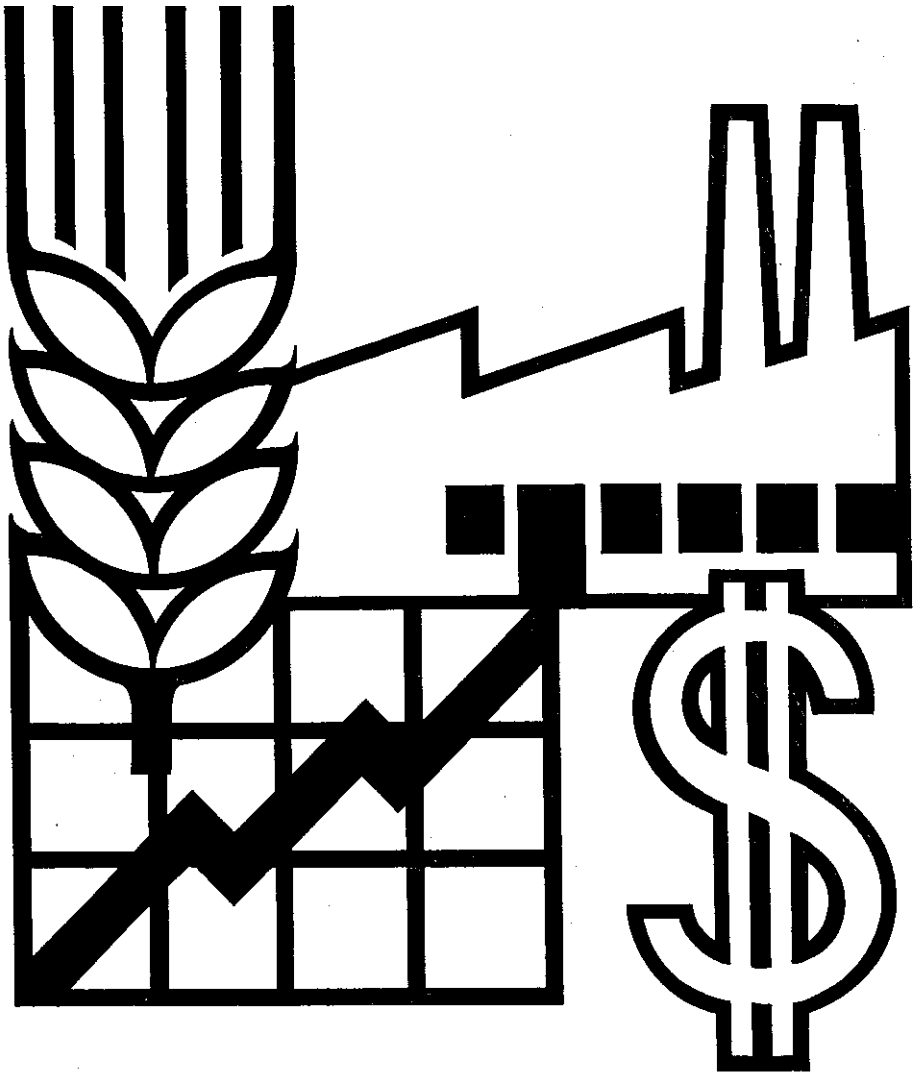
Saskatchewan
Education

Economics 30

A Curriculum Guide for Grade 10 to 12 Economic Issues: A Canadian Perspective



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ECONOMICS 30

ECONOMIC ISSUES: A CANADIAN PERSPECTIVE

Saskatchewan Department of Education

June 1978

ACKNOWLEDGMENTS

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TABLE OF CONTENTS

INTRODUCTION

Economics 30 is a very pertinent course that is CANADIAN in perspective with special attention being given to the SASKATCHEWAN economic scene.

