern states or pulverized and mixed with fat to make pemmican in the Northwest. Dried figs and dates are still a staple food of the nomadic natives of near-eastern countries now very much in the daily news.

Greatest Future

Strangely enough, although the perishable food industry amply deserves all the superlatives which I have heretofore applied to it, it still has before it unlimited opportunities for future development. It has been characterized by gradual, detailed improvement, rather than by great, fundamental, and sudden innovations. Drying, salting, smoking, pickling, fermenting, and freezing are, as we have seen, all ancient practices. Canning and pasteurizing are the only basically new methods of food preservation which can be credited to the Christian era.

But because of its very size and essentiality the perishable food industry offers tremendous opportunities for post-war modernization, change, and diversification. It is so huge that its forthcoming growing-pains will affect every country, every industry, and every human being. To help you appreciate the possibilities latent in this awakening giant of an industry, let me set before you in some detail the present status and future trends of the several methods of food preservation in use today or in sight for tomorrow.

Detailed Consideration of Preservation Methods

At the very great risk of guessing wrongly, I shall separate presently known methods of food preservation into two groups—those with minor promise for the future and those which seem to present the greatest opportunities for radical improvement.

In the former group I include salting, smoking, sun-drying, pickling, and combinations of those methods.

The importance of all of these methods and combinations of them is admittedly very great; but they are being rapidly supplanted by methods which deliver perishables to the consumer in more convenient, appetizing, compact, or nutritious form. For instance, it was not long ago that salt cod, herring, and mackerel were staple winter foods among rich and poor alike throughout New England. Today salt and smoked fish are being largely replaced by quick-frozen products. Sun-dried prunes, apples, apricots, figs, and raisins are already being superseded for shipment overseas by mechanically-dried and compressed products with a very much lower residual water content: and I believe that dehydration will almost entirely supersede sun-drying in the post-war period. In other cases, such as that of sauerkraut, dehydration will be brought into use after salting and pickling have played their parts.

Methods of larger promise for the future seem to me to include refrigeration, canning, pasteurization, dehydration, and fermentation.

Refrigeration

Definitions

The refrigeration of perishable foods has had an incalculable effect upon the activities of civilized peoples. Nowhere has this effect been greater, and progress in the use of refrigeration faster, than in North America.

"Refrigeration," as applied to the commercial preservation of perishable foods, may be defined as the use of artificially-created low temperatures to prolong the edible life of comestibles. Refrigeration may be used merely to chill foods at above-freezing temperatures or to freeze them at very low temperatures. The latter method may be subdivided to include rather slow "sharp" freezing in relatively still air and "quick" freezing at very low temperatures. These classifications are necessarily loose, for each of the methods has ill-defined boundaries, and a No Man's Land exists between them.

Refrigeration is supplied principally by means of natural or artificial ice, ice-and-salt mixtures, and mechanical refrigerating apparatus. Solid carbon dioxide—or, as it is better known, "dry ice"—is also used increasingly in refrigerated cars, trucks, store cabinets for ice cream and quick-frozen foods, and in the shipments of frozen foods in insulated containers for relatively short distances. Natural ice was the first commercial refrigerant, and the history of its use is worth reviewing.

Natural Ice as a Refrigerant

Natural ice was first harvested commercially in the United States from a pond in Lynn, Massachusetts, in 1805. From that moment its use for preserving comestibles during shipment and storage increased with astounding rapidity. Within twenty years the supplies of natural ice around Boston were insufficient to meet the demand, and the vast resources of Maine rivers were put to use. Thereafter the State of Maine took the lead in the natural ice industry in the United States, and in its peak year, 1890, produced 3,092,400 tons of ice for export out of the state. In the central western states the natural ice business started in about 1835. By 1850 New Orleans was buying 50,000 tons of ice annually at prices ranging from $15 to $20 a ton.

In the early days of this new industry, food was preserved by packing natural ice around it or by allowing ice to melt on the floor of the storage room. Later it was discovered that ice could be used more economically and effectively by placing it on racks above the floor so that the foods were bathed in cool, moist convection currents.

Meanwhile, natural ice sales continued to boom. Hospitals needed ice desperately during the Civil War. Meat packers, whose business had become centralized in large slaughter houses and whose product therefore had to be shipped relatively long distances, became dependent upon ice for the success of their business. Lager beer, with its attendant refrigerating processes, required vast quantities of ice.

Ice-and-salt Mixtures

A saturated aqueous solution of sodium chloride—table salt—freezes at approximately −5° F., and mixtures of ice and salt-brine can be used to maintain temperatures of about 0° F. It was therefore natural that before the advent of mechanical refrigerating machines, comestibles were frozen by packing them in ice and salt or immersing them in very cold salt brines. This method of freezing was never

very satisfactory, however; for the salt penetrated the product and caused rapid deterioration during subsequent cold storage.

Ice-and-salt mixtures have from the first been used as the cooling medium for practically all refrigerator cars. This mixture was used also to cool cold storages and freezers before the advent of mechanical refrigeration. Some of these installations were very ingenious.

Mechanical Refrigerating Apparatus

Mechanical refrigeration was developed experimentally about 1862; and much of the commercial pioneering of this new means of creating cold was carried on in Australia, where it was employed in the brewing and meat-packing industries. In 1880 Australia sent the first cargo of frozen meat to Great Britain, mechanical refrigeration being used to keep the vessel's hold at sub-freezing temperatures.

The United States and Canada, blessed with large quantities of natural ice, were much slower to adopt mechanical refrigeration. But the winter of 1890, at the very height of the demand for natural ice, was so mild that supplies failed and the meat-packing and brewing industries were seriously threatened. In desperation packers and brewers turned hastily to mechanical refrigeration, and the commercial development of that vital industry in the United States dates from that year.

Refrigeration at Temperatures above Freezing

Having considered several ways in which "cold" can be created for the preservation of foods, let us now discuss the ways in which the different classes of foods are refrigerated during distribution and storage at above-freezing temperatures.

Meats

Meats are unique in that they are benefited by a certain amount of ageing after slaughtering. This ageing process is literally a race between the beneficial tenderizing action of enzymes and the deleterious and sometimes dangerous changes brought about by bacteria, moulds, and fungi. Unfortunately, optimum conditions for the rapid action of both these forces are practically identical—high temperatures and humidities. Therefore additional ways must be found to hasten beneficial enzyme action and eliminate or slow down deterioration caused by the multiplication of micro-organisms. Better sanitation in slaughter houses is both necessary and feasible. Many practices are still permitted which are unsound from a micro-organic point of view. The production of better fresh meat would be furthered by more careful regulation of cool-storage temperatures and humidities, the controlled use of certain gases in storage rooms, and sterilization of storage-room air by means of ultra-violet rays.

Another handicap under which fresh meat labors at present is the inclusion of too much bone and fat in the product as shipped. The modern housewife discards excess bones and fats, rather than turning them into soup stock and candles as her grandmother did. I believe that in the future fresh meats will more commonly be reduced to

consumer cuts at the packing house, and more efficient use made of the bone and fat eliminated thereby. Even now, substantially all frozen meat shipped overseas for the armed forces is boned at the packing house.

Poultry

In poultry, as in meats, enzyme action makes for tenderness and micro-organisms quickly produce off-flavors. The former action, however, is less important with poultry than with meats; and the latter, even more harmful. Oxidation and evaporation are causes of serious damage in "fresh" poultry. I believe, therefore, that distribution of poultry in the fresh form will rapidly give place to dressing, quick-freezing, and packaging at the point of slaughter.

Seafoods

Fresh seafoods not so long ago were available only near production points. Then the use of crushed ice and refrigerator cars made it possible to ship "fresh" seafoods in fair condition for distances of a thousand miles or more. But fish differs from both meats and poultry in that enzyme action is wholly undesirable, and bacterial deterioration extremely rapid and harmful. Moreover, fresh fish contains a tremendous proportion of inedible waste. Gray sole as caught, for instance, contains only about 25 per cent of edible meat. Therefore a barrel of gray sole containing 200 pounds of fish and 100 pounds of crushed ice, shipped from Gloucester to Chicago, yields only 50 pounds of "filet of sole." The 150 pounds of head, fins, skin, bones, and viscera, eliminated a thousand miles from the point where the fish was landed, are utterly worthless in Chicago. If, however, the same 200 pounds of gray sole had been filleted, packaged, and quick-frozen at Gloucester, the resulting 50 pounds of fillets could have been packed for shipment in a fiber-board container occupying only one cubic foot and could have been stored for months and shipped thousands of miles without any deterioration at all. The 150 pounds of waste eliminated at Gloucester would have been converted into valuable animal feed instead of constituting a serious disposal problem. Because of these facts, the distribution of "fresh" fish to distant points has already been widely recognized as undesirable, and quick-freezing has usurped a very large proportion of the fresh fish market in both Canada and the United States.

Fruits and Vegetables

Fruits and vegetables remain living organisms even after being harvested and are therefore subject to many deteriorative changes which include wilting, rotting, insect damage, changes in flavor, and losses of vitamin content. These changes commence immediately after the product is harvested and continue up to the moment it is eaten.

As in other forms of perishable foods, enzyme action proceeds unremittingly after harvesting; and most of the results of such action are highly undesirable. Those of us who have farmed or had a Victory

garden know, for example, that the sugar in peas, lima beans, and corn quickly changes to starch, and that such products are best if harvested only a few minutes before being cooked. Asparagus begins to toughen immediately after being cut, so that a six-inch stalk, which would be delightfully tender if cooked immediately after harvesting, is only about two-thirds edible after twenty-four hours at room temperature, and perhaps only one-third tender after reaching the consumer through normal commercial channels. Loss of vitamins, too, commences immediately upon harvesting and progresses rapidly and continuously thereafter.

Wilting proceeds more or less rapidly throughout the distribution process and not only hastens flavor changes and vitamin losses, but quickly renders both vegetables and fruits so unattractive in appearance that their sales value is greatly reduced. Insect damage after harvesting is often considerable. For instance, some high-priced cabbages which I recently purchased in Boston were so full of cabbage worms that all of the outer leaves had to be thrown away, even though the product was otherwise quite "fresh."

All of the damaging changes listed above are greatly reduced if the product is thoroughly chilled immediately after harvesting and is kept cool until it is finally cooked or eaten, for enzyme action is halved with each 18° F. drop in temperature.

The necessity for proper care of "fresh" vegetables and fruits is well recognized in large production areas remote from consuming points. Products from such areas are handled under strict supervision by private or cooperative packing organizations. They are removed from the fields and cooled at the earliest possible moment and kept cool in local storages until shipped in refrigerator cars at carefully controlled temperatures. In California, fresh vegetables, carefully crated to provide easy handling and protection from bruising, are often shipped surrounded with artificial snow produced from ice by the same method used to manufacture snow-storms on movie sets. Products taken care of in that manner can be transported from the Pacific to the Atlantic coast with almost no loss of real freshness.

On the other hand, small farmers in areas relatively close to large production points seldom take adequate care to protect their vegetables from summer sun and heat; and as a result such local produce frequently has ceased to be truly fresh long before it reaches the consumer. For instance, many laboratory tests of fresh spinach received in the Boston wholesale market from California have shown that product to have a much higher vitamin content than that of spinach from truck farms within a score of miles of the city. Until small local producers learn from bitter experience to take better care of their produce, they will be at an ever-increasing disadvantage with regard to graded and refrigerated competing products from large, though distant, growing points.

Wholesale and retail markets, as well as producers and shippers, must learn to protect fruits and vegetables from high temperatures and undue evaporation. I predict that unless retail stores of the future provide this protection, fresh vegetables and many fresh fruits

will eventually disappear altogether from their counters. Much shipping space and weight would be saved if fresh vegetables, before shipment, were dressed ready-to-cook. The importance of this elimination of inedible waste at the shipping point is shown by the fact that one car of quick-frozen shelled peas contains as many edible portions as thirteen similar cars of the fresh peas. Greater convenience must be provided for users of fresh vegetables if those products are to compete successfully with canned, quick-frozen, and dehydrated foods. This is another incentive for dressing and thoroughly cleaning fresh vegetables where they are grown.

Damage from enzyme action, evaporation, and mould growth can be very greatly retarded by the use of a recently developed latex material which is inexpensive, elastic but strong, transparent, insect proof, substantially moisture-vapor tight yet pervious to carbon dioxide and oxygen, and suitable for application by high-speed packaging machinery. Undoubtedly other wrapping materials with equally valuable characteristics will become available in the early post-war period. The extended use of such wrappings will make the distribution of really fresh vegetables and fruits practicable.

Preservation at Below-freezing Temperatures

So far as I am aware, foods were first frozen in the United States by artificial refrigeration about 1870, when the freezing of fish and meats began to take place in crude rooms insulated with sawdust and cooled by means of ice and salt. As late as 1912 I saw such an installation at Battle Harbor, Labrador, where it was used for freezing bait. That particular installation consisted of two rooms, one above the other. In the upper room cracked natural ice and coarse solar salt were mixed and filled into rectangular metallic tubes which passed downwardly through the freezing and storage chamber on the ground floor. Surplus brine was exhausted onto the ground from the lower ends of the tubes.

The food-freezing industry grew rapidly. Frozen meat was shipped in 1876 from the United States to England, where it arrived in good condition. Four or five years later, Australia shipped frozen meat to Great Britain.

Shortly thereafter, mechanical refrigeration became widely used in both Europe and North America and gave a tremendous impetus to the freezing and cold storage of foods. By the early 1920's, meats, poultry, and seafoods were being frozen in very large quantities in Canada and the United States and were so extensively used in many of the large cities that great hardship would have resulted if refrigerated storage had suddenly become unavailable. Freezing and refrigerated cars were together responsible for the initiation and phenomenal growth of the halibut and fresh salmon industries of British Columbia and Alaska.

Much of the food frozen up to the early 1920's was of definitely inferior quality and therefore brought much lower prices than were paid for similar products which had not been frozen. These lower prices, in turn, induced many freezers to handle raw materials of

inferior quality; and that again lowered both the quality and the price of the frozen product. Thus there was set up a vicious cycle which brought many kinds of frozen foods into well-deserved disrepute. This was so generally true that the freezing and cold-storage industries were almost universally penalized and hampered by federal, state, and municipal regulations which all but hamstrung them.

QUICK-FREEZING

Definition

Quick-freezing may be defined as the freezing of comestibles so rapidly that their intrinsic freshness is not materially impaired by the physical and chemical changes which take place to a greater or lesser extent during relatively slow freezing in still air, even at very low temperatures. Let me explain why extremely rapid freezing is beneficial.

All living organisms, whether animal or vegetable, contain a large percentage of aqueous liquids which are in reality complex solutions and emulsions of a great variety of substances. It is characteristic of such solutions that when their temperature is lowered beyond the freezing point of water, water progressively crystallizes out in the form of pure ice, leaving behind increasingly concentrated solutions of the other materials, until even the solution with the lowest freezing point has been solidified. In the case of beef, which becomes "hard" frozen at about 25° F., not all of the water is solidified until the meat has been lowered to approximately −96° F.

It is axiomatic that when crystals are formed by lowering the temperatures of solutions, the size of the individual crystals depends largely upon the rate at which the solutions are cooled, the most rapid cooling producing the smallest crystals.

It is therefore apparent that the faster comestibles are frozen, the smaller the resulting ice crystals in the tissues will be and the less damage will be done by the freezing process. Products which have been properly quick-frozen may be cold-stored for months, shipped under refrigeration for thousands of miles, passed through wholesale and retail channels of distribution, and finally placed on the table with substantially all their intrinsic freshness intact.

History of Quick-freezing

The growth of quick-freezing on this continent during the last thirty years has been phenomenal and constitutes one of the most entrancing industrial stories of our time. I think you will be interested in a brief history of this new industry.

Although the comparative virtues of quick-frozen game and sea-foods have probably been at least dimly appreciated for many thousands of years by inhabitants of the Far North, the scientific study of quick-freezing and the first commercial use of quick-frozen products is very recent indeed, dating only from about the year 1915. Then a handful of European scientists learned the importance of the formation of minute crystals in quick-frozen products, and a few daring entrepreneurs utilized crude ice-and-salt baths to freeze whole

fish for distribution in relatively nearby areas. Commercial quick-freezing of whole fish on a small scale was undertaken in the United States in the very early 1920's.

The beginning of my own interest in quick-freezing was to a certain extent accidental. In 1917 I returned from five years of fur trading in Labrador and a little later became interested in the fish business in New York. The inefficiency and lack of sanitation in the distribution of whole fresh fish so disgusted me that I set about developing a method which would permit the removal of inedible waste from perishable foods at production points, packaging them in compact and convenient containers, and distributing them to the housewife with their intrinsic freshness intact.

At that time I had not heard of the preliminary work which had been done in quick-freezing whole fish in Europe and the United States, and I was greatly puzzled as to how dressed perishable foods could be passed through existing trade channels and yet reach the consumer at distant points in a really fresh condition. Certainly the desired result could not be obtained by any of the methods of preservation then in common use; for appearance, color, flavor, and texture were all completely altered by such methods as salting, smoking, drying, pickling, canning, or even freezing, as they were then practised commercially.

From the first, I had in mind the preparation and distribution of a complete "family" of perishable foods, including numerous varieties of meats, poultry, fish, shell-fish, fruits, and vegetables. However, I concentrated temporarily upon the production and distribution of packaged dressed fish, which seemed to me to have great intrinsic merit and to present about as serious problems as I was likely to encounter with any class of perishable food.

My first commercial attempt was directed to the distribution of dressed fresh fish, thoroughly chilled but not frozen, and shipped in heavily insulated corrugated fiberboard containers. I soon found, however, that the chilled product was still far too perishable, and in desperation looked around for some method which would enable me to add greater time utility to the product. Then I remembered that when I had frozen caribou meat, ptarmigan, spruce partridges, ducks, geese, rabbits, and even certain vegetables in Labrador very quickly in bitter winter weather, they had been fully the equal of any corresponding unfrozen foods.

There upon I developed a simple apparatus for freezing packages of dressed fish and put it to commercial use very early in 1924. The experiment was an immediate success in spite of the very bad reputation of ordinary frozen fish in New York, where my plant was located.

Shortly afterwards, I obtained the backing of three forward-looking New York business men, who financed a move to Gloucester, Massachusetts, where we established a plant for the production and distribution of a wide variety of quick-frozen dressed seafoods, and where we also experimented exhaustively in freezing, storing, and shipping many kinds of meats, poultry, fruits, and vegetables.

By the spring of 1929 our business in quick-frozen fish was booming, and we felt justified in planning the production and distribution of a full line of packaged quick-frozen foods. Arrangements to that end were made with a large hotel-supply house in Boston and a fruit and vegetable canner in Oregon. Then about the middle of 1929 we sold out to the present General Foods Corporation and bent our efforts to aiding that company in producing and marketing its present line of Birds Eye frosted foods.