It should be stressed that *Economics 30 is an ECONOMICS course.* When issues are treated, the ECONOMIC IMPLICATIONS (and not the political, sociological, or other aspects), should be emphasized. These other aspects certainly may be touched upon in the identification or treatment of particular issues, but they are merely ancillary. An issue may begin as a political or sociological one; however, analysis should be in rational economic terms. It is crucial that the teacher ensure that a BALANCED view of all the issues dealt with emerges--and culminates with the student formulating a conclusion that is logical and is open to modification with the emergence of new evidence. Solutions should NOT be teacher imposed.

The teacher should have access to the Curriculum Guide and Bibliography for Economics 20 and 30, together with the Social Sciences: An Overview. These materials are invaluable for teaching and evaluating Economics 30. For copies of these contact the Development Division, Department of Education.

Unit Overview

The Economics 30 course includes the following units:

UNIT ONE:	The Economic Setting
UNIT TWO:	The Economy of Saskatchewan
UNIT THREE:	The Economy of Canada
UNIT FOUR:	The International Economy and Canada

STUDENT BACKGROUND IN ECONOMICS AND INSTRUCTIONAL ORGANIZATION

It is desirable that students have taken Economics 20 before undertaking the study of Economics 30. Since the course focuses on issues, students require some background in the discipline of Economics. Classes that have not studied Economics 20 should give considerable attention to UNIT ONE. Here, invaluable assistance may be obtained from the Curriculum Guide for Economics 20.

Approaches to Instruction

There are three basic ways in which the content of Unit One may be presented to students:

1. Through the use of W. H. Wilson and F. F. Warmke, *LIFE ON PARADISE ISLAND: ECONOMIC LIFE ON AN IMAGINARY ISLAND, prior to starting the Saskatchewan Unit.

2. A review of the Units from Economics 20, covering the basic understandings, prior to the start of the Saskatchewan Unit. (In mixed classes, those students who have taken Economics 20 might be given a research assignment in lieu of a comprehensive review of Economics 20.)

3. A review of those Units from Economics 20 that pertain directly to each of the Economics 30 topics, prior to the commencement of these topics.

To illustrate:

ECONOMICS 30		Need to know from Economics 20 those Understandings covered in:
UNIT TWO:	The Economy of Saskatchewan	Unit one Unit two Unit five
UNIT THREE:	The Economy of Canada	Unit one Unit two Unit five Unit six Unit nine
UNIT FOUR:	The International Economy and Canada	Unit one Unit two Unit five Unit six Unit eight Unit nine

*This describes the development on an economy from self-sufficiency to a complex modern organization

Note: Units three, four, seven and ten of Economics 20 are considered optional, and should be used if the teacher considers them necessary for reinforcement.

Suggested Time Allotments

Assuming an academic term of 100 hours a possible allocation of time could be as follows:

1. For Students with Credit for Economics 20:

UNIT ONE	15 hours
UNIT TWO	30 hours
UNIT THREE	40 hours
UNIT FOUR	15 hours

2. For Students Who Have Not Taken Economics 20:

UNIT ONE	30 hours
UNIT TWO	25 hours
UNIT THREE	30 hours
UNIT FOUR	15 hours

OBJECTIVES OF ECONOMICS 30

Simplified definitions of Economics are:

1. a study of mankind in the business of making a living, and
2. a study of the way in which men produce, distribute, and exchange goods and services to satisfy human wants.

Developing an economically literate populace is an important societal need. Citizens require some knowledge of the discipline of Economics in order to perform intelligently and effectively as consumers, producers, and voters. Economics 30 cannot, of course, produce professional economists--it can, however, lead to a better understanding of our economic system, its operation, its problems, and its possibilities. There is a need to develop open, inquiring minds that can use the processes of Economics to more efficiently identify value systems and provide a mechanism for systematic decision making.

General Objectives of Economics 30

By studying Economics 30, the student should develop:

1. an understanding of the nature of Economics.
2. some ability to use certain Economics process skills.
3. an understanding and appreciation of the nature of the Canadian economy.
4. an understanding and appreciation of the nature of the Saskatchewan economy and its interrelationship with the Canadian economy.
5. an understanding and appreciation of the nature of the international economy and its interrelationship with the Saskatchewan and Canadian economies.
6. an understanding of the role of the individual as a participant in the Saskatchewan, Canadian and international economies.

To summarize, through an examination of pertinent issues, from the perspective of the discipline of Economics, the student should develop awarenesses and process skills that provide a means for understanding, and participating in, the activities in which Canadians engage to satisfy their many individual and collective wants.

CONTENT OVERVIEW

UNIT ONE: THE ECONOMIC SETTING

Note: This unit is a review of the basic Economic principles presented in Economics 20. It is amended to include those understandings considered basic for the Economics 30 course. Classes that have not studied Economics 20 should give considerable attention to this unit.

A. The Economic Setting

1. Wants, Scarcity and Choice
2. Capital and Consumer Goods
3. Market
4. Gross National Product
5. Producers and Consumers
6. Free and Economic Goods
7. Utility
8. Opportunity Cost

B. Production, Specialization and Exchange

1. Direct Production and Barter
2. Specialization and Surplus
3. Interdependence
4. Exchange
5. Factors of Production
6. Payment for Factors
7. Private Property and Public Property

C. Business Organization (optional)

1. Types of Business Organization
2. Bigness
3. Government and Business

D. Labor Organization (optional)

1. Unions
2. Collective Bargaining
3. Management Bargaining Tools
4. Labor Dispute Settlement
5. Government and Labor

E. The Role of the Market

1. Market
2. Price
3. Demand/Supply
4. Profit
5. Indexing

F. Money and Banking

1. Money and Near-Money
2. Banks and Near-Banks
3. The Banking System
4. Money Supply and its Control
5. Bank of Canada
6. Inflation and Deflation
7. Credit
8. Cash Flow and Reserve; Deposits and Savings

G. Personal Finance (optional)

1. Short-term Investments
2. Long-term Investments
3. Investment Planning
4. The Stock Exchange
5. Insurance

H. International Trade

1. Absolute and Comparative Advantage
2. Balance of Payments
3. Protectionism Pros and Cons
4. Exports and Imports--Visible and Invisible
5. Foreign Exchange
6. International Co-operation

I. Role of Government in the Canadian Economy

1. Government Revenue and Expenditures
2. Taxation
3. Income Redistribution
4. Government Regulation
5. The Business Cycle
6. Monetary Policy
7. Fiscal Policy

J. Comparative Economic Systems (optional)

1. Need for an Economic System
2. Common Economic Systems

UNIT TWO: THE ECONOMY OF SASKATCHEWAN

A. Overview of the Saskatchewan Economy

1. Historical Development
   a) Indians and Fur Trade
   b) Railways
   c) Land Settlement
   d) Scientific Agriculture
   e) Depression
   e) Developments to Present - Diversification
2. Physical Geography
   a) Climatic Regions
   b) Natural Vegetation
   c) Zonal Soils
3. Demography
   a) Population Distribution
   b) Population Movement

B. Agriculture in Saskatchewan

1. The Prairie Wheat Farm
   a) The Farm
   b) Climate and Soil
   c) Crop Hazards
   d) Choosing Crops and Varieties
   e) Seeding
   f) Harvesting
   g) Equipment
2. Farm Size and Management
   a) Factors of Production
   b) Factor Combinations
3. Farm Ownership
   a) Type
   b) Renting/Ownership
   c) Absentee Ownership
4. Grain Marketing
   a) Market Demand/Supply
   b) Marketing Channels
   c) Transportation
5. Government and Agriculture
   a) Production--Restriction and Resource Allocation
   b) Incentives/Subsidies
   c) Stabilization
   d) Family Farm and Rural Depopulation
   e) Experimentation/Research/Services

C. Forestry in Saskatchewan

1. Forest Resources
   a) Main Species of Merchantable Timber

b) Wood Volume
c) Importance to Provincial Economy
2. Forest Inventory

D. Mineral Resources in Saskatchewan

1. Fossil Fuels, Pipelines
2. Minerals
a) Potash
b) Uranium
c) Coal
d) Others

E. Transportation in Saskatchewan

1. Railways
2. Roads
3. Air
4. Pipelines

F. Industry in Saskatchewan

1. Business and Society
2. Development of Manufacturing
a) Manufacturing in Saskatchewan
b) Location of Industries
c) Service Industries
d) Future Growth