That "family" of quick-frozen (or, as they are more generally called, "frosted") meats, poultry, seafoods, fruits, and vegetables was first marketed through a few retail stores in Springfield, Massachusetts, in the spring of 1930. That year 80,000 pounds were sold. The following year sales rose to 800,000 pounds, and the year after that to 1,200,000 pounds. Sales of our products increased rapidly throughout the depression years and had reached an annual rate very much in excess of 100,000,000 pounds by the start of the present war. Since then the demand for quick-frozen foods, which are now produced by a large number of well-established concerns in both Canada and the United States, has risen almost vertically.

The War's Effect Upon Quick-freezing

The greatly increased demand for quick-frozen foods is due to several factors, important among which are the increased buying power of the general public, large purchases by the armed forces, shortages of canned foods, and the greater acceptance of frosted foods brought about by rationing. Several of these factors will bear consideration in some detail.

Frosted foods are ideal for use by the armed forces wherever proper refrigeration is available. They save enormously in transportation, storage, and handling. They are always "garden fresh" when delivered to the cook, and therefore contribute in maximum degree to the nourishment of men in camps, in the field, and aboard ship. Because they are already dressed ready-to-cook, they save much kitchen police work.

Rationing has contributed materially to the knowledge and acceptance of quick-frozen foods by the public because it has broadened sampling by housewives who have been forced to make radical changes in their food purchases. The scarcity of certain canned products has also helped. It is estimated that users of these frosted foods have increased three- or fourfold since rationing started. Partially offsetting purchases by new customers, however, is the fact that many people who have used quick-frozen foods for years are now unable to obtain them in accustomed quantities.

Quick-freezing Benefits the War Effort

Quick-freezing affects our war effort in many vital and tangible ways. Among the most important is the large saving in tinplate made possible by quick-freezing. Let me illustrate.

One million pounds of quick-frozen peas—less than a single day's pack in some plants—require as containers only 87,000 pounds of

cardboard, 7,000 pounds of cellophane, and 9,000 pounds of waxed paper. If canned, this same million pounds of peas would use 1,191,131 No. 2 cans composed of 4,038 pounds of pure tin and more than 250,000 pounds of steel.

Furthermore, a ten-station Birds Eye quick freezer, weighing five tons, can process 84,500 pounds of shelled peas per week. Such a machine is portable and can be used in one or more plants throughout the year. But even on the basis of a forty-week annual schedule, one such freezer can turn out 3,780,000 pounds of product—which, if canned, would require the use of eight tons of pure tin and 500 tons of steel. Other types of freezers effect similar great savings of critical materials.

Quick-freezing is as beneficial to our overworked transportation system as to our tin and steel situation. Eleven freight cars, each carrying 700 bushel crates of fresh spinach, are required to transport as many edible portions of fresh spinach as we ship in one car of Birds Eye product. Thirteen cars are needed to transport the fresh equivalent of one car of Birds Eye frosted peas. If this huge saving could have been applied to all of the 152,051 carloads of fresh vegetables moved by rail in 1942, a total of at least 138,200 carloads, most of them moving very long distances, would have been saved.

In 1942, railroads moved some 30,000 carloads of canned foods. If all those foods could have been quick-frozen, the savings in transportation would have been staggering. A million pounds of peas in No. 2 cans weigh 2,306,498 pounds and fill 64 freight cars. But 1,000,000 pounds of peas quick-frozen in 12-ounce cartons weigh only 1,121,280 pounds and fill only 31 freight cars.

Yet so far quick-frozen foods have scarcely scratched the surface of their huge potential market. Only about 40,000 out of the 430,000 grocery stores in the United States now carry them.

The Future of Quick-freezing

In Great Britain and on the European continent the production and distribution of quick-frozen packaged perishables was just getting off to a good start when the war intervened. Since then the Germans have utilized quick-freezing to rob the conquered countries of great quantities of perishable foods. It is probable, however, that in the immediate post-war period the generally impoverished condition of Europe and the lack of refrigeration facilities will temporarily handicap the further development of the quick-frozen food industry there. I am nevertheless confident that as soon as anything like normal conditions are restored, quick-freezing will be applied on a rapidly increasing scale throughout Europe and that it will eventually have an important effect upon the standard of living there.

In Africa, India, Australia, New Zealand, and Central and South America, as well as in Europe, the growth of quick-freezing will be retarded by the paucity of low-temperature facilities; but those facilities will be provided as rapidly as economic conditions permit, and their rapid creation may well turn out to be a potent incentive to post-war prosperity.

In Canada and the United States the growth of quick-freezing may pause briefly while excess war stocks of canned and dehydrated foods are absorbed, unless those surpluses are exported as Lend-Lease. Thereafter, growth will proceed very rapidly indeed; and quick-freezing will spear-point a truly phenomenal increase in low-temperature refrigeration in processing plants, public warehouses, transport, wholesale and retail establishments, locker plants, and farm and home refrigerators.

Quick-freezing is a very lusty and promising infant!

Cold Storage and Refrigerated Transport

Cold storage and refrigerated transport are really twin branches of the same great and fundamental industry, for the latter is merely the "in transit" form of storage. Neither can function commercially without the other, and the optimum conditions of both are very much alike. Together they are a sine qua non in the distribution of perishable foods. Without either of them there could be no centralized farming, no big-scale meat packing or fishing, no international fruit business, no home refrigeration, no city life as we know it today. Let me tell you a little about the development and present status of the more important subdivisions of this industry.

Cold Storage

A cold storage may be defined as an enclosed area in which comestibles are held at a temperature less than that of the surrounding atmosphere. Types are many and varied. They include private and public warehouses, locker plants, farm and domestic refrigerators, refrigerated cars and trucks, and ships. Temperatures range from about plus 55° to minus 20° F. There is great variety, too, in the means used to refrigerate storage space. Ice and salt, mechanical apparatus, and solid carbon dioxide are the most common.

Locker Plants

Locker plants are small commercial refrigerated storages providing as many as several hundred individual lockers, all of which are maintained in the neighborhood of 0° F. The lockers are rented to individual customers; and, broadly, the locker plants furnish to individual families somewhat the same services as those rendered to businesses by large public cold-storage warehouses.

Locker plants, however, perform many services in addition to freezing and storing. They skin and "hang" carcasses, reduce meats to consumer cuts, render fats, smoke hams and bacon, wrap and label packages, sell and exchange foods frozen elsewhere than in their own plants, and engage in a constantly widening variety of merchandising activities—such as selling domestic refrigerators and low-temperature food cabinets.

The commercial development of locker plants is quite recent. In 1937 there were less than 1000 in the United States, but by the spring of this year the number had grown to more than 4500, in forty-seven states.

Locker plants were developed primarily as food "service stations" for rural communities, but have recently been proving popular in cities in the central, western, and southern states.

In the aggregate, locker plants are doing a great deal to aid wartime food problems. It is estimated that more than a billion pounds of perishables have been preserved in them this year.

The future of locker plants is probably bright, but is somewhat uncertain because of several unpredictable factors, among which some of the most obvious are relatively high operating costs, wider distribution of nationally advertised brands of quick-frozen foods, freezing units for farms, domestic refrigerators with low-temperature compartments, and new types of foods such as dehydrated products.

Domestic Refrigerators

One of the first written records of the use of domestic refrigerators, or "ice boxes," was a book published by Thomas Masters in London in 1844. Darius Eddy of Boston is credited with having been the first manufacturer of "ice chests" in the United States.

Automatic mechanical household refrigeration was introduced in the United States in 1910. Twenty years later we had 2,700,000 refrigerators in use; and by the end of 1940, 18,000,000 had been installed. It is safe to prophesy that even this phenomenal rate of growth will be accelerated in the early post-war period and that before long nearly all households in Canada and the United States will have mechanical refrigeration.

Most large refrigerator manufacturers already have their post-war designs pretty well in mind, at least so far as basic characteristics are concerned. The new equipment will include, among other things, low-temperature space sufficient for storing several days' supply of frozen foods, means for maintaining humidities sufficiently high to keep fresh vegetables from wilting, automatic ice-making facilities, increased capacities, and greater convenience.

Refrigerator Cars

The advent of natural ice as a commercial refrigerant and the need of the Chicago meat packers for better refrigerated transport brought about the development of refrigerated railroad cars in the United States. The first such vehicle, an ordinary box car with platforms at each end to hold ice, was used successfully in 1860 to carry a load of meat from Chicago to New York. By 1875 specially constructed insulated refrigerator cars, with end compartments for ice and salt, began to appear in considerable numbers.

Today approximately 6 per cent of all freight cars on American railroads are classed as "refrigerated," and those of the latest type are capable of maintaining evenly distributed temperatures in the neighborhood of zero degrees Fahrenheit and safely carrying frozen foods throughout North America. A very efficient type of refrigerator car was originated in South Africa, introduced in considerable numbers in Canada, and is at present being tested in the United States with excellent results. This car carries the ice in overhead tanks.

Refrigerated Trucks

Refrigerated trucks probably came into wide use for transporting ice cream. They were at first cooled by bunkers of ice and salt, which later gave way to metal cartridges filled with frozen liquids whose melting point was well below that of the temperature desired in the truck. More recently, trucks cooled by dry ice or mechanical refrigeration have come into extensive use for hauling frozen foods long distances. Companies with which I am associated transport a very considerable proportion of their quick-frozen foods in such trucks, sometimes for distances as great as 2000 miles.

Preservation by Heat Sterilization

Sterilization by heat, so far as I am aware, is the only completely new method of perishable food preservation developed since prehistoric times. Broadly, this method includes both canning and pasteurizing, between which it is difficult to delineate sharply.

Canning

The story of canning goes back to the year 1795, when the French government under Napoleon offered a prize of 12,000 francs for the discovery of a practical method of preserving perishable foods for the French army and navy. In 1809 Nicolas Appert, a Parisian confectioner, successfully preserved certain perishables in hermetically sealed glass bottles which had been kept in boiling water for various lengths of time. A year later his book entitled "The Book for All Households, or the Art of Preserving Animal Substances for Many Years" appeared, and he was awarded the 12,000 francs.

William Underwood and Thomas Kensett introduced canning on a commercial basis in Boston and New York respectively in the year 1820, using the Appert process. Tin-coated steel containers first came into widespread use in the United States in 1839, the idea having been conceived and patented by Peter Durand, an Englishman. Since that time commercial canning in the United States has increased phenomenally, until today that nation uses some ten billion tin cans annually to preserve its harvests.

Appert attained his results by trial and error, and could give no logical explanation of the remarkable results he obtained. Not until half a century later did the true causes of food spoilage come to be understood, as a result of Pasteur's work. Still another third of a century passed before Prescott and Underwood, working together at the Massachusetts Institute of Technology in 1895, first specifically applied Pasteur's work to the canning industry by tracing spoilage of canned corn to imperfect sterilization resulting from insufficient heat processing.

Canning must be credited with immense contributions to the technology and mechanics of sanitation, quantity production, and quality control. Canned foods have done much to make possible man's concentration in huge industrial centres and his advance into distant frontiers as well. I remember vividly that when, in 1908 and 1909, I traveled extensively through our Southwest by pack

horse, we lived largely on canned beans, corn, and tomatoes; and that every ranch and settlement was marked by its piles of empty cans, which, glittering in the intense sunlight, were visible for many miles.

But because canning necessarily relies upon the use of excessive heat to ensure sterilization, canned foods do not closely resemble the fresh product in appearance, texture, or taste. For instance, though canned salmon is delicious, in appearance and texture it cannot by any stretch of the imagination be said to resemble the fresh product.

Therefore, in spite of the great contribution canning has made to food preservation and the fact that canned foods are consumed almost daily in tens of millions of households throughout the civilized world, I feel that the relative competitive position of the canning industry will deteriorate in the years to come unless a method is discovered by which perishable foods can be held at high temperatures in sealed containers without the use of excessive heat to bring about sterilization. Efforts are already under way in certain laboratories to bring this about by high-frequency electric current applied to foods in hermetically sealed non-metallic packages. It is at least conceivable that the whole canning industry may receive a new impetus by the perfection of this or some other equally revolutionary improvements—such as, for instance, the use of chemical preservatives.

Pasteurizing

Pasteurized foods, as compared to canned foods, are subjected to relatively low heat for a very short time and therefore are not very greatly altered in flavor by the process. This relatively mild use of heat has made it possible to pasteurize dairy products, fruit and vegetable juices, and wines without altering their flavor sufficiently to make them seem like "preserved" products.

However, even the relatively slight changes in flavor and aroma which result from pasteurizing at temperatures in the neighborhood of 145° F. for some thirty minutes constitute a very real drawback to the increased use of the process. Therefore in recent years much research has been devoted to the development of "flash" pasteurizing, which consists in raising the liquid momentarily to a temperature of about 165° F., the whole process of heating and then recooling occupying only a few seconds. This newer process considerably lessens flavor changes. Highly reliable commercial apparatus for "flash" pasteurizing is now available, and its use is increasing rapidly in the United States. When and if ways are found to pasteurize foods with even less change in flavor, still larger fields will be opened. Such developments are entirely possible and are already being pursued by several laboratories with considerable hope of ultimate success.

Dehydration

Advantages

Theoretically, dehydration is a perfect way of preserving perishable foods—so perfect, in fact, that if we could utilize its potential advantages without running head-on into accompanying disadvantages, we would not need any other means of food preservation whatsoever.

The advantages of food dehydration are obvious. The costs of moisture removal are reasonable as compared to other methods of food preservation. The weight and bulk of the dehydrated product are only a small fraction of those of the same foods fresh, frozen, canned, smoked, salted, or pickled. Packaging, transportation, storage, and other distribution costs are much less than those inherent in other methods. Waste can be eliminated at the point of production and used for valuable by-products. Maximum convenience for the housewife can be another inherent advantage.

Disadvantages

Unfortunately, however, most dehydrated foods at the present time possess such serious disadvantages that in peace times dehydration has been limited principally to milk, eggs, and condiments.

In the first place, several of the elements which contribute flavor and aroma to perishable foods are volatile and are to a greater or lesser degree driven off by heat during the dehydration process. The longer the drying period and the higher the temperature of the product while drying, the greater the loss of volatiles.

During dehydration, too, there may be serious losses of vitamins and a denaturation of the cell contents. Dehydration is often too slow.

Frequently the product is scorched during the latter part of the drying process.

Many dehydrated foods are highly hygroscopic and therefore must be packed in substantially moisture-vapor-proof containers to prevent their moisture content from rising dangerously during storage and shipment, especially in warm, humid climates.

Although foods to be dehydrated are usually slightly precooked to inactivate enzymes, oxidation may nevertheless occur during storage and may cause ruinous loss of flavor and vitamins and appearance changes so serious as to render the product unmarketable.

Types of Dehydration

Modern food dehydration is an evolution from ancient sun-drying, although several types of food are dried by processes and apparatus which are of comparatively recent origin. It is worth while at this point to review briefly the several divisions of the modern dehydration industry.

Dehydration on outside of heated stainless steel drums is used to dry whole milk, some fruit juices, and most purees. The liquid is applied in a very thin layer to the outer surface of the drum and becomes thoroughly dry in a few seconds as the drum makes less than one revolution. The dried food is peeled from the apparatus by a knife and reduced to small flakes or a fine powder.

Drying on the inside of metal drums is one of the oldest forms of mechanical dehydration and is still used on a very large scale. By this method fish fertilizers and the higher grades of fish meal are produced. Internal drum dryers of refined construction are used for drying much of the ground meat now being prepared in the United States for the armed forces and Lend-Lease, and at least one manu-

facturer is turning out a drum dryer for vegetables. Improved dryers of this type may be expected before long to dehydrate a considerable part of the cattle feed now going into hay or ensilage.

Spray drying is used for skimmed milk, eggs, and some fruit juices. In this process the food is atomized into a current of very hot, dry air, where the individual droplets dry almost instantly while being cooled by evaporation, so that they do not at any time rise above their critical temperatures of about 120° to 150° F.

Tray or tunnel drying is used in the dehydration of most fruits and vegetables. The essence of this method is that the product to be dried is spread in a relatively thin, loose layer on trays or belts and then passed through a tunnel while warm, relatively dry air with a carefully controlled moisture content is passed in large quantities over or through the layers of product. This process is a direct development of old sun-drying methods and is, I believe, fundamentally wrong in that the product remains in an undisturbed layer and therefore must be dried very slowly if scorching is to be prevented.

Vacuum is employed in many widely different types of apparatus to remove moisture from a great variety of foods. It has the advantage of permitting evaporation at very low temperatures. Blood plasma is dried by sublimation in vacuuo. Condensed milk and citrus juices are concentrated in heated vessels under a moderate vacuum. Most sugar and table salt is crystallized in vacuum pans.

Freezing and centrifuging can be used to concentrate many liquid foods whose flavor and aroma are adversely affected by even the relatively low temperatures required for vacuum-pan drying. Fruit juices, for instance, are solutions; and fresh-water ice begins to crystallize out of them when they are lowered below about 30° F. The partially frozen juices can then be centrifuged to separate the unfrozen liquid from the ice crystals. Freezing and centrifuging can then be repeated at successively lower temperatures until the desired degree of concentration has been obtained. This process maintains such low temperatures throughout the process that there is very little change in flavor and a minimum loss of volatile elements and vitamins. Apparatus is now being "readied" for employing this process on a large scale in the post-war period.

Dehydration for the Post-war World

Dehydrated foods will inevitably play a major part in the nutrition of war-torn countries in the immediate post-war period, and a large proportion of such foods will be shipped from Canada and the United States. Moreover, I know that the Russians, Brazilians, and Swiss are already contemplating extensive use of American dehydrating equipment on a large scale as soon as possible after war ceases.

Dehydration, like quick-freezing, is almost certainly destined to grow rapidly to presently undreamed-of proportions in the post-war world; but such a future can be realized only if greatly improved processes and apparatus are developed and if the industry becomes very much more quality-conscious than at present. I think that to

be successful as a retail store item, a "line" of dehydrated foods with most of the following characteristics will have to be developed.

The "line" must be reasonably comprehensive, including at least fifteen or twenty of the commoner vegetables, a dozen fruits, two or three meats, perhaps a seafood or two, a good variety of soups, and several cooked products such as baked beans. Size and form of the pieces of product must be what the consumer is used to having on her table—e.g., sliced carrots, diced beets, julienne potatoes, sliced onions and cabbage, asparagus tips, spinach leaves, or sliced fruit. Appearance and aroma must be attractive both before and after cooking. Maximum convenience is essential—small, compact, easily-opened packages and speedy cooking without preliminary soaking. Taste need not, I think, be exactly like that of the fresh product, but must surely be equally delicious. "Hidden" food values must be satisfactorily preserved in the product as served at the table. Last, but by no means least, prices per edible portion must be lower than those for comparable fresh, canned, or quick-frozen foods.

Fermentation

Fermentation is probably one of the oldest and most varied means of changing the form of perishable foods and making them less perishable. Separately and in conjunction with salting, smoking, and drying, it is employed everywhere; and its products enter into the diet of every human being.

Spruce beer, that definitely "tasty" spring beverage made by the Labrador "livyeres" from fire shoots and molasses; tequila, a most potent beverage produced "south of the border, down Mexico way"; and that great variety of more civilized drinks, the scarcity of which we are beginning to mourn—all these are products of fermentation.

"Yeast meat" is a recently developed synthetic food very rich in proteins and vitamins and said to possess a decidedly meaty flavor. If memory serves me right, I believe that I personally would much prefer a nice, thick, rare, broiled T-bone steak; but such synthetics as "yeast meat" offer great promise for post-war nutrition in areas where people must eat to live—rather than vice versa.

Preservation by High-frequency Electric Current

Several investigators are studying the possibilities of high-frequency current in the preservation of perishable foods. Some hope to sterilize food, either in or out of containers, without raising the temperatures sufficiently high or for a long enough time to change flavors. Others are considering the application of this method to the final steps in dehydrating foods, whether "loose" or compressed into cakes.

Whether or not the application of high-frequency current to the preservation of perishable foods ever becomes commercially practicable, it at least has tremendous potentialities.

Packaging

The art of packaging and the development of packaging materials for food products were stimulated greatly by the advent of quick freezing.

Quick-frozen foods require adequate protection against moisture loss and oxidation during storage. Of course similar protection for ordinary frozen products has always been equally desirable; but whole frozen fish have received that protection from an ice glaze which evaporated only very slowly during storage and could be easily renewed as often as necessary. Frozen meats and poultry have usually been given no more protection than was afforded by ordinary waxed paper or parchment wrapping inside a wooden box or barrel.

Quick-frozen dressed foods required different and more adequate protection against oxidation and loss of moisture during prolonged storage. Glazing was not suitable for them, and ordinary packaging materials did not furnish the protection necessary to maintain the high quality which was absolutely essential to the success of the new product.

Moisture-proof cellophane was developed to meet this requirement and, after the initial defects characteristic of all new products had been removed, served very well indeed. This new material first became available about 1926, and quick-frozen foods constituted its principal market until it came into use for wrapping cigars and cigarettes.

Since that time many entirely new and very promising wrapping materials have made their appearance. Some are transparent, others opaque. Included are various forms of paper, coated or laminated with natural or synthetic waxes and resins; transparent sheetings having a latex base; and thin-walled latex bags. It is to be anticipated that the immediate post-war period will make many additional new and valuable moisture-vapor-proof packaging materials available. Transparent plastic containers have great possibilities in this connection.

Dehydrated foods, like those which have been quick-frozen, require moisture-vapor-proof wrapping materials and will benefit greatly from the work which has been done in connection with quick-freezing. The future of dehydrated foods depends to a considerable extent upon the development of suitable packages for them.

Fresh fruits have for many years been wrapped for storage and shipment, and numerous special wrappings have been developed for that purpose. These, however, have all had serious defects which greatly limited their usefulness. They were insufficiently moisture-vapor-proof, gas tight, or penetrable by the mycelia of moulds which often spoiled whole groups of individually wrapped fruits in a package.

A recently developed wrapping material for fruits has, however, great promise. It is transparent, insect-proof, inexpensive, substantially moisture-vapor-proof, permits the outward passage of carbon dioxide gas exhaled by the fruit and the passage inward of sufficient oxygen to meet the plant's requirements, and can be applied automatically by apparatus which is relatively simple and inexpensive. This wrapping extends the storage life of practically all fruits several hundred per cent, whether at room temperature or in "cool" storage.

This new wrapping material may well make possible a revolution in the distribution of fresh vegetables as well as fruits. Spinach, lettuce, cabbage, carrots, peas, string beans, and many other leaf and root vegetables can be dressed at the production point ready for the kitchen and then shipped and retailed in bags which allow their contents to "breathe," but not to dry out. Such products, even after several days in an unrefrigerated retail store, retain their genuine freshness to a large extent and are not only more atrractive and convenient, but much richer in "hidden" nutritive values than "fresh" vegetables distributed by present means.

The Future

I have dealt in a somewhat detailed manner with the history and present status of perishable food preservation because it is only with a thorough understanding of past and present methods that we can make an intelligent guess about what the future has in store. I am fully confident that the perishable food industry will see just as revolutionary and far-reaching changes and improvements as we know to be in store for such younger and hitherto more progressive industries as plastics, aeronautics, and light metals. Quick-freezing, dehydration, and other means of preserving even the most perishable fresh foods will eliminate time and distance, except as economic, political, and social factors. To a greater and greater extent, traffic in perishable foods will become international big business. Such foods will be produced wherever in the world they can be grown to the best advantage and consumed wherever and whenever they are most needed. Increased availability of these "protective" foods will go far toward raising nutritional standards among that major portion of the human race which is habitually undernourished. This better nutrition will catalyze innumerable other improvements in the lot of human beings.

Moreover, better methods of making perishable foods substantially imperishable will bring about certain specific industrial changes which can, even today, be predicted confidently. Farming will be materially affected; for perishables grown, harvested, and processed under favorable conditions by quantity production methods will reach crowded industrial communities many thousands of miles away in better condition and at lower cost than competing foods grown on a smaller scale and taken care of less scientifically by producers located much closer to market. This tendency may have very serious social and political effects, since it may entirely alter the status of the small farmer in regions such as the Maritime Provinces and New England.

There will be a very large demand for mechanical refrigerating equipment to provide low-temperature facilities throughout the world. This equipment will be exceedingly varied and will embrace both public and domestic types. Its production and distribution will provide employment for tens of thousand of skilled workers in many countries.

Warehousing facilities will obviously have to be increased all over the world to an extent which few of us have visualized. Most of these

warehouses will be refrigerated and will provide both cool-storage and sub-zero temperatures.

Quick-freezing has already given a tremendous impetus to the development of better railroad refrigerator cars in both Canada and the United States. In the post-war period this trend will be accelerated, for a constantly increasing percentage of all perishables will be shipped at low temperatures. Lighter materials will be used in car construction. Better axles will increase speeds. More uniform temperatures will be maintained throughout the run, no matter how long it may be or how varied the outside temperatures through which the car may pass.

The use of refrigerated trucks for transporting both fresh and frozen perishables will increase by leaps and bounds; and truck and rail transportation of perishables will continue to compete, to the great advantage of both.

Refrigerated ocean transport will soon become a serious bottleneck, no matter how much of a surplus of ordinary unrefrigerated bottoms there may be at the close of the war.

Air transport will probably not move large quantities of either fresh or preserved perishable foods in the post-war era. It is distinctly possible, however, that certain very perishable ripe fruits may be brought by air from distant tropical growing areas to our principal cities. Such fruits, protectively wrapped, would remain in excellent condition long enough to reach the public through a limited number of relatively expensive retail stores. It is interesting, in this connection, that United States patent protection has recently been sought for a process for simultaneously transporting and quick-freezing packaged perishables while being flown through the extremely low temperatures of the sub-stratosphere.

Food technology will, I believe, both lead and follow the great expansion of the food preservation industry. I can think of no field which offers a more promising future for young technologists.

The perishable food industry of the future will be truly international in scope. Those countries with great undeveloped agricultural resources, regardless of their distances from main centres of population, will produce immense quantities of crops at costs very much lower than now seem possible.

Canada will be one of those great producing countries. I cannot make any detailed prophecies as to just how she will fit into the picture of general world food supply. That will depend upon the wisdom of her agriculturists, technologists, entrepreneurs, financiers, and statesmen. But I know that Canadian perishable foods, rendered imperishable by processes some of which are not today even guessed at by the general public, will become well known in many parts of the world which have not known them heretofore.

New Merchandising Techniques

NOVEMBER 29, 1943

LEE H. BRISTOL

New Merchandising Technique

In addressing myself to comment on New Merchandising Techniques, I fear some disappointments are in store for you, since much of what I shall say may not appear as new as you may have hoped for. But, after all mere newness applies more to form than to fundamentals. Indeed, the fundamentals of new merchandising techniques, if they are worthy of that definition, namely, that they are fundamental—are perennial. It shall be my thought, however, to bear down with accent and emphasis on those fundamentals concurrently as we explore the subject tonight.

Peacetime Problems

We hear much nowadays of post-war planning, and it is to be regretted that it has been necessary to put such a bellicose title on something that has always existed. Of course, the war has forced itself into the title. But, what we really mean at heart, is planning ahead for the future.

Certainly, no business management worthy of the title would fail to be a planner ahead at all times. And, yet, of course, with war-time restrictions bearing heavily upon us from every direction, it is only natural that we must think for our present future in terms of the period following the cessation of hostilities; and the release thereby to all of us of products and opportunities that are not currently available.

And, indeed, with the grimness of the conflict still strong upon us, it is pleasant and profitable to speculate once more on peace-time problems. In that connection I am reminded of a quotation I came across in reading Thomas Mann's monograph on "democracy." From a wisdom born of long experience with and study of European political history, that great observer defined war in these words: "War is nothing but a cowardly escape from the problems of peace."

There is, indeed, rich food for thought in those words, and I feel that any discussion dedicated to any of those problems of peace may in some way be contributing to an avoidance in the future of the cowardly escape to which he referred.

During a war-time economy, merchandising becomes a lost art. The markets that remain are avid and voracious. Demands seem limitless. Indeed, the seller is king and persuasive selling born of competitive necessity becomes an unused art.

Background

In setting our sights forward in contemplation of a post-war world, I am further reminded on an anecdote told recently by Mr. Paul Hoff-

man, President of the Studebaker Corporation in the States. Mr. Hoffman, as you may know, is head of the now well-organized Committee for Economic Development. That activity is dedicated to post-war employment as the fundamental key-stone for a return to a flourishing peace-time economy.

When Mr. Hoffman referred to his committee's plan and program of activity which is based on anticipating employment demands in the post-war world, he received this comment from the president of one of our other large American corporations:

"Paul, I have never yet been able to play a hand of poker until the cards have been dealt."

To be sure, that is a cynical wisecrack—pregnant though it is with one very bald truth. We must try to anticipate the political and economic climate under which our post-war plans will operate. And, yet the boldness and venturesome quality of such an undertaking cannot be avoided even though it exists in the unarrived present; nevertheless, we must try to envision the background of future climate and we must plan and plan soon.

These plans embrace two conditions:

A. A Short-term plan.
B. A Long-term plan.

A. Short-term Viewpoint

There exists in the near post-war future many pent-up demands on many items of merchandise that are war-scarce at present. That demand asserting itself will unquestionably provide in the short-term future an excellent cushion for the period of transition to peace.

Again, there are innumerable necessary replacements in prospect for our whole productive machine. I believe this situation which I reflect in the United States finds a close parallel here in Canada. The cycle of employment simply expressed is this: Ample employment is offered by manufacturers. This provides wages which in turn become markets for merchandise, and the purchase of that merchandise in turn assures the employment.

It is a perfect cycle and like the chicken and the egg, it would take a more profound economic philosopher than I to challenge employment as being as adequate a starting point as any in that cycle. Certainly, it strikes hard and direct at the very core of any national economic problem.

And, again if as presumably most of us hope we are to avoid the overthrow of the capitalistic system—the free enterprise system—call it what you will, then the problem and evil of unemployment must first be attended to.

Economics

Of course, I believe that Government help will be needed. Again, taxes won't fall too sharply. There will be a lively need for cash reserves as post-war cushions to bridge the transition to peace-time production in many cases—especially those industries which have completely retooled themselves for war production.

These cushions, or perhaps Government subsidies, in one form or another, will doubtless be required in part. And, we may well anticipate that some recently installed Government services are here to stay. But, all of us jealous of the future of free enterprise must take great care to lend our voices and our votes, lest our respective Governments attempt to run the whole show.

In your democracy and in ours—in any real democracy—the Government is the servant of the electorate, not its boss—else what have we been fighting for anyway.

Longer Viewpoint

In considering a longer-term viewpoint in our post-war planning, we deal with other factors that may develop with the passage of time. When we think of merchandising, we naturally think also in terms of markets, and markets are people, with all their wants, desires and unsatisfied needs.

Hence, if more people with its concomitant of bigger markets are to be anticipated, we are bound to lead quickly into a contemplation of immigration as an acceleration to birth-rate increases. Since people make markets, we should view with alarm any trend or tendency to too much regimentation and too strict a control over the activities and the earnings of the individual.

I am reminded of the case several years ago in the States of a newly elected Congressman who arrived in Washington as a political novice. His campaign had been much ballyhooed, and I strongly suspect that his success at the polls should be attributed more to his showmanship than to any profundity of wisdom that he possessed as a legislative representative of his constituency; in his campaign he had recklessly achieved popularity by rash promises of drastic reform. He would repeal this law and that law.

Some alert reporter interviewing him upon his arrival in Washington asked this Congressman what he was going to do about the law of supply and demand.

With characteristic enthusiasm he quickly replied, "I'm going to have that law repealed, too."

Influence of Exercise of Choice

As free and "sovereign" individuals where the buyer is king, you do indeed have the right of choice. And yet, if you are management and directing merchandising policies, you do not have the complete freedom of the individual. Forces beyond management control are always bigger than that management or that company and bigger, too, than the individual's power to control it.

Mr. Kettering, Director of Research for General Motors Corporation, told me an anecdote over ten years ago that I have not forgotten, since it will illustrate this point.

The time was around 1928 or '29, when Chevrolet had already adopted a self-starter on its latest models. Mr. Kettering met Mr. Ford one day, and in the course of conversation inquired: "When are you going to put self-starters on your Ford cars?"

Mr. Ford replied that he wasn't certain whether he would at all, now or at any time.

Mr. Kettering came back at him quickly: "If you'll pardon my gratuitous suggestion, Mr. Ford, I don't think you have any power over that decision yourself."

After Mr. Ford's amazed and indignant ejaculation, Kettering continued, "After all if a million people decide not to buy a Ford car because it lacks a self-starter, you're going to put one on whether you now think you will or not."

Summary

So, since people make markets as previously stated, that matter of immigration policy for Canada is sure to have strong implications for the industrial and economic development of Canada. I shan't let myself become embroiled as a visitor here in your Dominion policy for the next ten years as regards immigration, but I would call your attention to one irrefutable fact.

The outstanding characteristic of the free enterprise system is its dynamic quality, and I strongly suspect that any curb or reversal of the expansionist trend required by industry would be stultifying as well as devastating in its consequences.

Nowadays production capacity will probably exceed the markets created through normal birth increases. And, here the end result of a wisely administered but liberalized immigration policy finds its greatest justification.

Reading as I have the opinions of many of your Canadian industrial leaders, it would seem that they, too, share the feeling that your frontiers are not closed; that you have a wealth of natural resources which are still untouched, and the additional people to exploit them provide markets that hold strong allure to the merchandise-minded.

Until Canada's immigration policy is more firmly formed, there will naturally be a big question mark hanging like a reverse sword of Damocles over the heads of those planning for a bigger and more dynamic industrial future for Canada.

Distribution

As I keep reiterating, people make markets. To this should now be added the obvious corollary—*markets are where people are.*

Statistically, Canada just as in the United States, has shown a marked trend towards urbanization. The Canadian statistics I have seen indicate that in the census period from 1891 to 1941, this fifty year trend shows the urban population in Canada to have increased from 31.8% to 54.3% in the latest census. As a corollary to that, Canada's urban population in your four principal cities: Montreal, Toronto, Vancouver and Winnipeg, shows an increase of population concentration that has grown from 30% of the urban population represented by these four cities to 43% of the urban population in those four cities in 1941.

On the face of it, that would present impelling evidence of a strong influence on merchandise distribution, but a post-war factor not yet

realized may have a strong compensating impact on the rural. I refer to the strong probability that air transportation may keep the availability of markets better balanced than would appear at first glance.

Certainly, mail, express and people will in the post-war world be transported with speed and facility to areas now looked upon as outlying frontiers. That will have a sharp influence on markets and distribution, and the thinking which you and I are attempting to apply to them.

Considering the distribution of merchandise, the urban markets will tend to expand the opportunity for the growth and extension of super-markets. The chain store situation in Canada also shows an interesting development. In 1941 chain stores numerically represented only 6.1% of Canada's retail stores. In 1930 they were 6.8%. Despite this, in 1941 chain stores did 19.6% of retail volume as against 18.3% in 1930.

Actually, the number of chain stores decreased by 470, but their sales increased $145,000,000. This seems to confirm the indication of the development of larger unit outlets. The development it would be logical to assume will continue.

If past history teaches us anything, we learn that the growth of these modern forms of merchandise distribution tends to increase rapidly in all areas where population is highly concentrated.

The availablility of merchandise and the convenience of its purchase have always been sound policies as long as they are held within the bounds of sound economics. Therefore, post-war merchandising undoubtedly will tend to be sold via the means most easy and convenient to the purchaser.

This may entail certain changes in the distribution structure, such as the creation of super markets on the one hand, or house-to-house selling on the other. But over and above this new distributional structure, we must recognize a logical return to the channels of distribution for the product, whether those channels be salesmen, direct agents of manufacturers, wholesalers, retailers, etc., since the smooth unimpeded flow of goods is so important.

Export

One cannot envision the merchandising development of the Dominion of Canada without giving full recognition to the importance of export markets for the dominion.

This subject I notice has been ably covered by Mr. Floyd Chalmers in a lecture here a few weeks ago. May I merely echo my complete agreement with his insistence that Canada should do well to cultivate foreign markets, and especially those with Great Britain and the United States.

Remember only that this matter of export is a "two-way" ticket, as we in the States have been all too slow in appreciating.

If the discussion thus far invites some change of thinking on your part, I would pause to call to your attention this quotation from a recent article by your own Stephen Leacock:

"A man who hasn't changed any of his ideas since the war started is in the class of a man who hasn't changed his shirt—too conservative."

Packaging

The term Packaging may have a very broad interpretation. Indeed, it can be stretched to include the form and character of the final product itself in certain types of merchandise. If we visualize the strides made in such an easy illustration as the modern electric refrigerator, we become aware of the changes and improvements in design for the product that makes it more saleable.

To that extent such design becomes a form of packaging itself, at least insofar as the customer appeal is enhanced thereby. Plenty of other goods in the semi-durable merchandise class afford comparable opportunities for design improvement and the customer appeal of the finished product. In those cases the product itself is its own package.

Turning to the more distinctly consumer goods classification, the matter of packaging is the sales dress. Here the primary elements to consider are convenience, visibility, utility and protection.

War Packages

The impact of the war has, as we all know, produced such a shortage and scarcity of raw materials that practically every package is indirectly under some form of Government restriction. I believe the Canadian list very closely parallels that in the United States.

The packager is now confronted with the problem not so much of using his package for the sake of sales appeal, but is forced by necessity to struggle to discover and locate available materials into which to put what few products he may still continue to make.