G. Government and the Economy

1. Budgetary Policies and Financial Management
a) Revenue Sources
b) Expenditures
c) Budget
d) Government Spending Controls
2. Government Services and Crown Corporations
3. Provincial Regulation of the Economy

H. Economic Growth

UNIT THREE: THE ECONOMY OF CANADA

A. Overview of the Canadian Economy

1. Historical Development
a) Fish and Fur to Machines and Computer
2. Economic Geography
a) Resource--Location

b) Industry--Location
c) Population Distribution
d) Transportation and Communication Systems
e) Regional Disparities

3. Canada's Economic System
   a) Mixed Enterprise

B. Business and Society

1. Role of Business in the Economy
   a) Economic Responsibility
   b) Social Responsibility

C. Industry

1. Primary, Secondary, Tertiary, Industrial Mix
2. Productivity
3. Concentration of Power
4. Foreign Ownership

D. Labor and Labor Organization

1. Labor Force
   a) Composition
   b) Quality
   c) Mobility
   d) Manpower
   e) Immigration and Emigration
2. Unions and Collective Bargaining

E. Government and the Economy

1. Unemployment
   a) Measurement
   b) History of Unemployment in Canada
   c) Job Creation--Government Policies
   d) Unemployment Insurance
2. Inflation
   a) Definition--Theories of Inflation
   b) Money Supply
   c) Government Policy
3. Monetary and Fiscal Balance
   a) Inflation--Employment Trade-Off
   b) Time Lags
   c) Equity
   d) Levels of Government Spending
   e) Public Debt

4. Federal-Provincial Fiscal Relations
   a) Tax Sharing
   b) Equalization Payments
   c) Federal Funding of Provincial Programs
   d) Resource Taxation--Royalties
5. Direct Government Intervention
   a) Nationalization
   b) Crown Corporations
   c) Joint Ventures
   d) Regulatory Agencies
   e) Competition Act
6. Government and the Economy--How Much?

F. Economic Growth

1. History, Rate and Nature
   a) Nature of Growth
   b) Past, Present and Future
   c) Optimum Rate
   d) Growth and
      i) Population
      ii) Regional Considerations
      iii) Separatism
      iv) Economic Nationalism
      v) Income Distribution
      vi) Automation

G. The Economic Implications of Social Policies (optional)

1. Poverty
2. Pollution and Ecology
3. Consumerism
4. Health
5. Welfare
6. Housing
7. Resource Use
8. Separatism (and Bilingualism)
9. Native Peoples
10. Income Distribution
11. Energy
12. Regional Disparities
13. Other

UNIT FOUR: THE INTERNATIONAL ECONOMY AND CANADA

A. Reasons for and Nature of Canadian Trade

1. Reasons for Trade
   - Absolute, Comparative and Natural Advantage
2. Nature of Canadian Trade
   - Patterns of Visible and Invisible Imports and Exports
3. Balance of Payments

B. Trade Barriers

1. Types of Barriers to Trade
   a) Tariffs
   b) Import and Export Quotas
   c) Foreign Exchange Controls
   d) Political Persuasion
   e) Dumping
   f) Embargoes
   g) Boycotts
   h) Corporation Pressure
2. The Pros and Cons of Restricting Trade
3. Canadian Tariff Policy

C. Trade Agreements

1. Types of Agreements
   a) Bilateral
   b) Multilateral (E.g. ECM and GATT)
   c) Producer Cartel (E.g. OPEC and IWA)
2. Canadian Trade Policy

D. International Concerns

1. International Aid
2. International Investment
3. Other

BASIC REFERENCES

For complete addresses of publishers see the Publishers' Directory.

It is suggested that the following be used as basic references.

Student References

Note: References are listed in order of preference.