Under such circumstances he is actuated almost entirely by expediency and will take temporary and normally unsatisfactory substitute materials merely for the sake of keeping his product on the market. After all, in this seller's market existing during the war, we are experiencing happily an acceptance by dealers and by the public of these restricted, limited and often most unsatisfactory packages. These products are making the bravest possible showing in windows, on counters, and on shelves that the circumstances permit.

One naturally asks the question: "How are these substitute materials performing?"

In the military field where there is no problem of priority or expense in packaging, the practice of using substitutes derives from specifications arbitrarily established.

In this field a great many materials have been developed which, for example, are doing an excellent *protective* job. For instance, "Renlflex" (a 5-ply lamination of kraft, asphalt, cellulose sheeting, metal foil and thermoplastic), is serving to protect a great many perishable products.

If protection were the only element in packaging, it would be safe to predict that such products as this one will survive for civilian packaging after the war. It seems quite likely that the exterior can be glamorized so as to enable this very useful lamination to present an

attractive external appearance that will have high value in consumer appeal. The same may prove true of many other substitute materials.

Post-war Packages

On the other hand, there are substitute packages which will disappear immediately after restrictions are lifted. Of that, we may be sure.

One example is the paper container for tooth powder and the paper cap for cosmetic jars. When plastic and metal closures are again available along with more decorative types of glass containers, I think it is safe to predict that these present temporary make-shifts will pass out of the picture. The packaging will resume once more its consumer appeal and will be a powerful force in merchandising.

Even with empty shelves in retail stores now, observers may still see evidences of the power of an attractive package. This was brought out very forcefully recently in a talk before the American Marketing Association by the owner of a group of super market food stores in New York State.

He is a keen observer of the merchandising power of packages. He stated that even today when consumers will take almost anything on second or third choice, their first selection is the attractive package. This has influenced him in providing the counter and floor displays of merchandise in his stores.

Of course, this involves only the sales appeal and not the protective function of packages, but his testimony is significant in emphasizing the fact that an attractive package is a powerful selling factor and that attractively arranged merchandise displays are vital in the moving of goods.

Practically everyone here has lived through the days from the bulk cracker barrel up to the present time with packaged crackers for example. Here, packaging has been a vital factor in delivering goods to the consumer in better condition and of higher quality.

Since packaging also involves brand labeling, manufacturers have invited upon themselves the requirements for maintenance of high standards, because the purchaser at least knew what he or she was buying. With the trend towards self-service and open displays that travels hand-in-hand with the trend towards the bigger self-service type of store, we may all expect a corresponding improvement in packaging.

The more that consumers are permitted to select the packages they choose, the more emphasis packaging will have in brand preference. From the standpoint of utility, there is encouraging evidence of progress. The convenience of the wide-mouth jars illustrates this point.

This development will doubtless continue apace involving advance in attractiveness and utility in size and design. As food for conjecture in the future, I suggest that there may be an increase in the number of packages designed for permanent consumer use after the original product has been consumed.

In contemplating the post-war status of packaging, it will be interesting as well as profitable to observe the probable competition that will exist between basic raw materials that are used in packaging. It

looks as though there were in prospect a group of competitive struggles between plastics and metals and wood and glass and synthetic fibers.

From an industrial standpoint that will be an intramural conflict of lively dimensions. As with all other such struggles in the competitive system under free enterprise, the battle will go to the survivor when measured by the requirements of cost, adaptability, convenience, decorativeness, etc.

Labeling

With the growth of consumer consciousness inspired by progress in so-called education, there will doubtless continue a social trend here in Canada as in the States toward more informative labeling of merchandise.

Rapid strides have been made in that direction, and I am one who strongly upholds the consumer's right to adequate information on labeling. I do not hold with some extremists who would carry this to the point of a label cluttered by highly technical information that no average consumer can really understand or interpret in terms of his own needs and requirements for information.

The sanity of the mass consumer group of buyers will undoubtedly assert itself in maintaining reasonable but not extreme informative labeling.

Since I believe the United States have given evidence of more radical activity in this connection, the Canadian student might profit by continuing observation of any developments along those lines which we may achieve.

Psychology of Selling

Under the heading of "Psychology of Selling" we start with another fundamental. I heard not long ago a definition of education which intrigued me. Paraphrased, it is in essence this: "A person is educated when he can understand and appreciate another person's viewpoint."

Bearing that thought in mind as containing a big psychological truth when applied to selling, we find ourselves confronted as salesmen with this condition:—It doesn't make any difference at all whether or not I *want* to sell something to you—be it merchandise or an idea. I will get no where, and deservedly so, unless and until you are so conditioned as to be receptive to me and my wares or my ideas.

There is here involved what I might call a decent regard for the rights of the reader or the rights of the listener or the rights of the purchaser. As in life manners express a code of graciousness and consideration that should find its counterpart in salesmanship.

If we have learned anything in this chaotic turmoil of a world conflict and the shared hardships, it is some regard for the other person. And, if I may offer as an aside in that connection, this regard for the other fellow may hopefully help us in the future to avoid those roots of selfishness from which wars grow.

In the field of merchandise there are two broad classifications—durable goods and consumer goods. Of course, there are sub-divisions such

as semi-durable, and there is also a sub-division of goods which are more quickly consumed than others.

Covering both fields there are the necessities of life. When we pass beyond the elementary fundamentals of food, clothing, shelter and health, we find an expanding list of items that become so-called necessities with progress in improvements in the standard of living.

What was classed as unnecessary in former years (and perhaps still is unnecessary if judged solely by sterner more rugged elemental standards)—that is former unnecessary articles, we can as a people come to accept as necessities. Who today would be so bold as to deny the almost necessitous character of such things as telephones, automobiles and radios, for example.

Selling

Advertising and Selling—those hand maidens of all promotional effort—are importantly dedicated to that stimulating, persuading job of creating wants and desires.

Selling is a never ending job. It must be continuously employed. The task is never done, and why? Well, the quickest terse answer is baby carriages and hearses. Perhaps the Beveridge Plan for a complete program of social security from the cradle to the grave is its most modern recognition.

Bruce Barton once colorfully illustrated this idea with a Biblical reference: "And a new King rose in the land who knew not Joseph."

(I am not so skeptical or cynical as to subscribe to the famous P. T. Barnum philosophy!)

Selling Appeals

The basic selling appeals are those that are basic and inherent in the product itself. Many products with a good selling appeal have no valid reason for changing that appeal. Newness may be introduced, however, in the interpretation of that appeal in terms of current interests or needs, or in anticipation of them. Successful salesmen whether they be personal or mass salesmen have always followed this procedure and have adapted their stories to contemporary conditions.

Appeals are varied as we progress through the Shakespearian Seven Ages of Man, but the fundamental is the same. You, Mr. John Smith, Mrs. John Smith, change mightily as a consumer and as a sales prospect as you grow from youth to maturity to older age.

And, science is still widening that life span constantly so the market for products becomes increasingly broad. Let me here interpolate a collateral thought that bears with great impact on our thinking of appeals and the psychology of selling.

And that is, the importance of women in all markets. With the emancipation of women, speeded mightily by modern education, modern acceptance of women in all forms of human activity and by suffrage, too. It is interesting to note a statistic recently given me, and which, I believe, is broadly accurate; namely, that in the United States in 1942 elections, more women than men voted. (A correction

should be noted that many male voters were in the war services, and therefore unavailable or absent at the polls.)

Women are the purchasing agents of the home. They have an important influence on all buying. (Here I find no necessity for doubting the domestic truth of that statement being as valid in Canada as in the United States.)

It has been estimated that 85% of all consumer purchases are made by women. So, our psychology of selling, must include the ladies as one of the most important markets for our influence. I'll not recite the various fundamental appeals that impress buyers—such as comfort, pleasure, pride, utility, convenience, etc., etc., but there is an underlying fundamental of the mechanics of arriving at the right selling appeal.

Find out what the people—what your markets *want.* Market surveys, a development of a new modern market technique, provides us with the information that practically writes its own copy. In retaining customers, we must not overlook the value of the thought process known as rationalizing.

James Harvey Robinson's book "The Mind in the Making" makes that amply clear. Having become a convert via some particular sales appeal, the rationalizing human being needs repetition and reminder to keep the validity of the original conversion firm and continuing.

I know one simple fundamental that you all know, too. People don't want *to be talked down to.* I resent it, and so do you. But the appeal should be reasonable and, (here's a newer and more modern note), informative. There doubtless will be an increase in the presentation of products not only on a basis of their own merit but on a basis of their contribution to social welfare. This gears itself to the growing and expanding social consciousness of these times.

Consumers

There has sprung up of late many so-called consumer groups—people who are leaders in the concept that consuming is a profession or at least a separate function of people's lives. O.K., I say, but don't let's get fooled—a consumer is not anyone or anybody but you and I.

We are all consumers even as we are directly or indirectly producers, too. Let us not catalog ourselves into too tight a classification.

I referred earlier to more informative labeling. If that is wanted by the vast majority, then surely all consumers are going to have it, and the sooner the better. They're entitled to have it, but I believe it should be based on a real consumer desire for this information and should not be confused with a movement as a subterfuge for the heckling of business and the overthrow of the free enterprise system.

Another factor that has received some publicity is the matter of grade labeling. This is a little more difficult in some categories, and possibly not too important. The important factor there is to never put a top ceiling or limitation on quality and never to require manufacturers to trade *down* to arbitrary standards.

Business is not built on hoaxes. Solid decent business thrives and lives only because it *deserves* to live—because it supplies honestly and reasonably the fulfillment of consumer wants.

I am afraid here I have contributed little or nothing to your information on the psychology of selling other than the rather trite fundamentals with which we have all lived these many years, and yet as I said at the outset, fundamentals really never change. Form moves with progress to modernity.

Conclusions

Unquestionably there will be a great temptation for us all in post-war activities to try the new for the sake of its newness rather than because the new is sounder or more efficient.

Permit me to emphasize once more the need of sticking to fundamentals to avoid being lured off base without sound valid grounds for so doing.

As friends and neighbors, I believe that Canada and the United States will move together in the post-war world. We each have much to give the other and that greater understanding may well serve not only the practical material good of us both, but let us hope set a world example of friendliness and collaboration for the future of mankind.

Closing

I look forward with eager anticipation to the questions which I hope this all-too-inadequate paper have inspired. It is truly difficult in a prepared talk of this character to cover fully so great a subject even if I were so endowed and qualified as to be equal to it—which, of course, I am not. But even sketchily covered topics can be provocative and challenging. I hope I may have accomplished at least that much.

Advertising as a New Technique for Management

DECEMBER 6, 1943

JAMES WEBB YOUNG

Fifty-four years ago, on November 1, 1889, a great business statesman was inducted as Chancellor of this University.

There was, I believe, no School of Commerce in this University at that time, nor in any university anywhere. Even the selection of a business man for such an educational post must have required some daring in academic circles.

But this man had, so to speak, grown up with this University. He had landed in Montreal as a plain Scottish lad named Donald Alexander Smith on July 2, 1838. And that was almost exactly the time when James McGill's original endowment for the founding of this University had been finally released by the law courts and the University was getting under way.

When Donald Smith died in 1914, as Lord Strathcona and Mount Royal, he had lived to see this university recognized as one of the great ones of the world. His life had paralleled its rise, and by his labors and his beneficence he had helped it attain that place.

But we may observe also another parallel between the lives of this university and this business man. Both saw the development of the North American continent from a wilderness into the most productive industrial area in the world, and both played a leading part in that development.

It seems to me, therefore, that it is altogether within its tradition, and in keeping with the impress that must have been left upon it by this great business man Chancellor, that McGill looks forward to "Canada in the Markets of Tomorrow." I am happy to have this opportunity to contribute, if I may in some small degree, to your voyage of exploration and discovery beyond our present industrial frontiers.

Now advertising has always been, primarily, a hand-maiden of industry, so its rise and development may also be traced in parallels with the lives of McGill and Strathcona.

If we look into the yellowing files of newspapers before that date of Sir Donald Smith's induction into the Chancellorship in 1889, we can see that in several respects advertising was essentially different from what it is today.

Let us run our eye down some of these old columns and see what we can find. Here are announcements of ship arrivals and sailings. Here are bulletins that certain merchants have received new shipments of dry goods and will be glad to have them inspected. Here is land for

sale. Here are new medical discoveries which work in mysterious ways their wonders to perform. And here and there are a few strange Yankee gadgets upon which some inventor has staked his all.

In short, the predominant tone of the advertising of that day is news—commercial news.

But just about 1889, and from there onward, a most important change in advertising took place. First, national as contrasted with local advertising began to develop. Second, branded, trade-marked goods began to be established, even among such staples of life as oatmeal. And, third, persuasion was added to news in advertising, and became the dominant note—persuasion to raise the standard of living in every home.

You realize, of course, what brought these changes into advertising just before the end of the nineteenth century. They were a direct result of the opening up of the country by the transcontinental railroads which such men as Strathcona built in spite of hell and highwater.

Because these railroads made national marketing possible and gave distribution to national advertising mediums. That in turn made branded goods and brand advertising inevitable, because once I undertake to sell beyond my neighborhood I must have some identification for my product. And then I must persuade my distant prospects to try my goods, and to do that I must hold out to them the joys of that better living which the railroads development of our North American natural resources was making possible.

The thought I am trying to leave with you at this point is this: that advertising is an integral part of our total economic structure. It has developed and changed as that economic structure has developed and changed—from the time of that original viva voce advertiser of medieval Europe, who first blew his own horn to attract attention, and then cried "What d'ye lack?"—down to the nation's crier over the radio today.

Advertising changes with the total organization of this economic structure for the making and distributing of goods; it changes with the technical changes in the means of communication as in the development of radio; but it also changes as the purpose, philosophy and social climate of our economic organization change.

And this last brings me to my theme. You originally asked me to talk about "New Techniques in Advertising," but what I really want to talk about is the changes in advertising which are coming about as a result of changes in the purposes, philosophy and social climate of economic organization. A more apt title for this talk therefore is "Advertising as a New Technique for Management," as I hope you will see.

But first let me say at least a few things on the subject as you assigned it to me. That there will be new techniques *in* advertising for the markets of tomorrow none of us can doubt.

One of them almost certainly, will be television. Already in advertising organizations such as I represent this new facility for advertising is being studied and prepared for. Already a few advertising projections over this medium have been experimented with.

I recently heard an expert in this field say that it was now perfectly possible, technically, not only for your wife to call you up by radio wherever you might be of an evening, but to see what you were doing. If this is so, and the advertiser in turn starts out to invade your privacy in this way, Heaven only knows what the results will be.

Another development will probably be in the field of what is now called Visual Education. In this field we have had some use of the moving picture in advertising for quite awhile, but its full potentialities have never been realized.

I do not look for the change here to be the result so much of technical improvements in the medium, as they will be the result of improvements in the skills of presentation, and the increase in the outlets for the showing of films.

The moving picture has grown up primarily as an entertainment medium, and most of the producers of films are steeped in the knowledge of entertainment techniques. But we are learning that films for propaganda, indoctrination, and instruction are something else. In the great laboratory of war we are really learning something about this, and I look to see a wholly new type of movie producer whose art will be the transmission of knowledge and ideas.

The impact of this will go far beyond advertising. President Hutchins of the University of Chicago was recently quoted to me as saying that the visual education program being developed there was potentially more important for education than anything else that University is doing. That means there is a possible revolution in the making in instructional methods throughout our whole school system. And if that comes about it means eventually an eye-minded generation that the advertiser will need to adapt to.

Other changes in the techniques of advertising will probably come, in the future as they have in the past, from the development of new transportation facilities. The airplane is going to make it possible, I think, to repeat internationally what the railroads made possible nationally—that is, the distribution of goods and advertising media over much greater areas. You can already see the forerunners of this in my country, in the international editions of Time Magazine and the Readers Digest. You and I will probably see the London Times on sale in Montreal and New York almost on its date of issue in London; and who knows but that Devonshire Cream may then be advertised therein and flown here to meet our demand.

England's postwar slogan is "Export or Die." Your country and mine, with a greatly expanded industrial plant and a huge fleet of cargo carriers, are certainly going to be greatly interested in more international trade. So I look to see a rapid development in all forms of export advertising.

Out of such developments in international trade and communication might even come a new advertising language, namely, that one called Basic English, which Mr. Churchill lifted out of obscurity on his last visit here. I tried using Basic English in advertising some twenty years ago, but found it too colorless for our purposes. But if it should catch on as an international language—and there are already a good

many people learning it in Latin America—we might find our advertising writers having to learn it too.

But the biggest development in advertising techniques is going to take place, I hope, in the production of advertising messages themselves, irrespective of the medium which carries them. That is developments in the art of what we call copywriting.

Most experienced advertising men can already write better advertisements than they frequently do. The reason for this is that their knowledge about what makes a good advertisement is of the unorganized, intuitive, undemonstrable kind. It is very like a politician's "feel" for the voters' wishes. Consequently he cannot always convince the man who pays the advertising piper that one way of singing the tune is better than another.

But we are beginning to make progress in the accumulation of objective knowledge in this field. We now have techniques by which we can measure with fair accuracy what attracts the most attention to, and what increases the reading of a printed advertisement. For example, we can now say, with a good deal of evidence to support it, that the picture of a lady *en déshabillé* is, contrary to the common idea, more interesting to women than it is to men.

But we have not yet succeded in inventing satisfactory techniques for measuring the conviction or sales action secured by most advertisements, even after they are read. When we do reach that point we should be able to make great strides in the productivity of advertising —which, remember, means in the cost of distribution.

I could go on and speculate on other possibilities, such as the development of printed news sheets delivered to your breakfast table by radio teletype. But I do not have the courage of an H. G. Wells. Thirty-five years ago I read a book of his with, I think, the longest title in the world. It was called "Anticipations of the Reactions from Mechanical and Scientific Progress Upon Human Life and Thought." Just recently I reread this book, and it convinced me of the dangers of prophecy. So please pardon me if I go no farther in this direction.

Also, after all, such possible developments as I have been mentioning are techniques to be dealt with by advertising technicians. Sufficient unto their day will be the evil thereof!

So let me revert to my main and, I think, more important theme—advertising itself as a new technique for management.

Now, in our industrial western world, in the period between our two world wars, advertising rose to new heights as a sales promotion force. From 1918 to 1929 there was an extraordinary rise in advertising volume. And even in the 30's, in our period of business depression, advertising held its position to a remarkable degree. It had become accepted by an ever-widening number of business houses as an essential tool in a mass production, mass market economy. It was an inherent part of the aggressive-selling complex of modern business. And it became, perhaps, the most pervasive single influence in our lives.

I remember one of my colleagues at the University of Chicago, a political scientist, saying to me somewhat wistfully in this period: "It must be some satisfaction to you, as an advertising man, to see that

you actually do change the ways of living in your own life-time—*even if at a low level.*"

This somewhat left-handed compliment was based on truth. We advertising men did change the behavior of innumerable people in all sorts of ways. We did it not only in projecting the new ways of living which manufacturers invented. We invented others ourselves, and attached them to products.

Out of this there suddenly came a realization that something new had happened in advertising and in society. This something new was this: advertising—particularly here in North America—had become the greatest means of mass communication, *plus persuasion*, that the world had ever seen.

It had gone away beyond its days as a crier of commercial announcements; away beyond its use as a familiarizer of brand names and trademarks. Through a vast development in the mechanics for distributing advertising messages, and through a less noticed but equally important development in the psychological techniques for constructing these messages, advertising had become a social force of the first order of magnitude.

It is said that one of the first to recognize this was Herr Goebbels, and that he began to study the techniques of American advertising for what they could teach him about propaganda. Others, recognizing it, feared it, and became critics and antagonists of advertising. Among the last to recognize it were advertising men themselves, and the business men who employed them. With their heads down and their eyes set on their individual *sales* quotas, it only slowly dawned on them that they had fashioned a mighty instrument of social leverage, and that it would not be left in their hands if they did not use it with some sense of social responsibility.

This sensing of the full power inherent in modern advertising, and of a social responsibility in its use, was just coming to a focus when this war engulfed us. Some results were immediately noticeable. Throughout the British Empire most of the Governments began almost at once to use paid advertising for various war purposes. When the United States entered the conflict openly, its advertising men were called upon to mobilize their forces for government service, and as a result some three hundred million dollars worth of paid advertising time and space has been devoted to government messages in the United States in 1943—in contrast to about three million dollars worth in the last war.

For the first time in history, advertising has become a major means of communication and democratic persuasion between governments and their people.

This striking fact in itself summarizes the newly realized potentialities in the use of advertising, and indicates why I think it will become a new technique for management, in Canada and elsewhere, in the markets of tomorrow.

In the cultivation of those markets advertising will continue to be our great sales promotion tool. In fact, it is going to have an increased responsibility in this field, in our efforts to get the cost of distribution down.

But business as a whole is going to come out of this war with a new sense of its social responsibility. Sales and profits are not going to be any less the concern of practical management. But are they going to be as exclusively ends in themselves as they have been? I think not.

If this is so, then advertising is not going to remain as exclusively a sales promotion tool as it has been in the past. For advertising, as I have said, always changes as the purposes, philosophy and social climate of business change. If business is going to become increasingly concerned with other ends than sales and profits, it is going to want to communicate this concern to the public. And if advertising has become the greatest means of mass communication, *plus persuasion*, in our societies, then business must turn to it to promote these ends other than sales.

Let us look at what some of these other uses of advertising are likely to be.

First, I think that, in the markets of tomorrow the management of a progressive business is going to have an increased concern about its over-all reputation with the public. It is going to want not only satisfied customers for its products, but a plus good-will which will gain it the respect and confidence of its community in times when these are most needed. In short, it is going to want to be known as a good citizen as well as a good manufacturer and money-maker.

One of the first results of this is going to be the realization that advertising—product advertising—is in many cases a company's chief representation of itself to the public. As such I think top management is going to take an increased interest in that product advertising. It is going to want it to continue to make sales, but it is going to be more concerned in whether it does that in a way which enhances over-all good-will.

This process is already well under way. Even in the citadels of rugged individualism advertising is being scanned from this viewpoint. I have heard of its being done just recently in one very large and successful company in the United States. This firm has been, I might almost say notorious for its aggressive advertising. Its advertising management has been ruthless in its pursuit of results. And it has gotten them. But in the process the company has not always made as many friends as it might. Today the top management is taking cognizance of that fact, and there is a new concern about *how* advertising makes sales.

Second, I think more businesses and more industries as a whole are going to recognize the supreme court of public opinion, and are going to have cases to try before it. I think this is not only going to be true of the managements of manufacturing businesses, but of such other businesses as union labor groups, farm and consumer's cooperative groups, and even churches and universities.

In trying their cases before the court of public opinion in the past such managements have been prone to rely almost wholly on the transitory news release and the inspired editorial. But now it is beginning to be seen what power there is in advertising's ability to say exactly what you want to say, when and where you want to say it, and

to repeat it until it sticks. And what power there is in the open, signed appeal to the public as against the press agent's hand-out.

So today we find the acute public relations adviser, who traditionally has considered himself a competitor of advertising, recommending its use to more and more clients. Hence, we see an increasing number of advertising campaigns in which a brewing industry, for instance, combats prohibition sentiment; a life insurance industry seeks better understanding of its role in the nation's financial health; a single big oil company bids for respect for its scientific achievements; and another shows how human welfare has been advanced through photography. Such advertising is the concern of top management, a new technique of such management in guiding, developing and preserving the institutions of which they are trustees. I think we will see such advertising campaigns increase in number, in the development of the markets of tomorrow.

Third, I think progressive business management is going to be increasingly conscious of, and concerned about the *emotions* of its workers. Does this sound a little on the sentimental side to you? If so, let me quote a few facts.

Recently Mr. Elmo Roper, whose name you probably know as one of our leading scientific explorers of public opinion, compiled for my company a report on what the workers really want. It was based on all the surveys he had made among worker groups over a ten year period. His findings are as follows:

The *first* thing the laborer wants is SECURITY in the broadest possible sense—having his own home, a sure job, education, money in the bank (but not just government security, old age pensions, etc.). He prefers to buy his own security if he can be sure of continuous employment at good wages.

Second, he wants a CHANCE TO ADVANCE, in pay and responsibility, to go from job to job. Older workmen regret the bringing in of young workers over their heads with more education as, for example, technical men, MIT graduates, etc. At least the worker wants, for his children, a chance to have advancement through education.

Third, he wants something described as "BEING TREATED LIKE PEOPLE." He wants his bosses to realize he is and know him as "human," and he wants everything in his relationship with his bosses to indicate that the boss is aware of him as a living, vibrant human being.

Fourth, something really too important to be included with the third, the laborer wants DIGNITY—the dignity that comes from a feeling that he is needed, that he has an important job and handles it well, a job that needs doing. He wants the respect of the people for the good job he is doing.

Now, all four of these wants are things about which the worker has *emotional* reactions, something very deep-seated, unreasoning, and violent emotional reactions. These emotional reactions are at the bottom of much of our conflicts between management and labor. And they have a marked relationship to the cost of production. So I say management is going to be increasingly concerned about them.

But what does advertising have to do with all this? Do you notice more advertisements in which appear individual workers who have made outstanding records or improvements in production? This is one method of adding dignity and recognition as an individual to the workers wage. Have you seen the device of printing the company house organ in a newspaper page instead of in a booklet, so that everybody in town can read about a worker's part in things, and his wife can show it to the neighbors? And some day you are going to see a big corporation smart enough to *sign* its advertisements "The Workers at General Motors" or whatever the corporate name may be. And when they do the tone of the advertising will become more human, every worker in the plant will feel some pride in it, and other workers will feel maybe a little friendlier toward those products.

Of course advertising does not in itself offer the solutions to these worker emotional problems. But to the management which is concerned about them it does offer some techniques which can contribute to their solution.

Fourth, as shown by Mr. Roper's statement, the major factor in the emotional reactions of the worker is the fear of unemployment. I believe that we will see a determined new effort made by many business managements to remove this spectre.

Just a few days ago I was talking with the head of a big corporation which has some sixty-five plants, producting a variety of products, scattered throughout the United States and Canada. He made the statement that labor troubles were practically unknown in most of their plants, because they produced products for which there was an all the year round demand. That is, continuity of employment and security of income were, to his mind, the reason for their good labor situation. On the other hand, he said, that they had a few plants which were only able to operate seasonally, and in those they had constant labor problems.

When I asked him what he was going to do about this he said at once: "Develop new, advertised products which will fill in the present production gaps, and make continuous operation possible."

So in this area, too, I think we are going to see advertising come up for a new scrutiny by top managements. It will be examined to see what it can contribute to making a more continuous employment program possible—either by spreading the seasons for existing products, or by offering a road to new markets for new products.

These examples, perhaps, will be sufficient to suggest the line of thought I wish to leave with you. In the past advertising has been very largely a technique of the sales department, and the advertising manager has often been a part of that department. Especially in our larger enterprises top management has too often had little concern with advertising or little understanding of it.

Of course this changed somewhat when radio developed, and the musical likes and dislikes of the President's wife became important.

But by and large advertising has gone its way as a work-a-day salesman goes his route. It has done an increasingly effective job as a salesman and will continue to do so.

But advertising has suddenly come of age as a great social force, as the greatest means of mass communication and influence that we possess. This, in the markets of tomorrow, will take it increasingly into the offices of Presidents, of Board Chairmen and of Directors, as a new technique of management. Advertising men had better be prepared to represent it there.

Sales Management Tomorrow

DECEMBER 13, 1943

K. B. ELLIOTT

When we return to the conditions of a peace-time economy, will sales management and its procedures take up where they left off when the war started? There are probably few, if any, who would answer "yes" to that question. But we may well ask ourselves wherein will lie the changes which we anticipate. Furthermore, it would be a wise thing for each of us to consider how sales management activities *now* should be directed in preparation for the changes we are looking for.

It would be foolhardy to attempt at this juncture completely to blueprint the sales management job of tomorrow but it would be equally unwise for us to fail to make some preliminary sketches.

In that spirit I suggest the following four respects in which it seems to me the sales management job will show marked development from previous standards or experience:

1. A general widening of the scope of the sales management job.
2. A broad advance in the field of selecting, training, supervising and compensating salesmen.
3. Substantial improvement in the opportunities for salesmen because of better sales management and progress in the field of selection, training, and compensation; with a much more constructive attitude toward selection and training on the part of both sales management and sales personnel.
4. A change in the character of the literature of sales management in the direction of less flamboyancy and more realistic treatment of the subject matter.

It is a temptation to add a fifth but perhaps the thing I have in mind follows from, rather than being in addition to, the four items mentioned. I mean to say that I believe sales management will grow less bombastic, less dogmatic and less oratorical, and accordingly less pompous, while at the same time it becomes more professional in approaching its job.

The scope of the sales management job widens as the economy grows more complex. It also tends to broaden as the individual industry or line of business grows more mature. The formulation and interpretation of policy become increasingly important as the number of people or groups participating in the distribution process increases. Questions relating to the product and its physical handling en route to the consumer are supplemented by those having to do with relations with others affected by the process of distribution.

When a producer sells directly to a consumer, as when a farmer sells a dozen eggs or a basket of potatoes to a housewife, policy questions are

rather simple. When, however, he sells them at a booth in a public market, that is when he offers his wares to the public generally, and in direct competition with other producers, new questions of policy begin to arise; for example, that of uniform prices to all consumers.

When goods pass through wholesalers and retailers en route to the customer, policies become more and more important and at the same time their formulation and interpretation become less simple. When transportation becomes an important factor additional relationships arise among participants in the distribution process and the sales manager must have policies which reflect that fact.

When the maintenance of jobs at either the manufacturing or distribution level becomes an important social or economic consideration, sales management is still more deeply involved in policy considerations. When, finally, the public interest comes into play through the exercise of governmental functions such as taxation, inspection, price control, prevention of monopolies or unfair trade practices or in countless other ways, sales management finds itself completely encompassed by a situation in which policy making and policy interpretation constitute a major part of its responsibilities.

It is, therefore, because of the increasing extent to which more people, more groups, more interests are involved in the process of distributing goods and services that the scope of the sales management job must inevitably expand. When, in addition, sharp changes occur in the social and economic conditions which surround people and greater complexities develop in their relationships with each other, sales management must find within itself the capacity to recognize and appraise the impact of those changes and growing complexities if it is to meet not only its responsibilities but its opportunities.

It is, therefore, as a result of my observation that all of these things are happening or are in prospect that I am convinced we shall see after the war a considerable extension of the scope of the sales management job.

In the selection and training of salesmen there are three influences making for a sharp advance in our methods. First—the accumulated developments in these fields were substantial prior to the war. Personnel and sales training specialists had developed considerable data and had completed a substantial amount of experimentation which we had only begun to apply. The war has provided an interlude, let us say, during which the personnel and sales training people have had a chance to recheck their material, restate their conclusions and revise their recommended procedures. Those of us responsible for using their findings and procedures have had opportunity to see how we might make better use of them.

The second influence is the greater receptivity of sales management as well as other divisions of management to use of selection and training methods at a higher professional level.

But on top of these influences is found another factor of the greatest significance, namely the demonstration in military experience of the validity of selection and training techniques expertly applied. And what makes this experience of such great significance is the fact that it

has produced favorable attitudes on the part not only of those at the level of supervision but also of the personnel affected by the application of these selection and training techniques to themselves.

The third influence, therefore, making for a notable advance in selection and training methods, is the changed and more favorable reaction to such methods on the part of those to whom they are applied.

Improved opportunities for salesmen will come almost automatically from the adoption of improved selection and training techniques. One of the principal reasons in the past for low earnings, slow promotion or none at all, and lack of progress generally, has been the fact that either the individual involved should not have been in the job to start with or, if so, he has not been adequately trained.

It is, of course, impossible to divorce supervision from training and selection because the best possible methods of selection and training cannot attain their goal unless the carefully selected and adequately trained salesman is effectively supervised. It is out of all three (selection, training and supervision) that development of the salesman's ability, productivity and earnings will come.

Finally, compensation will increasingly be used as the fine tool which it can be in providing incentive, building morale and supplying the opportunity for security and a business career instead of a precarious hand-to-mouth existence.

But increased opportunities will come not alone from management initiative and action. Indeed they will come very largely from what I believe will be new attitudes towards jobs, towards their work, on the part of millions of people. Those who have found that they have higher skills which can be disclosed by tests, who have earned that training increases skill and productivity and, therefore, compensation and ultimately the chance of promotion, will not be anxious again to work in jobs where these lessons are ignored or forgotten. Training has received a tremendous impetus from military experience and from that of war production. Just as aviation has given mathematics and physics a glamour for the school boy which they never had before, so will the selection and training procedures which have had such great success during the war carry enhanced prestige in the postwar period, with resulting greater opportunities for the individual.

By the literature of sales management I refer not to the publications in the advertising and selling field but to the written and spoken words of sales management itself. This literature has too often in the past laid stress on phases of the selling job which were incompletely understood at best and at worst irrelevant or superficial so far as the main objective was concerned. This over-emphasis is best illustrated by the tendency to use pep talks and other inspirational techniques while failing adequately to deal with such matters as good organization, sound training, and morale building based on carefully planned compensation and interpretation of the selling job in terms of the application of "know how" to the selling process.

The development of this thesis would be a subject worthy of treatment by itself. But, although I shall refer to it indirectly later on, I shall, in my further remarks, address myself more particularly to the

agenda set forth in the bulletin of this series of lectures. That agenda is largely covered by items two and three in my list, namely the subject of advances in the field of selecting, training, supervising and developing salesmen and that of the substantial improvement in the opportunities for salesmen which are realizable because of those advances and because of better sales management generally.

In spite of our now being in the reverse gear of a "seller's market"—yes, in large measure *because* of it—it is high time that sales management started making its preparations against the day when the shift to the "buyer's market" begins to make itself felt. We need to reinoculate sales people with a selling attitude towards customers.

High purchasing power, combined with scarcity of merchandise, may seem to have caused only temporary irritation when they brought about the condition where the indifference and ineptitude of sales people at any level—or even active discourtesy—has, apparently, almost been taken for granted. Certainly, it hasn't prevented either merchants or consumers from buying just about anything that was offered. The only questions that most of us have been asking are, "Can I get the goods?" and, in rationed lines, "Have I got enough points?"

But this is such bad preparation for postwar selling that, throughout the whole chain of distribution, industry had better be thinking—and acting—now to bring about the reconversion of *personalities*, as well as the reconversion of *plants*.

This is the time for marketing men to be asking ourselves some very searching questions.

What do advertising and selling offer to a postwar world? Do they hold for the consumer the promise of greater effectiveness, lower cost, better service, more convenience? Are we, who are engaged in those fields, building good will or ill will? Have we learned anything from the past? Are we learning anything from the present?

Are we giving enough thought to how our own work affects the broader field of distribution, and how the effectiveness of our labors is affected by the various other distributive processes and problems?

Let's take a look at just one area and see how we're doing in relation to it—and, please understand, that this is no preachment. It is, first of all, a confession.

How about our relations with customers, actual and potential?

I don't care whether we call this function of business "customer relations," or "consumer research," or "public relations"—or what. What I refer to is the handling of those people who bring to us their wants, their needs of goods and services, or who may do so at some future time.

Dealing with these people is one job for which production and engineering have no responsibility beyond the product or service itself. It is ours alone—the responsibility of marketing executives—whether we call ourselves "advertising managers" or "sales managers" or "manufacturers," or "wholesalers" or "retailers."

And what is happening? In many cases enlightened, farsighted and skillful efforts are being made to convert the difficulties of this unusual

situation into opportunities. But we are also seeing widespread failure to cope with these difficulties with the skills that, as distribution executives, we should possess.

All too often the consumer whom we have been luring with expensive store fronts, fluorescent lighting and double-page spreads is, today, being treated as if he were an enemy alien with leprosy. This is happening in stores, in hotels, and on railroads—yes, and in automobile repair shops.

The rebuffs are being given by retailers, by wholesalers, by manufacturers, and are seen and heard not only in sales contacts, but also in the gradual deterioration of the highly touted service, which we have been so proud to claim we were providing for the great American customer.

That customer is now being patronized. He is being treated with condescension. He is being unnecessarily inconvenienced. He is being rebuffed.

Whether prospective buyers, with desire in their souls and money in their fists, are actually being "insulted," as so many of them feel they are, seems an academic question since that's the way they do feel.

Certainly the buying public that we have wooed so long is today being treated much too shabbily, too often by those who—don't forget—have taken its dollars in the past and must hope to receive them in the future, not to mention the dollars that are being taken currently at higher prices than usual.

Now, you probably know some who are shrugging off this whole question by the generalized and foolish attitude that the war makes it necessarily so. Some, unfortunately, blame the whole thing on the sales people at the "point-of-contact"—and let it go at that.

What has happened to create the situation *where*, in spite of the millions of dollars, and millions of hours of toil and effort we have spent in making ourselves and our sales organizations articulate, so many turn out to be tongue-tied under a new set of circumstances, clumsy at selling, belligerent in attitude, even guilty of obvious irritants in discussions with customers?

More important, what can be done about it?

Can it be that the shoving around the American customer is getting (to the detriment of *all* business) is the simple result of lack of preparation?

It not only *can* be—it *is!* We have been prepared to deal only with the situation wherein we were constantly seeking to dispose of goods or services by persuading the customer to buy. We were *un*prepared to deal with a situation wherein there are more buyers than merchandise, and more *demand* for service than manpower to provide it.