Armstrong, Muriel. THE CANADIAN ECONOMY AND ITS PROBLEMS. 2d ed. Prentice-Hall, 1977.

Swan, Neil, and Henry J. Kaluza. ECONOMICS: A CANADIAN PERSPECTIVE. McGraw-Hill, 1973.

Mitchell, Alison Kemp, and Mary Austin Millard. ECONOMICS: A SEARCH FOR PATTERNS. Gage, 1971.

Wilson, W. Harmon, and Roman F. Warmke. LIFE ON PARADISE ISLAND: ECONOMIC LIFE ON AN IMAGINARY ISLAND. Lothrop, 1972.

(This text is suggested for overview use only)

It is strongly recommended that all Economics teachers become members of the Canadian Foundation for Economic Education, 155 University Avenue, Toronto, Ontario. M5H 3B7

Additional Sources

These should be part of the school library, in multiple copies, wherever Economics 30 is taught.

Canada. Statistics Canada. CANADA YEAR BOOK. Publishing Centre, Supply and Services Canada.

CANADIAN STATISTICAL REVIEW. Monthly Publication. Statistics Canada.

Canada. Department of Finance. ECONOMIC REVIEW - May 1977. Publishing Centre, Supply and Services Canada.

Richards, J. Howard, and K. I. Fung. ATLAS OF SASKATCHEWAN. University of Saskatchewan, 1969.

SASKATCHEWAN ECONOMIC REVIEW. Annual Publication. Saskatchewan Bureau of Statistics.

Problems and Issues References

These titles should be part of the school library:

Archer, Maurice. CANADA'S ECONOMIC PROBLEMS AND POLICIES. Macmillan, 1975.

Chant, John, et al (eds.). CANADIAN PERSPECTIVES IN ECONOMICS. Collier-Macmillan, 1972.

Clark, Robert J. (ed.). CANADIAN ISSUES AND ALTERNATIVES. Macmillan, 1974.

Pal, I.-D. (ed.). CANADIAN ECONOMIC ISSUES. Macmillan, 1971.

Ruggeri, Giusseppe C. THE CANADIAN ECONOMY: PROBLEMS AND POLICIES. Gage, 1976.

Trimble, W. UNDERSTANDING THE CANADIAN ECONOMY. 2d rev. ed. Pitman, 1975.

Basic Teacher References

Bellan, Ruben C. PRINCIPLES OF ECONOMICS AND THE CANADIAN ECONOMY. 5th ed. McGraw-Hill, 1976.

Lipsey, Richard G., and Peter O. Steiner. ECONOMICS. Harper and Row, 1975.

Samuelson, Paul A., and Anthony Scott. ECONOMICS. 4th ed. McGraw-Hill, 1975.

Note: A comprehensive, annotated list of references is cited in the Bibliography for Economics 20 and 30. Teachers should attempt to make as many references as possible available to themselves and to their students. A number of the references listed are free or inexpensive.

THE TEACHER AND ECONOMICS 30

Economics is a highly complex science. A constant danger is that of oversimplification, or arriving at conclusions on the basis of scant evidence; of feeling that conclusions are fixed and unchanging. It is highly desirable that the teacher have a good background in the discipline of economics to ensure that these dangers will be avoided, or at least minimized.

As a minimum, the teacher should have a solid understanding of such introductory college-level texts as:

Bellan, Ruben C. PRINCIPLES OF ECONOMICS AND THE CANADIAN ECONOMY. 5th ed. McGraw-Hill, 1976.

Lipsey, Richard G., and Peter O. Steiner. ECONOMICS. Harper and Row, 1975.

Samuelson, Paul A., and Anthony Scott. ECONOMICS. 4th ed. McGraw-Hill, 1975.

The Direction of Economic Education

The task of economic education is to prepare the individual for his economic contribution to society. Knowing what the task is, is not enough--we must know what economic education is before we can decide what the proper direction should be. Beginning with what it is NOT: It is NOT facts, NOT description, NOT history, NOT theory, and NOT a list of concepts. Many now agree that it is the development of a *rational decision-making capability with reference to economic problems.* Of course, rational decisions cannot be made unless they are within the framework of accurate facts, correct description, actual history, workable theory, and usable concepts. Facts, descriptions, history, theory and concepts are not the objectives of economic education; they simply facilitate attainment of the objectives by providing the necessary framework and analytical devices for reasoning wisely about economic problems.

Professor Jerome Rothenburg related the study of economics to the problems of modern society by discussing four basic lessons that can be gained from such a study. These are the lessons that economics educators should provide:

1. There are always alternatives of choice.
2. There are always consequences of action.
3. These alternatives, of either choice or consequences, are not always what they seem to be or what they were intended to be.
4. The evaluation of the consequences of action very often differs depending upon the perspective of the different agents of evaluation.

These four basic lessons imply that scarcity of resources relative to the demand for them creates situations which constantly force us to

make individual and collective choices regarding the allocation of resources based on individual and collective value systems. Life is not "a bowl of cherries." Rather, it is a series of hard decisions. The pervasiveness of the need to make choices and the need for some mechanism for making sound choices must be developed within students. This implies that the teacher must have a sound instructional delivery system. The science of economics must be applied--teachers must be aware of this, and their teaching must reflect it.

TEACHING STRATEGIES

In seeking teaching strategies to use in Economics 30, the teacher may find both the Curriculum Guide for Economics 20 and Social Sciences: An Overview useful.

Since Economics 30 is an issues course, inquiry strategies are particularly useful. These lead the student to inquire, analyse, discover or problem-solve. Within this frame, it is important to know how to use facts and information and the various forms of analysis, to perceive relationships to proceed from this to an understanding of concepts, and eventually to make decisions.

Concomitantly, students must develop a concern for values and an awareness of the role values play in economic systems. The educator must be willing to discuss ALL aspects of controversial issues, thereby allowing students to perceive the underlying values. In addition, teachers must be willing to allow students to develop their own, intelligently arrived at, value systems.

To ensure relevance, current events (and student interests), as they relate to local, provincial and federal scenes, should be constantly tied into the teaching-learning of economics. Students can thus see that economics is a highly relevant, very alive study that affects their daily lives and the world around them. If teachers allow their teaching to become overly theoretical and textbookish, they will, and should be, accused of being dull, irrelevant and dismal--the subject itself cannot be so accused.

The modern approach to teaching economics seeks the following four outcomes in students:

1. acquisition of inquiry and critical thinking skills,
2. acquisition of knowledge,
3. recognition of values, and
4. development of desirable attitudes.

If Economics 30 teachers wish to develop these outcomes, which relate to rational decision-making ability for the solution of economic problems, students must be provided with practice in solving problems, and teaching methodology should reflect this. That is, methods such as the following should be used:

- problem solving/discovery-inquiry
- case studies
- conflict/adversary, (debate)
- independent study/contracts
- discussions
- panels/dialogue/forum/symposium/round table
- projects, (group and individual)
- critiques of newspapers, periodicals, and books
- essays/papers/reports
- community-contact activities

Inquiry

In inquiry, the central values are the open mind and autonomous probing of the learner. It proceeds systematically using the steps of the scientific method. It involves the learner actively, teaching skills of critical thinking and motivates the student through the examination of problems and the expression of carefully considered values or opinions. Very importantly, it provides the opportunity for the student to practice the skills required in the discipline of economics.

Briefly, STEPS IN INQUIRY are:

1. recognizing the problem from the data presented,
2. formulating hypotheses,
3. recognizing logical implications of hypotheses,
4. gathering data,
5. analyzing, evaluating, and interpreting data,
6. evaluating hypotheses in light of data, modifying if needed, and
7. stating a generalization.

Using inquiry as a teaching strategy attempts to build, in the student, skills in delimiting a problem and stating an hypothesis; skills in collecting evidence; and, skills in analyzing and synthesizing evidence. Also, it attempts to build skills in critical thinking, value analysis, and social interaction. A more detailed description can be found in Social Sciences: An Overview.