Now, of course, all of us know from experience—sometimes quite embarrassing experience—the difficulties that come with inexperienced help, understaffing and long hours. We may well sympathize with sales people whose nerves are tired and a bit raw at the edges.

But don't we also realize that one reason dispositions are inclined to get out of hand is that too many people who sell feel that they can safely take an "if-you-don't-buy-it-somebody-else-will" sort of attitude?

But does that mean that such a situation cannot be prepared against? Does it mean that there are no techniques for dealing with the public under such conditions in ways calculated to retain confidence and good will?

Of course not. All of us are familiar with both preventives and remedies of known value. It is a matter only of study, of analysis, of definition of policy and procedure, of training and supervision to make our good intentions effective—and advertising and sales management have a *joint* stake in how well all these jobs are done.

But how many organizations do you know of that have defined for themselves their policies and objectives in this pre-postwar situation? How many have analyzed their problems, not so much of *procurement* of merchandise or materials under possible continuance of scarcity in supply, but of methods of *distribution* in such a way as to assure *satisfaction* and build the *good will* that any business must have for top results.

How comprehensive and aggressive have been the training programs among sales and service employees to inform and educate them in the subject of how the firm's customers should be dealt with? What sort of programs are being got ready for the time when sales organizations will have to be rebuilt, resharpened and retooled?

Is supervision, that most important instrumentality of executive action, being competently directed towards solution of this problem? Do today's publicity and advertising help or hinder the purpose of keeping the customer's good will under these new and strange conditions and building up a back-log for tomorrow?

It is my opinion that responsibility for the deterioration that has taken place in the handling of customers lies squarely at the management level.

If management doesn't know what's going on, management must, to some degree, be indifferent or complacent—for, management *can* know; and, come "postwar," many a sales manager—and advertising manager, too—is going to recognize the makings of his company's success, or the lack of it, in the extent of the *control* being exercised over these things *now*.

* * *

A large part of the overall sales personnel problem that most sales managers will have to face has to do with the manufacturer's responsibility not only for taking every precaution to assure a "selling attitude" on the part of his own field organization, but also for helping reconvert retail sales people from seller's market to buyer's market attitudes.

What is done, during the next few months, about all these things down at the sharp tip of the business wedge— where factory representatives or retail sales people bring each business into final contact with its ultimate consumers—may well make or break its postwar outlook.

For, how consistently and how well that "point-of-contact" performs its function of translating potential purchasing power into actual deliveries to consumers will determine the extent to which each company's own particular wedge is to penetrate into its own potential

market; and the extent to which its product is to become firmly established *in* that market—and also the extent to which it will be able to provide the sales volume required to justify it in maintaining high levels of postwar employment.

It is reasonable to expect, therefore, that top management will be more and more concerned with the extent to which the sales department has the sharpness of its sales contacts *under control. Exercising* that control—sharpening the wedge, and keeping it sharp—is the function of each company's sales *training* program—for both newcomers and old-timers.

This matter of control is one of *mutual* interest among salesmen and their employers. Though the right has seldom been exercised as fully as it might, we have taken it as a matter of course that employers at least did have a right to control their salesmen. But doesn't the salesman also have every right to look to management for a carefully considered program of job assignment, job training and personal development as an important element in his compensation?

Isn't this just as important to most salesmen as the wage rate or commission arrangement? Potentially, it is probably more important. The current salary or commission policies of their respective companies set the standard for their ration of daily bread—but the extent to which management encourages and aids salesmen to make the most of whatever ability they have, or can acquire, may well determine not only the degree of their security, but the satisfaction they get out of life.

* * *

Now, I realize that the term "sales training program" sometimes sounds rather pedantic and formal to the ears of many of my sales manager colleagues. We pride ourselves on being "practical" people; and anything that even suggests the idea of "teaching" is apt to be branded as "theoretical"—hence, as poisonous.

As a matter of fact, most of us realize, I believe that all too often in the past "training" has been confined to (or confused with) lists of pious "do's and "don'ts." But, whether consciously or unconsciously; whether formally or informally; and whether well or poorly administered, every company has always had *some* sort of "program" for the managing and development of its sales people, and *effective* training is neither formal nor formidable. In exploring such postwar possibilities as may lie in improved methods of selling and sales management, I hope, therefore, to be understood as discussing simply the *intentional* and *sound* application of certain basic considerations in helping salesmen make the most of their talents on behalf of themselves and their employers.

In fact, simplicity and the *absence* of formality may well be two of the most important characteristics of effective training. But, while it may well be *informal*, this doesn't mean that it can be *formless*. Like any other kind of coaching, the training and direction of salesmen *does* have recognized elements of "good form."

Could anything be more "practical"—less devoid of the taint of pedantic "theory"—than the task of searching out and making use of these fundamentals?

And, of course, if it is to be "intentional" and "sound" the training of salesmen must have a DEFINITE PURPOSE. As he looks at his postwar task, the sales manager needs to ask himself, *"What is the target?* Is it our aim to have each territory produce the *same sales volume, at the same cost per sale* after the war as it produced in, say 1940? Or is our aim *more sales, at the same cost?* Or the *same sales, at less cost?* Or is it *MORE sales, at LESS cost?"*

Of course, there are apt to be many cases where *more cost* per sale may be justified in order to build up the volume required to bring down the unit cost of manufacture; but the United States Department of Commerce is on rather solid ground in summing up the overall postwar objectives of industry as: "The production and distribution of more goods, to more people, at less cost—and at a profit."

If we are to accept that as the main purpose, we are safe in assuming that, from a *selling* standpoint, the aim is always towards *MORE sales, at LESS cost.*

If so, the main purpose in *training* salesmen is to improve the *kind* of work they do, and increase the amount.

* * *

If we are going to accept our obligation to do *better* after the war, *now* is the time to prepare the pattern. This begins with the design of the man who makes the pattern; and the need for giving the program all possible prestige springs from simple logic that runs about like this: First, no company can provide productive employment permanently, unless it also sells its product continuously; second, the more capable its salesmen, the surer any company is to sell—and keep on selling; therefore, no "postwar planning" is more worthy of the specific approval and active participation of top business executives than the plans which have to do with making salesmen capable.

Whether a given company distributes its products to ultimate consumers direct, or through a long chain of intermediaries, every salesman acts as proxy for the management of the business. Every favorable sales contact forges a permanent link of satisfaction between the dealer, or the user, and the company. Every *un*fortunate contact is another nail in the coffin of the company's hope for full appreciation of its products and its policies.

So, whether the representative who meets the public is paid a salary or a commission—and whether he is an employee or an agent in the eyes of the law—not only the company's commercial success, but also its prestige and its reputation for good faith, depend on what the salesman says or does—or fails to say or do.

Let us consider, then, this question: What *are* the requirements for making good as a salesman in your company or mine? What are the salesmen for our individual companies supposed to *do? How* are they supposed to do it? What are they to be trained *for?*

Such questions may sound so elemental as not even to need mentioning—but are they? In our organization, we have approached this

matter on the basis of studying the job in complete detail. Having made a complete break-down of the job, some of the obvious questions that will help to determine the direction the company's training should take are:

What are the chief essentials of a productive career as salesman for this business?
How well is our present training program functioning?
What can be done to improve it?
What special kind of training is needed to put our new recruits on a profitable basis quickest—and most surely?
What will be the effect of our compensation plan on the nature of training, and on its acceptance by salesmen?
Are our employment methods securing the sort of men with whom the best training plan we can devise will have the best chance to be fully effective?
What competitive advantage can we gain by more effective use of the human resources in our sales organization?
How can we help our recruits from the fighting forces to translate their military training into civilian terms?
Do we need to spend more money on training?
Will increasing the effectiveness of our present sales organization cost less than increasing the size of the sales force?

Such questions are, of course, only a start; and improving a company's relations with its customers and prospective customers is one of those undertakings which, by its very nature, will never be completed. The need for research grows greater, rather than less, as progress is made.

Furthermore, in the face of our inborn human resistance to changing our habits, even the best recommendation for change must be "sold" —and if it is to be "bought" it must be packed with both merit and incentive.

It is a mistake to expect—or even to hope—that even the most careful marshalling and presentation of the soundest kind of facts will guarantee success of a program for training salesmen. It won't. Mere exposure of a sales force to training doesn't mean that the values of training will be acquired.

Besides every sort of incentive and motivation that can be devised, habits of study and practice are essential supplements to any sort of training—and these habits can't be counted on for self-propagation. They must be planted and cultivated. Moreover, the ground must be fertile if a bumper yield is to be expected—and this brings us squarely up against the problem of selecting salesmen.

* * *

Although there can never be any end or let-up in "refresher" training for experienced men, the desire to learn about a job, naturally, is most easily stimulated in a new man; and careful selection at the time of employment may well be a more important factor in raising the production-per-salesman than any amount of effort at training and development after a man is hired. It is reasonable to expect that this

will apply with special force after the war, when so many sales organizations will have to be rebuilt from the ground up.

Although even the most advanced methods of selecting employees for their aptitude for specific duties are still far from infallible, great progress has been made during the past few years; and there are indications that the millions of young men who have had their wartime destinies decided for them by United States Army and Navy classification tests will expect postwar employers to be reasonably familiar with the subject. I suppose the same thing will be true in Canada.

In most organizations—particularly those where a large part of the problem of selection and training is at the retail level—the need is for methods of the simplest sort, which the employer can interpret clearly and apply quickly, without calling in outside help.

At least for the present, this probably rules out the so-called "aptitude tests" and "personality tests"—except where employment is confined to a central office equipped to administer such procedures; but a growing number of industries have developed easily-applied methods of getting information about applicants, and of interviewing and investigating them, which serve as valuable supplements to the employer's judgment—and, because of their factual and objective nature, they are not so apt to arouse resistance among those who must be depended on to use them in the field.

Sometimes, supplementing aptitude tests—used in combination with other methods, or independently—a good many employers now use application forms which have incorporated in them a means of grading the applicant. This so-called "weighted application blank" is strictly factual, and aims at finding the chief common denominators among the company's successful and unsuccessful salesmen, and giving these statistical values.

Such facts as age, marital status, number of dependents, former earnings, ownership of furniture, employment changes, and so forth are thus taken out of the "impression" category and made a specific aid to judgment. It is not intended to displace judgment. If the break-even point is, for example, a grade of 80, anything either above or below that point is a signal for re-checking impressions. If the impression has been good, but the rating is low, the employer may go ahead, but at least the low grade has warned him to "proceed with caution." If, on the other hand, the applicant is distasteful to the employer, but has a combination of qualities that are common to successful salesmen in that business, the interviewer is warned to re-check, in order to make sure he doesn't pass up a good bet.

This method has already served as a practical guide to reducing turnover among salesmen—in the insurance business, among others—and because of the simplicity of its use, it seems probable that it will receive increasing attention.

Another selection method which is growing in popularity is sometimes referred to as the "standardized interview." It is used in many industrial personnel departments and by the United States Employment Service. The general principle is also employed by the United States Army boards-of-review in interviewing officer candidates.

This is based on the same principle as the weighted application blank—that is, on the controlled interpretation of objective information, given by the applicant himself. As a matter of fact, the two methods are sometimes used together, employing the weighted application blank as an "application for an interview" and weeding out the obvious misfits in advance, so as to avoid wasting time on needless personal interviews.

The standardized interview is intended not only to get direct answers to specific questions but also to give a chance to draw the applicant out and see what's on his mind; and the interviewer who has a clear idea of what he wants to find out, and uses a well-planned interview guide, can uncover many a revealing fact which never comes out into the open in the great majority of employment interviews.

What limits has the applicant's desire to earn? What incentive has he to do his best? What is the influence of his home life? Is he a trouble-maker or a team-worker? A sympathy-seeker or a self-relier? An alibier or a truth-facer? Is he slippery or dependable? Complacent or eager? A shirker or a worker?

The answers to such questions as these are the sort that make or break a salesman. Perhaps there is no sales organization where misjudging at such points has not added to sales expense, and multiplied the work and worry of management. Yet these are questions of the very kind that are most liable to go unanswered—until after the salesman has come to the point where he becomes one of his company's problem children or part of its "turnover" statistics.

There is no guarantee, of course, that any one of the selection methods I have mentioned, or any combination of them—or any other method— will give completely satisfactory answers to these questions.

There is ample evidence, however, that employers who work along some such lines can reduce their percentage of misjudgment. Considering the high cost of hiring, indoctrinating, training and paying the expenses of salesmen—plus the high cost of losing business through ineptitude or neglect—it would seem that there are few departments of business that deserve more painstaking investigation in looking forward towards postwar markets.

It is a field where every step forward contributes both to the efficiency of the individual employer and towards meeting part of the social responsibility of all business; and where the processes of discussing and sharing experience are among the surest means of crystallizing experience into concrete form.

Of course, there are also many able consultants in the universities, and elsewhere; but one of the reasons for reappraisal of the whole subject of selection is that this has been a great field for over-claiming by self-styled "experts," and one where the "hundred-percenter" is to be mistrusted—yet is also a subject which cannot safely be neglected by any company which is seriously interested in reducing the proportion of failures or drop-outs among its salesmen.

* * *

Another problem that faces postwar sales management has to do with the effect of the compensation plan on the attitude and productiveness of salesmen.

There is a growing tendency to recognize that it is not enough to think solely of the influence the quantity and quality of the salesman's work has on the size of his pay check. The method of pay needs also to be planned the other way around. That is, it needs to have in it qualities which: first, attract the kind of salesmen the management wants; and, second, encourage them to exert the LARGEST quantity of their BEST quality of effort.

It is the most obvious place to bear down hard on the incentive and motivation elements of training—towards getting done whatever the management wants done.

Like the selection of salesmen, this subject of compensation is so spacious that it would be confusing even to attempt to examine the details in the time available for this brief look at the sales management horizon. There are, however, a few trends that can be seen with the naked eye. None of them is particularly new, but some of the old trends seem quite sure to assume new importance.

In the first place, no matter what the details of the plan may be, it will, more than ever, need to be one which is so obviously fair that the employer can have a sincere feeling of "offering" it to the sort of men he wants to have in his organization, instead of merely "telling" them about it—perhaps with a touch of apology.

With this in mind, sales management needs to review all its compensation policies in the light of their potential influence—both desirable and undesirable—on salesmen, and on sales activities and results. In our own sales training work we have formulated these questions as those by which any compensation plan may well be appraised:

What influence will the proposed method of pay have on the expensive turnover which plagues so many sales organizations?

What will be its influence on the salesmen's morale and enthusiasm —and on their willingness to accept guidance and training?

Will it appeal to the calibre of men the sales manager wants to attract?

What's going to be the effect in the coming competition for sales manpower?

Is it liable to force salesmen to adopt "high pressure" methods that skirt the edges of dishonesty?

Will the plan encourage cream-skimming?

Will it tempt salesmen to promise more than they can deliver?

What has been the effect of similar plans on the good will and respect of the public?

Will salesmen have sufficient incentive to sell customer-satisfaction along with the product or service?

Will it give salesmen a really sound basis for a career and enable them to plan confidently for the future?

Is there likelihood that the earning opportunity will be either oversold or undersold by field supervisors?

Does the plan reward ability and effort with reasonable uniformity, or does it make things too easy in one territory and too hard in another?

Does it recognize the difference between established territories and those where the pioneering is just getting started?

Does it give salesmen a special incentive to develop new business?

Does it also provide for protecting, and actively developing, business from established customers?

Does it encourage—or discourage—the sort of customer service for which the company's management stands?

Does it give control against the over-stocking of merchants or over-selling of merchandising and advertising cooperation?

Does the compensation plan give the management unquestioned control of the salesman's activities—or does it encourage him to feel that it's nobody's business how or when he works, just so he brings in some orders?

Of course, these are not by any means the only questions that might be asked about any given plan for the compensation of salesmen, but they suggest that a good many employers are apt to find some need for change, if they start to examine the relation between compensation and the results they expect from their salesmen.

Most employers of salesmen are concerned that changes made shall be in line with the reduction rather than the increase of distribution costs. But many an employer has found that reduction in overall selling costs is not at all incompatible with attracting better men, or inducing better work, through stepping up salesmen's incentives and opportunities to increase their earnings.

Moreover, it is all too *easy* to see the direct cost of sales on the profit and loss statement, and all too *hard* to measure such intangibles as: the cost of dissatisfaction, incompetency, or poor morale as causes of turnover in the sales force; the cost of sales lost to competition and loss of dealers; and the cost of a time-serving or "get-by" attitude.

Is there any doubt that, more often than not, each of these has some direct relation, either to the compensation plan or to its administration? For example, I don't know of any employer of salesmen who doesn't recognize that holding customers is more profitable than getting new ones. Yet, can there be any question that many a compensation plan is so devoid of any customer-holding "service-after-sales" incentive that it is actually a factor in poisoning good will?

Whoever approves the budgets will need to take into consideration the influence of a compensation plan that attracts and holds a sales force that is both able and stable. For, if the ability and attitude of the men who do the company's personal selling are important factors in volume-building, in profit-making, in cost reducing, and as builders of prestige and good will, members of the sales force will need to see, in the overall situation, the makings of a sound business career—attractive earnings in proportion to ability and effort; plus a reasonable degree of permanence and security.

* * *

Assuming, then, that a favorable "climate" for training and development has been provided by, (1) the active approval and participation of top management, and (2) by the careful selection of the men to be trained as salesmen, and (3) by a compensation plan that is fair and

has a bearing on the salesman's acceptance of guidance, there are two factors to which sales management may well give special attention when laying plans to make training an effective agent in raising their production-per-salesman.

First—take full advantage of the current live interest in training.

During the past few years the Army, the Navy, and the war production industries have proved conclusively that thorough training can help greatly in assuring greater dependability and uniformity of action. Modern methods of selecting and training production workers have been doing things to our industries that have already profoundly affected the economy of both Canada and the United States. Billions of dollars worth of war plants have been built and manned by men and women who would have sworn a few months ago that they didn't have a trace of "mechanical" aptitude in their make-ups.

And not only have the millions of young men in our armed forces become accustomed to the idea of scientific assignment to square or round holes by the various aptitude classifications, but they have also become accustomed to think of training both as the fighting man's best form of life insurance and as the best stepping stone towards promotion.

There are already signs that—in the postwar future—they will not only be receptive towards intelligent guidance and training, but will expect it.

The company which is prepared to take full advantage of this trend by providing a program for training its salesmen will, when the war ends, have a three or four year start ahead of the competitor who neglects training. But it is just as much of a mistake to make wasteful haste in working out a sales training program as it is to try to rush the engineering of an epoch-making product. Both require careful planning.

EFFECTIVE training is built on a solid foundation of fact-finding, planning, coaching, practice and incentive. There's no such thing as a nice pre-fabricated structure, ready for occupancy, and guaranteed against earthquakes, storms, dry-rot and termites. So, the second suggestion for making the most of sales training is to plan for visible, tangible results. Don't let's be satisfied with vague, or fuzzy, out-of-focus results.