EVALUATION

Evaluation in Economics 30 should be viewed as a means of measuring changes in attitudes, skills, and understandings of students; and, as a means of improving one's personal teaching program. Importantly, it should reflect the acquisition by the student of value clarification and decision-making skills.

Because Economics 30 has an issues orientation, it does not lend itself easily to external examination. This places the onus on the teacher to determine whether or not the student has attained the objectives outlined by the curriculum guide, and those set by the teacher.

The teacher may wish to refer to Social Sciences: An Overview, pages 32-34 for a discussion of evaluation.

Since the teacher will most likely have an emphasis on inquiry/discovery strategies, evaluation will pose a special problem. A means is required for evaluating essays, reports, projects and the process and products of inquiry. As an aid to the teacher, it may be useful to use the approach suggested in the following pages.

This system attempts to identify thinking skills that are expected of students. A scale is used that ranges from level one, which is simple recall, to level five, which demands creative problem-solving.

Use is made of the Taxonomy of Educational Objectives, Handbook I: Cognitive Domain. (Bloom, 1956)

LEVEL ONE: Knowledge

Knowledge is the remembering of previously learned material. All that is required is the bringing to mind of the appropriate information. It ranges from simple facts to complete theories.

1. Techniques to acquire information
   a) library skills (knowing how and where to gather information).
   b) surveying, interviewing and other polling techniques.
   c) skill in listening critically.
   d) skill in use of audio visual materials as a data source.
2. Being able to state the data gathered in your own words, (orally and in writing).

LEVEL TWO: Comprehension

Comprehension is the ability to grasp the meaning of data. This may be shown by translating from one form to another (e.g. numbers to words), by interpreting data (summarizing or explaining), and by estimating future trends (predicting consequences or effects).

1. To be able to summarize the meaning of data gathered.
2. To be able to tell the meaning of visual information (e.g. a graph).
3. To be able to put the meaning of data in visual form (e.g. to summarize statistical material in graph form).

LEVEL THREE: Analysis

Analysis is the ability to break down material into its component parts so organizational structure may be understood. This may include the identification of the parts, analysis of relationships, and recognition of organizational principles.

1. To be able to recognize and define problems.
2. To be able to suggest tentative hypotheses.
3. To be able to distinguish facts from opinions.
4. To be able to distinguish between irrelevant and relevant information.
5. To be able to evaluate the validity, objectivity and authenticity of data in both primary and secondary sources.
6. To be able to identify the most and least important points in a problem or issue.
7. To be able to recognize the technique used in persuasive materials (e.g. advertising or propaganda).
8. To be able to recognize underlying assumptions and motives.
9. To be able to assess whether the data presented is adequate to support a given conclusion.
10. To be aware of cause and effect relationships.
11. To recognize the need for additional information.
12. To be able to continually reassess the hypothesis in light of new information.

LEVEL FOUR: Synthesis

Synthesis is the ability to put parts together to form a new whole. This may involve producing a new theme, plan of operation, or a set of abstract relations (scheme for classifying information).

1. To be able to formulate conclusions and apply these to new situations.
2. To be able to produce new or divergent ideas that will serve as an adequate conclusion.
3. To be able to produce a plan or scheme for the new situation.
4. To be able to draw inductive generalizations from the specifics.

LEVEL FIVE: Evaluation

Evaluation is the ability to judge the value of a work for a specific purpose. These must be based on definite criteria.

1. To be able to evaluate the adequacy of the conclusion by the use of an internal criteria (organization), or by the use of an external criteria (relevance to the purpose).
2. To be able to determine other criteria which will be useful in judging a conclusion.

Ways to Use the Scale

One way to use the scale is to provide a series of exercises which are FORMATIVE EVALUATIONS. Here, a student would be presented with a problem and asked to use the "five point scale" to attempt a solution. In small groups the students and teacher would then discuss the successes and shortcomings of the work done. This is repeated as often as deemed necessary. Following this the teacher could assign a SUMMATIVE EVALUATION which is really a final evaluation of the student's knowledge and skills in working with an issue, problem or case study.