Most of the sales managers who have been more or less cool to the training of salesmen seem to have had in the backs of their minds the idea that it must be accepted on faith—sort of like the old idea of institutional advertising. Many companies, for example, have employed exciting, inspirational showmen to put on whoop-and-hooray meetings for salesmen. Some of these have been good—but they have to do with stimulation, not nutrition. They're pep talks—and may have their place as such. But they're *not* training.

In our time most of us have also had our experiences with the quack psychologists, and with the dealers in parlor tricks for sizing up prospects and bowling 'em over. Most of these are amusing enough; but the insidious idea back of nearly all their exotic stunts is the implied promise that the salesman is being given an antidote for the curse of hard work. There is nothing, however, that is either tricky or in-

tangible about the modern trend in training salesmen. It will *not* take the place of hard work. It will make hard work more productive.

When a soldier learns from live ammunition to quit humping himself along like a measuring worm—that's training—that's tangible—but sales training has hid too long behind the foggy alibi of "intangibility." Far too often manuals and meetings—methods and techniques—records and route lists—have gone without challenge. They have been accepted as the conventional thing to do—but seldom has any genuine effort been made to evaluate their usefulness in the development of salesmen.

Everybody agrees that when there's a measurable increase in sales per hundred demonstrations, that's tangible. That is visible evidence of reaching one of the main objectives of training—an increase in the production-per-salesman. Furthermore, measuring the difference is one of the surest ways of selling the program to salesmen—and, thereby, increasing their production still further.

For example, there is the actual record of a case where those salesmen who use only *two* out of *eight* simple, ordinary methods make only *five* sales out of every *hundred* demonstrations—while the salesmen who use all *eight* make *twenty* sales out of every *hundred* demonstrations. The sales manager who measures the results of training this way has no need to talk of "intangibility"!

And, of course, keeping a salesman out of a rut surely must be tangible. Every sales manager can remember dozens of interviews with salesmen whose application blanks showed plenty of "experience" in terms of years, but who still were just "getting by." Their experience had not been under control. Probably most of them had gathered a good sized store of "horse-sense," but they neglected to make intentional and sound APPLICATION of it. It did them no good to know how to drive—if they didn't watch the road, and ran off the smooth highway onto the rutted shoulder.

Training, along with supervision, of course, provides the control for "know-how"—keeps the salesman's attention concentrated on the smooth road—prevents his landing in a rut.

One of the greatest opportunities for the training of salesmen lies in in the fact that creating LEADERSHIP within the organization is decidedly "tangible." There is not greater need on the postwar horizon than the deliberate, intentional cultivation of leadership qualities for the many marketing tasks that will have to be done. But many a potential field supervisor, or top executive will be marooned in a narrower field of selling, simply because he is short in what it takes to step along into bigger responsibilities. He may have made an acceptable—even a brilliant—sales record, but he hasn't any idea whatever as to *how* he did it. So, not knowing how he sells—never having thought of the fundamentals of "good form" that underlie his daily work—he can hardly be expected to have any very clear ideas about how to transfer his skill to others. Thus it becomes an axiom that "a star salesman doesn't necessarily make a good sales manager."

On the other hand, the salesman with "controlled know-how" need not be marooned. He has the "reach" that is necessary, if he is to use

his present job as a stepping stone towards whatever bigger jobs he sees ahead. He may not have so magnetic a "personality" as some of the others—but he has a longer stride. So he steps along confidently, because he knows he has something important that the business needs for its sales managers.

And surely, if high morale results from training, that is tangible, too. The military text-books have a definition for "morale" which may well be brought over, without change, and put under the glass tops of sales managers' desks. "Morale," says this definition, "is an attitude exhibited in the zest for action towards a goal"—and probably morale means more in selling than in any other job. It's the spark plug of whatever the salesman has of competitive aggressiveness. It puts drive into his confidence and self-reliance. If it grows of itself—that's fine! But it's far safer to plant and cultivate morale through the conscious control that we call "training."

And above all—MONEY—profit—is a tangible goal for sales training. More profit to the company, through more sales per territory—at less cost per sale. More profit for the salesmen. More profit for retail outlets—through the better understanding of retail sales problems on the part of factory representatives. Yes, and more profit for the customer, too.

We are now going to have not only a once-in-a-lifetime opportunity —but also a crying need—to demonstrate, on a far broader scale than in pre-war days, that the development and control of capability among sales people pays all the way down the line.

And there is no secret, no mystery, no mirrors to this highly tangible subject of increasing sales and reducing selling costs through increasing the production-per-salesman.

It will be done by the intentional and sound APPLICATION of fact-finding research and firm control to the *selection*, *training* and *compensation* of the men and women who will have the immensely important postwar responsibility for finding buyers and building markets for the products and services that make up the raw material of all our business lives.

The Science of Public Relations

DECEMBER 20, 1943

JOHN P. SYME

The subject assigned to me is: "The Science of Public Relations."

To be perfectly frank, I must say that I deliberated over this subject for some time after I started preparation of my paper.

It was the word "science" which made me pause.

I found myself asking: "*Is* public relations a science?"

My answer to that tonight is "yes." Let me tell you why I think so.

As an established function in industrial operation, public relations is barely out of its swaddling clothes. Those of us who spend all of our waking hours, and—yes—I'm afraid a great deal of the time we would rather be sleeping—seeking additional knowledge of this new and necessary function of industrial management, find ourselves wondering at times just how far we have progressed in developing public relations as an exact profession, in the same sense, for example, as engineering.

There still seems to be a lot of confused thinking as to just what is meant by "public relations."

I find almost universal acceptance of the opinion among business men that public relations *is* important; that it is a new and dynamic function in industrial management. In fact, many industrial leaders now feel that specialization in public relations is essential to modern management if we are to prepare the way for new and greater accomplishments by our free enterprise system.

But, when some business leaders are asked just how public relations is to go about its job and just what it may be expected to accomplish, the responses are sometimes most bewildering.

Fortunately, there is an encouraging trend in industrial management to want to know more about public relations and to take steps to make it a basic and integral part of business operation. This meeting here tonight is an outstanding example of this.

Personally, I feel that this trend is most significant. To me, it means that public relations, which I have already said is barely out of its swaddling clothes, is now coming of age. Those of us who have tried to help father it, are coming to the place where our biggest problem no longer is to try to keep the infant alive and properly nourished through the help of the more venturesome among industrial management. The child, in fact, is doing well and now that it is coming of age our challenge is to be eternally vigilant in supervising its sound development, in seeing to it that its great, potential strength is not dissipated by excesses, and in finding new and useful work for it to do.

Yes, public relations has come a long way in a very few years.

But what is it, in fact? What do we mean by the term?

This is the point at which a speaker in his prepared talk usually endeavours to raise his subject and speaking prowess to a high elevation of erudition by creating his own completely encompassing definition that is designed to top all previous definitions.

There have been as many definitions of public relations as there are advocates of its importance. Rather than reviewing or attempting a new definition let me descend to terms of practical use. Let me tell you what we in our company consider to be our public policy as stated by our President and from which stems our public relations objectives: I read:

We who are responsible for the management of Johns-Manville in supplying the needs of the public for our goods and services and who recognize our obligations to stockholders and employees, believe

THAT we should constantly seek to provide better values at lower costs so that more people can enjoy the fruits of our production.

THAT we should strive to develop greater efficiency in our work so as to earn a fair return for our stockholders and provide the highest possible reward for the productivity of our jobholders.

THAT we should stimulate the genius of science and utilize the methods of research to improve our products and to create new ones so as to continuously provide new fields of employment for the present and the coming generations.

THAT Johns-Manville should encourage fair trade practices in business which, whether effected by competition or cooperation, will be so shaped as to be for the best interest of our customers and of society as a whole.

THAT it is our duty to be alert to our own shortcomings, to the need for improvement, and to new requirements of society, while always recognizing the responsibility of our trusteeship.

THAT our business has never been what it could be and never what it yet will be.

THAT Business, Labor, Government and Agriculture working hand in hand can provide jobs and the opportunity for all to work for security without loss of our liberty and rights as free men.

That is our stated policy. Those are our broad objectives. We try to measure all of our action against those principles. This, to my mind, is where public relations starts—not with an advertising plan or plan to get name publicity in the papers.

Then we became more specific as we laid out our public relations plan of action.

The following seven points reveal our conception of the public relations function of management in action:

It will be our aim to:

1. Develop complete policies in writing as consistent guides in the relationships between the company and employees, stockholders and the public.
2. Follow through to determine that we do not deviate from these policies through inattention or neglect.
3. Keep alert to the needs of employees and the public to be in a position to change details of the policies to fit changing needs and desires.
4. Inform employees, stockholders, and the public of our general policies and practices.
5. Be frank in telling employees, stockholders, and the public about company operations which will be of value in developing their interest and confidence in the company and in private enterprise.

6. Interpret convincingly to employees, stockholders and the public the social and economic benefits of our policies and accomplishments.
7. Develop and make full use of all of the new techniques in encouraging a full cooperative spirit among our employees.

These two sets of statements may not constitute a *definition* of the term "public relations," but it is my hope that they convey my conception of the *meaning* of public relations.

Now you will notice that I have said nothing about advertising nor have I stressed relations with our customers. It has always been so obvious that relations with customers must be of the best if a business is to succeed it does not seem to me necessary to devote special time to it this evening.

In practice the public relations job of most concerns has always started with the customer, and in perhaps too many cases, it has stopped there. Let us for tonight, therefore, consider that the job of appealing to and satisfying the customer as he represents one segment of the public, is well understood and is being well done. This will mean that we will not think in terms of product or service advertising and selling during this discussion.

As a matter of fact, in our own organization, the public relations and advertising functions are almost completely divorced. Advertising is the responsibility of the sales executive, and public relations—my responsibility—comes under the direct supervision of the president of the company. By this means, public relations activities can reach into all phases of the business—a very necessary condition to its proper functioning.

Now, I have said that public relations has become a science.

First, let's agree on what we mean by the word "science."

To the purist, the practice of medicine is not a science. It is an art which is developed by the study and mastery of several sciences such as biology, physiology, histology, pathology and chemistry. The knowledge of all of these separate sciences is integrated by the physician in the actual practice of his art.

I suppose, by this standard, the *practice* of public relations is also an art rather than a science. But, the significant point here is that successful public relations, properly developed and applied, must be based on scientific studies and scientific principles just as surely as is the practice of medicine.

Let us continue this analogy for a moment.

Your have a pain in your neck, or in your foot, or in your hand, and you call in your doctor. He may or may not examine your neck, or your foot, or your hand. But it's usually certain that he will give you a physical check-up to find out what actually is causing the trouble. Because of his intimate knowledge of your nervous system, of your circulatory system and of the many other intricate phases and functions of the human body—knowledge acquired through the study of many sciences—he determines that your pain is actually caused by an infected tooth, improper diet or some other maladjustment apparently completely unrelated to the source of the pain. Then, by the employment of the techniques of his profession—either the prescription of

medicine, the use of surgery, or the recommendation of a diet—he proceeds to put an end to the pain in your foot by removing the basic cause of it.

The pain, in other words, was a warning of some deep-seated disorder which the *science* of medicine isolated and the *art* of medicine treated.

Now, let us see how we can fit this example into our examination of the science of public relations.

Your company develops a "pain" in the form of a dissatisfied employee, or stockholder, or customer. He is quite vocal about his dissatisfaction. To the trained public relations man, this complaint (if it persists and the man is not a crank) appears as a danger signal that something may be wrong with company policies and the administration of these policies—just as pain serves as the warning signal to the physician. To be sure, the specific complaint is dealt with. But the real concern of the public relations man is to apply all the rules of science available to his profession to make a diagonsis, to isolate the real cause of the trouble, and to recommend steps for its correction. This cause may seem to be equally as unrelated to the original complaint, as was the pain in your foot to your tooth infection.

For instance, a stockholder may complain about "total mismanagement of the company." Actually, as the applied science of the public relations man reveals—his real complaint is ignorance of certain of the company's operations. It is then that the public relations man plies his art, specifies his treatment and cures the patient—not by urging the management to retire, as the stockholder may have suggested, but by supplying all stockholders with full information on company operations which are misunderstood.

Perhaps a still more important job for the physician than the curing of ailments, is the use of science and the techniques of his profession in the prevention of them.

Certainly this is the most important job of every public relations man.

In the practice of preventive medicine, the physician must exercise some very definite controls over the health program of the individual concerned.

Similarly, to prevent the development of dissatisfaction within a business organization or to guard against public antagonism toward a business, the public relations man must have a very definite voice in the formulation and application of company policies.

So much for the analogy. I hope that, in addition to illustrating how public relations must apply the methods of science in the proper exercise of its functions, it also has emphasized this very important point: That the role of the public relations executive in any company must be on a level of importance with that of the financial officer, the production executive or the sales executive; that the prime requirements for a good public relations program start with basic company policies.

No so-called public relations genius can convey for any great length of time a good impression of his company, if there is not a healthy

condition to be conveyed. For this reason I feel sure that public relations, as a profession, stands in constant danger of being sabotaged. Not by those who are opposed to what we champion, but rather by the superficial thinkers—those who would conjure up a fine picture of public relations as a cure-all and the complete salvation of any business which is feeling the hot breath of trouble on its neck. In other words, public relations is not press-agentry, it is not the promotion of artificial build-ups, it is not high pressure salesmanship of business practices, and above all, its purpose is not to engage in any attempted white-washing of abuses.

Let us discuss the application of public relations in a little more detail.

What are the methods of science which the public relations man employs? There are several, but I shall deal with only a few.

T. H. Huxley, once said in a lecture (On the Education Value of the Natural History Sciences, London, 1854):

"Science is nothing but trained and organized common sense, differing from the latter only as a veteran may differ from a raw recruit; and its methods differ from those of common sense only as far as the guardsman's cut and thrust differ from the manner in which a savage wields his club."

The first action of the public relations executive, therefore, must be to make a thorough and complete analysis of his company and of all the elements of society which his company directly affects, in order that he may be prepared to execute "the guardsman's cut and thrust," rather than wield his club promiscuously.

In other words, the public relations man must actually "dissect" his company and its various functions with all of the care of the student of anatomy to learn where there may be points of weakness or of strength, where "medication" in the form of new or revised policies may be applied to correct maladjustments, or where vital deficiencies in trained supervisory personnel may be causing unnecessary friction or loss of efficiency.

Then, he should apply this same careful method of analysis to all points of contact between the company and the public. None of these should be overlooked, even things so apparently insignificant as the calling cards of salesmen. The appearance of factories which are the day-time home of employees and are daily seen by large segments of the public, the collection letters sent out by the credit department, public appearances of company executives, signs on company-operated trucks, courtesy of the truck drivers dividend check enclosures—all of these and many other points of contact with the public have an effect, either negative or positive, on the general public attitude. We must also be certain we are good neighbors and citizens at home—in the community in which we operate. In addition to a plant appearance that is a credit to ourselves and our neighbors, we must keep our chickens out of our neighbors gardens—chickens in the form of objectionable smoke, dust, odors and the disposal of waste industrial products. It is of vital concern to the public relations executive that the company put its best foot forward on all these fronts.

To further assure that he can use "the guardsman's cut and thrust," rather than have to rely on wielding a club, the public relations executive must carefully select specific targets for his thrusts. It is an old bromide in advertising that one must set up the proper target and shoot at it with a rifle rather than spray shotgun pellets into the air. This applies equally to public relations. We must determine just what the word "public" means when used to identify this profession. With whom are we to improve our relationships? Are we trying to be big brothers to all the world?

Well, if public relations is the sum total of the efforts of every industry and every individual engaged in the work, then I suppose the public *is* everybody.

But, in my company for example, if we are to try to reach all of the 145 million people of Canada and the United States, to impress them all with how important Johns-Manville is to each of them, I am afraid that no matter how loud a noise we would make, it would scarcely reach the threshold of audibility. The importance of my company, as a typical industry, may not seem great in the eyes of the total public. Perhaps we might say that its importance should be measured entirely in proportion to its contributions to the economic and social structure as a whole.

At the present time there are 15,000 employees in all of Johns-Manville. These employees and their families, perhaps a total of 60,000 persons, have a very direct interest in the company and its welfare. Then there are 8,000 stockholders and their families and dependents with a positive interest. In addition there is the interest of hundreds of thousands of customers. Add them all up and it looks like a large sphere of influence. Yet it is pretty difficult to say that we have a direct effect, discussed in these terms, on more than a few percent of the total population. Actually, we do have a far greater effect, but I think it wise for a corporation occasionally to reduce its feeling of importance by looking squarely at itself in an unblemished mirror that will reflect only hard facts and leave out suppositions.

There is, then, a segment of the country, and there are thousands of persons who are and who should be directly interested in what is being done in my company. They have a selfish reason for wanting to be on our side. It is to their own personal interest to know the contributions that are being made by Johns-Manville to the business and social life of Canada and the United States, to know how well and how honestly this job is being done by us and to know that we are a typical representative of the free enterprise system.

These are the people, the *public*, who have a stake in Johns-Manville. And each company in Canada, regardless of size, has a similar audience of its own. We know who they are. Thus we can be specific in communicating with them directly and effectively.

Now, let us talk for a moment about the public relations aspect of basic company policies.

If a public relations program is attempted in any organization without the proper authority being set up for the control of basic policies, the achievement of lasting results is doomed almost from the start.

And, even when such control is provided, it requires constant vigilance to assure that, under the stresses and exigencies of day-to-day operations, we do not stray from the course which has been charted.

For this reason the public relations executive must be the counselor and advisor to top management during policy-framing periods when program changes in basic policies are being discussed about the management table. Many times he may be the instigator of new policies. After all, in this respect, the public relations man acts in the same manner as the staff assistant on finance, accounting, marketing and production.

However, I want to emphasize that, in serving this function, the public relations executive *must know what he is talking about.* Particularly is this true when he is discussing the problem of attitudes and reactions among people. And, in this field, he once again must turn to science for assistance. Hokus-pokus methods of judging public opinions and employee attitudes will not suffice. A new tool has been invented and should be used by all of us. It is the newest practical application of psychological research in the field of human understanding—the measurement of human attitudes and reactions in a truly scientific manner.

Everyone in business can play with equal skill the game of judging the opinion of *all* from the reactions of a *few.*

The game starts with dogmatic statements such as:

"I know how my wife would react to that situation, and let me tell you there would be millions of housewives all over the country who would think it was a fine thing."

and

"I was talking to Joe Blutz in the Finishing Department the other day and he knows how the men feel—they certainly don't like any part of it."

and

"Fred Smith, the president of such and such a corporation was telling me the other day that he had a letter from one of the employees in his factory where they employ 10,000, saying their plan was a fine thing and therefore he was going to continue it for another year."

Gentlemen, let me tell you that the public relations executive is no more of an expert in making judgments of this kind than any other man. If he is to do the most intelligent and effective job in evaluating employee and public attitudes he must rely on the use of scientifically conducted research into the facts.

No responsible leader of any business would approve a program for producing a new product without having all of the facts concerning its probable cost and the amount of capital required to produce it. Nor would he proceed without quantitative as well as qualitative facts concerning the market for the product, based on sound surveys made scientifically. Very few products are launched today on the basis of hunch and the playing of the "I know" game which I have just described. Yet, when it comes to public relations, intelligent people seem fearful of using those tools which throw real light on mass opinion. Whether all of the techniques have been developed to the

point where complete reliance can be placed on their answers, is a question that I cannot answer. But, certainly, a multiplicity of answers tested along scientific lines for consistency, must be more reliable than the opinion of "Joe Blutz," "friend Smith" and "My good wife," however honest and sincere they may be.

This is an application of science particularly useful to the public relations executive. Without it, I do not know how he can attain a clear sighted approach to his job.

In my analogy of the practice of medicine and the practice of public relations, I compared the use of tools and techniques by the physician and the public relations executive in effecting desired results.

Now, just what are the tools and techniques of the public relations executive?

They fall into three general classifications: (1) The spoken word; (2) The written or printed word; and (3) Visual presentation.

First, let us consider the spoken word.

This is a tool which, by all measurements I can apply, should be one of the most valuable in the entire Public Relations kit. It is one, however, which I am afraid has been very much neglected. We have thought largely of the spoken word as something to be used almost exclusively by company officials in making important addresses at public gatherings, before company meetings, or on records and more lately over loud speakers in plants and offices.

Now, do not misunderstand me, I am not trying to underestimate the value of such meetings and such public utterances, and I realize that business still has a long way to go in learning how to become effectively vocal.

But what the most of us are prone to forget, in considering the spoken word is the fact that a proper program of information and incentives *within* any one business organization can result in a word-of-mouth Public Relations campaign being carried on by *every* member of the organization, rather than by a selected few.

In Johns-Manville, for instance, we have a real opportunity to develop 15,000 spokesmen from 15,000 employees. Each company is limited in this respect only by the number of its employees—the men and women with whom we live and work for half of their waking hours. Each spokesman will be talking to friends who know him, who will have no reason to disbelieve him, and who will, in turn, because of their natural interest in what he says, pass the information along. Who can deny that this is the most powerful type of good will building? But how many companies have actually made an attempt to develop it for all that it is worth?

Perhaps the Bell Telephone System has done the most outstanding and consistent job along this line. I have yet to meet a telephone man, be he executive, lineman or installer, who does not have sufficient knowledge of his company to give me helpful information and who has not in the meantime done a fine job of selling me on the fact that he is a member of a great and efficient organization. This has been the result of many years of intelligent missionary work in the telephone company's employee training and educational program. Because

word-of-mouth Public Relations is one of our most powerful of tools, I urge that we all take a leaf out of the Telephone Company's book in this respect.

Our second major Public Relations tool, of course, is the written or printed word. It is my fear that we sometimes devote too much time to altogether too few written statements. And again, too often these statements intended for general consumption by employees, stockholders or public are monumental masterpieces of hedged about meanings intriguing only the trained legal minds vying with each other for full protection against all possible as well as impossible future contingencies.

When something needs to be said, let us say it, directly, simply, briefly and with full candor and honesty. Perhaps the public relations men should urge the use of basic English in company statements as an additional safeguard against the temptation to use the technical business jargon that we have all allowed to grow up around us like weeds in our garden.

And if we feel that it is important for the public to know and understand a certain fact about our business, then let us repeat this fact, and repeat it until it finally is driven home. The advertising man will tell us that a single advertisement will usually make an insignificant impression. The power of advertising lies in its repetition. The good public relations man understands this same principle and knows how to make it work.

Of course, there is a definite limitation to the effectiveness of the printed word. I am sure, with the pressure of interest in our lives today, that you and I and all of the people find time to read less and less. Therefore, I think that we might consider seriously the following axiom:

Before trying to force printed words to do a job, let's first exhaust every possibility for doing it through some other medium—by the spoken word or visually.

For this reason, our third important tool—"visual presentation"—has, during recent years, assumed greater and greater importance. It has come to the aid of the printed word by substituting pictures for the rhetoric which few would read. It has assisted in presenting the printed word in more attractive and readable style. Moreover, through motion pictures and slide films, photographs, design, color and the use of pageantry, the purely visual mediums available for our use have assumed increasing importance in their own right. In my opinion they will rise to even greater importance.

Particularly do I think we should learn more about how to use pictures. Although the expression has become so trite I hardly dare mention it, the Chinese wisely said that a picture is worth a thousand words. They might as truthfully have said a million.

I dare say that because of the current camera craze, more of our people have learned more about expressing themselves with a picture than with the written word. Yet few of us realize the tremendous potential public relations tool that pictures represent. A study of various house publications reveals that there is a *trend* toward the use

of pictures as a substitute for words, which is following the trend in general publications. However, I believe that we still have a lot to learn in this respect.

Public relations cannot be discussed these days without attention being given to its role in wartimes. While our nations are at war, we have had to change many of our ways of doing things. We can no longer carry on business-as-usual; we must do the job that is necessary to win. I have no feeling, however, that I am trying to preserve any fiction of business-as-usual when I say that a proper public relations job has already proved itself to be as vital to the war effort as it is to our peacetime economy, if, of course, it is a sound one and is soundly constructed. There can be no change in the fundamental objectives.

Today management needs as it has never needed before an understanding of public relations and the strong counsel of the public relations man. And the public relations man needs the facts about the impact of the war on the people and on the men and women interested in the specific production problems of his company. Only by this knowledge can policies be wisely guided.

The importance to victory of production for our armed forces means that there must not be the slightest delay in our production effort. This requires the full cooperation of our production men and women and their neighbors and friends, and this can be furthered by a better understanding of the problems which beset industry in meeting all demands. There must be no lack of effort because of shaky confidence or unfair suspicions brought on by our failure to give these men and women the facts.

It is more necessary than ever to explain a company's ability to serve the allied cause.

Particularly have we learned that we must avoid glittering generalities. It is vital that we carry on our war effort successfully and it is also important that we retain the view of what we are fighting for. And, in doing our part, let us resolve to guide our actions by facts. Let us speak and write interestingly of real and tangible things.

Let us, for example, not waste our time, our efforts and our opportunities by simply appealing for the preservation and support of, say the Canadian or American "Way of Life," the "free enterprise system" or any other abstraction. Let us always, whether in a simple bulletin to employees, an annual report to stockholders, or a major address by the head of the firm, really attempt to picture simply and clearly the system that we champion, rather than use a series of comfortable and meaningless platitudes to stand for it.

To illustrate what I mean, let me quote from the writings of a brilliant former student of McGill—S. I. Hayakawa. In his book, "Language in Action," he has demonstrated in a most devastating way the complete fallacy of our reliance upon abstractions rather than interesting facts to create impressions upon the public:

> "What do you mean by democracy?
> "Democracy means the preservation of human rights.
> "What do you mean by rights?
> "By rights I mean those privileges God grants to all of us—I mean man's inherent privileges.

"Such as?
"Liberty, for example.
"What do you mean by *liberty*?
"Religious and political freedom.
"And what does that mean?
"Religious and political freedom is what we have when we do things the democratic way."

Don't all of those things sound too familiar? Have we not too often ourselves resorted to such abstract expressions to represent the very vital, and tremendously interesting truths of the operation of business and of democracy?

Those of us who have the responsibility for public relations may have complete familiarity and skill in the science of the profession. We may have a clear and compelling picture of the job to be done. But, we must always remember that none of these technical advantages can ever be a substitute for careful thought—which, in the final analysis, is our one and only important tool.

Oliver Wendell Holmes once said:

"Science is a first-rate piece of furniture for a man's upper chamber, if he has common sense on the ground floor."

Certainly this thought must be kept uppermost in the mind of every public relations executive as he helps his company plan for the future.

How does a company organize to do an intelligent public relations job?

I believe I can summarize the steps quickly into three points:

1. *Dissect your organization from top to bottom.* Don't do it yourself. Get a specialist. If a company is large enough to specialize, hire a top-notch trained public relations man and put him to work. A smaller company can achieve results by *consulting* with a professional public relations counsel or that department of an advertising agency which so specializes. Put them to work to find the good and the bad about you and your business.
2. *Start correcting the bad.* Get your house in order. Then start to be vocal about the good things. Don't expect to change all things quickly. Work out a program of projects against a time schedule —perhaps a five year plan.
3. *Give the public relations function real authority* and importance in your business and in the executive staff.

In many a company this job should be started now. When post war difficulties beset us it may be too late. I could even predict that some companies who do not make this investment now in time and thoughtful, honest, direct action will not *survive* the post war period.

The post war world cannot be accurately pictured today. There is no common agreement as to just what kind of a social and economic structure will emerge from the present complete dislocations in all countries. There is almost universal agreement on *one* point, however. There will be vast changes—changes in the wants and desires of people, changes in government, changes in economics. No country or section of a country will remain untouched.



Even amidst the strains of war we see manifestations of deep seated concern over the future course of governments. This war is being fought to protect and preserve the freedoms which the democracies have assured. And yet those very freedoms are being challenged unwittingly by the pressures and demands of special groups who have not looked beyond the immediate results of their actions.

It would be presumptuous on my part to point out ways and means to offset dangerous currents in economic, political or social tides in this country or even my own country. Nor, wrapped up in it as I am, can I say to you that, public relations will remake the world, perpetuate any economic system, or even save one business from drastic change.

But I can say truthfully, and I sincerely believe it, that one of the business leader's few means of keeping informed of the changes bound to come and one of his principal weapons of defense against the destructive onslaught of misunderstanding, lies in full and proper use of public relations.

Continuous new invention-making and job-making thrives only on free enterprise. Free enterprise needs democracy. Democracy is what the people make it. Therefore, business must know and adjust itself to what the people expect of it. If the people demand more from business than is arithmetically possible then business must intelligently inform the people of the limitations.

This stark over-simplification of the problem of business helps only to demonstrate the vital need for full use of the science and tools of public relations, by every business unit in our two great neighboring countries.

It is the one science which can keep company policies and management attuned to the needs and demands of society and at the same time keep society informed of both the limitations and possibilities from business.

INDEX

A

Advertising,
  early, 130-131
  modern growth, 133
  new techniques in, 131-132
  use of, to raise employee morale, 136-137
Agricultural products,
  export of, 73
  industrial use, 79
Agriculture,
  diversification due to war, 68
  export market vital to, 73
  increased output due to war, 14
  postwar aspects, 15
Air cargo,
  advantages of, 48
  Canadian pioneering, 40-41
  rates, 44, 48
Air express, 46
Air mail,
  postwar developments, 40
  rates, 49
  volume, 37-38
Air routes, 69
Air transport,
  cargo, 40-41, 46
  early days, 22-23
  future development, 24, 36, 40-41, 48-49, 60
  greater "reach" of, 46
  greater speed of, 47
  importance to perishable foods industry, 118
  mail, 37-40
  passengers, 34-35
  significance in merchandising, 123
Air travel,
  domestic, 34, 36-37
  overseas, 35
  rates, 48
Aircraft industry, 72
Alaska highway, 68, 87
American Railway Association
  see Association of American Railroads.
Aptitude tests, 148
Association of American Railroads, 54, 61
Atlantic Charter, 11-12, 89, 90, 94
Automobile travel, 31-32

B

Bacon,
  export to Britain, 73
Bank for International Settlements, 19
Basic English, 132
Brussels Conference, 1922, 19

C

Camphor, 80
Canned foods, 111-112
Cellulose, 79, 80
Chain stores, 123
Chemical industry, 78-79
Chemurgy, 79
Cold storage, 109
Commerce, early, 25-26
  see also Foreign trade.
Construction,
  postwar need for, 66
Consumer buying power, 16, 69
Copywriting, 133
Credit, 92
Crops, 68
Currency depreciation, 73

D

Dehydration,
  preservation of food by, 112-115
Dehydrated foods,
  wrapping of, 116
Durable goods,
  backlog of demand for, 15-16
  postwar needs, 67

E

Emergency Transportation Act, 1933 55, 56
Employment, postwar, 64, 120
Export business, 91
Express shipments, 46

F

Fermentation, 115
Food-freezing industry, 104-105
Food industry, perishable, 96-99
Foods, perishable,
  preservation, 97-99
  packaging, 115-117
Foods, quick-frozen, 116
Foreign exchange, 20
Foreign relations, 87-88
Foreign trade,
  growth of, 83-84
  postwar opportunities, 89-90
  triangular nature of, 11
  value of, 72-73, 86-87
Forests, 85
Free enterprise system, 120, 122, 166
Freight,
  Canadian and United States per capita tonnage compared, 44-45
  transportation modes compared, 45-47
  World Wars I and II, tonnage contrasted, 58
  see also Air cargo.

Freight rates,
air, 44
express, 47
railroad, 43
water, 47
Fruit and vegetables,
preservation for marketing, 102-104

G

Genoa Conference, 1923, 19
Glycerine, 80
Gold standard, 18-19
Goodwill, 135, 144
Grade labeling, 128
Great Britain,
agricultural expansion, 14
industrial expansion, 13
postwar demand for goods, 15-16
postwar market for Canadian products, 73
relations with Canada, 87-88
Great Lakes,
effect of Panama Canal Act on, 51-52

H

Heat sterilization, preservation of food by, 111
High frequency electric current, preservation of food by, 115
Highway traffic, 54, 58, 60
House organs,
new forms of, 137
Housing,
postwar needs, 66

I

Immigration,
from United Kingdom, 88
possible effects on domestic market, 71-72
Immigration policy,
compared with that of United States, 88-89
implications for industrial and economic development, 122
Industry,
expansion due to war, 12-14, 89
postwar reconversion, 14
International Development Corporation, 20
International payments,
mechanisms for, 18-20
Interstate Commerce Commission,
co-operation with O.D.T., 59
decisions on railway rates, 57
motor carriers subjected to authority of, 56
rulings on water carriers *v.* rail carriers, 51-52
Interviews, standardized, 148-149

L

Labeling, 126
Land area,
compared with other countries, 84-85
Land reclamation, 66
Locker plants, 109
London money markets, 18-19
Lucite, 80

M

Mail, United States,
postal receipts, 38
transport by air, 40
volume, domestic, 37
" overseas, 39
Marketing,
postwar problems, 17
Markets, foreign,
China, 93
Empire, 75, 93
Great Britain, 73
Russia, 93
South America, 93
United States, 74
Markets, domestic,
farm, 71
measured in terms of potential needs, 15-16, 65-67
Markets, postwar,
assessed by ability to pay, 16-17
competition for, 76
may depend on employment level, 64-67
measured in terms of needs, 12
Meats,
preservation of, for marketing, 101
Merchandise,
distribution of, 123
Microfilm, 80
Milk, human,
preservation of, 97
Mining industry, 85
Monetary mechanisms,
international, 18-20
Motor Carrier Act, 1935, 56
Motor transport, 54
Moving pictures,
use for propaganda, 132
Mutual aid, 73

N

National income, 64, 65
National Recovery Act, 1933, 55
Natural wealth, 68
Nylon, 80-81

O

Ocean transport, refrigerated, 118
Overseas travel,
by air, 34-35
early, 29
modern growth, 32-33

P

Packaging,
  food products, 115-117
  postwar, 125
  wartime, 124
Panama canal, 50, 51, 60
Passenger transport,
  air, 34-37
  automobile, 31-32
  railroads, 30-31, 58
  steamship, 32-33
Pasteurizing, 112
Perishable foods industry, 96-99, 118
  see also Foods, perishable.
Population,
  densities, 88
  size of, 64
  trends, 70-71
  urban, 122
Poultry,
  preservation for marketing, 102
Prairie West, 68
Product advertising, 135
Production,
  Canada's capacity for, increased by war, 67
  percentage of world total, 86
  postwar increase necessary, 11
Public investment, 66
Public opinion, 135, 161
Public relations,
  development as a profession, 155
  objectives, 159
  policy of Johns Manville Company, 156
  practice of, 157
  role in wartime, 164
Public relations executive, 158, 161
Public relations program, 156
  how to initiate, 165
Public relations techniques, 159
  printed word, 163
  visual presentation, 163
  word-of-mouth campaigns, 162

Q

Quick-freezing, 105-109, 118
Quick-frozen foods, 116

R

Rail express, 46
  rates, 47
Railroad transportation,
  freight, traffic, 45-47, 60
  golden age of, 54
  mail, 38
  passenger traffic, 30-31, 58
  position at beginning of 20th century, 50
Railroads, United States, 31
  federal control, 1918-20, 52-53
  freight rates, 43
  labor difficulties, 59
  position prior to World War II, 57
  postwar plans, 59-61
  rates under Act of 1920, 53
  revenues, 41-43, 55, 62
Raw materials, 88, 94
Rayon, 80
Reciprocity, 74
Refrigerated transport, 109
Refrigerated trucks, 111, 118
Refrigeration,
  as food preservation method, 99-100
Refrigerator cars, 111, 118
Refrigerators, domestic, 110
Reforestation, 66
Rehabilitation,
  industrial, 13-14
Rehabilitation and relief,
  international, 17-18, 94
Reparations Conference, 1929, 19

S

Safety glass, 80
Sales management,
  scope of job widening, 139-140
Sales managers, 153
Salesmanship,
  training programs, 144-147
Salesmen,
  compensation of, 141
  compensation plans, 149-151
  selection and training, 140-141, 151-154
  supervision, 141, 144
Savings, public,
  growing volume, 16
  Canada and United States compared, 69
Scientific research,
  effect on living conditions, 78
Seafoods,
  shipping problems, 102
Selling,
  customer relations, 142-144
  psychology of, 126
Shippers Advisory Boards, 54
Shipshaw Power Development, 41, 68
Standard of living, 11-12
Steamboat travel, 29, 30
Steamship travel, 32
Subsidies, government, 121

T

Tariffs,
  effect on trade, 74-75
  postwar problems, 13, 21
Television, 131

Trade,
see Commerce.
Transportation Act, 1920, 53
Transportation,
general policy needed, 60-61
historical development, 25-30
new facilities for, effect on advertising, 132
Travel,
early, 27-30
future, 49
modern, 30
Tripartite Monetary Agreement, 19

U

Unemployment,
see Employment.
United Kingdom,
see Great Britain.
United States,
postwar market for Canadian goods, 16
trade relations with Canada, 74, 87-88

V

Visual education,
use of motion pictures in, 132

W

War,
impact on Canada, 12-14
Water transport,
early, 25-27, 29-30
effect of railroads and motors on, 50
postwar increase predicted, 60
rates compared with air and rail, 47
revival of inland waterways, World War I, 53
Waterpower, 86
Wheat, 94-95
Wood,
new chemical treatment, 81
Wrapping materials, 116

BNQ
000 343 228