Assigning marks using this scale can be done in a number of ways. It may be used in a linear sense. For instance, if the student did little more than restate someone's ideas in his own words, the teacher could assign a "level two" grade. As the student achieved higher levels of intellectual activity, he could earn higher levels on the scale. These levels can be converted to percentage using something like the following:

level one	50-59%
level two	60-69%
level three	70-79%
level four	80-89%
level five	90-100%

Another method is to evaluate a student on each level and add up the marks. For example:

level one	- a possible 10 marks
level two	- a possible 20 marks
level three	- a possible 30 marks
level four	- a possible 30 marks
level five	- a possible 10 marks

Marks can be adjusted to suit the needs and abilities of a particular class. (For more information see the Handbook on Formative and Summative Evaluation of Students Learning. (Bloom, 1971))

Content Issues and Resources

INTRODUCTION

UNIT ONE reviews some basic economic information, concepts and principles that are deemed necessary for an effective treatment of the ECONOMIC ISSUES dealt with in UNITS TWO, THREE AND FOUR. UNIT ONE, with some modification, is essentially a review of Economics 20.

UNITS TWO, THREE and FOUR present the content, issues and resources that may be dealt with by the teacher. It is not possible to cite all the issues and resources pertinent to the content in these units. Also, it is not possible for the teacher to attempt to deal with every issue identified; hence, the teacher must judiciously select from those issues presented and perhaps add other appropriate issues and resources. In time issues will change. Teachers should modify these issues to make them relevant.

UNIT ONE: THE ECONOMIC SETTING

A. The Economic Setting *(Unit One)

Objectives

To give students an overview of the basic economic concepts of scarcity, choice and the marketplace.

Content

The need for every individual and society to make economic choices--what, how, how much, who--due to economic scarcity. The need for an understanding of the marketplace, circular flow, and the Gross National Product.

Understandings

Scarcity; wants; choice; capital goods, consumer goods; market; Gross National Product; producers; consumers; free goods; economic goods; utility and opportunity cost.

B. Production, Specialization and Exchange (Unit Two)

Objectives

To gain an understanding of production, the reasons for specialization in our economy, and the interdependence of people, institutions and regions.

Content

Self-sufficiency, barter; specialization and exchange; factors of production.

Understandings

Specialization; interdependence; exchange; factors of production (land, labor, capital, entrepreneurship); payment for factors (rent, interest, wages, profit); surplus, staple (primary products); barter; private property; and public property.

C. Business Organization (Unit Three--optional)

Objectives

To assist students to gain an understanding of the organization, the operation and the problems of business institutions.

*Units identified in parentheses refer to those in Economics 20.

Content

Need for organization; types of organization; advantages and disadvantages of each type; selecting the appropriate organization; government and business.

Understandings

Types of business organization (sole proprietorship, partnership, co-operative, corporation).

D. Labor Organization (Unit Four--optional)

Objectives

To give the student an understanding of the process of collective bargaining and the role unions play in the economy.

Content

Unions; collective bargaining; conciliation; mediation and arbitration; union tools; business tools.

E. The Role of the Market (Unit Five)

Objectives

To provide the student with an understanding of the role of the market in the determination of prices and quantities.

Content

Market; price determination; price indexing; advertising.

Understandings

Market; price; supply; demand; consumer price index; and profit.

F. Money and Banking (Unit Six)

Objectives

To provide students with an understanding and appreciation of the role of money and financial institutions in the Canadian economy.

Content

Money and near-money; banks and near-banks; banking system; money supply; and, control of the money supply by the Bank of Canada.

Understandings

Banks; inflation and deflation; credit; currency; financial institutions; money; money supply; capital; cash flow; cash reserve; deposits; and savings.

G. Personal Finance (Unit Seven--optional)

Objectives

To give students an understanding of the nature of a well-thought-out savings and investment plan.

Content

Investment planning--short-term and long-term investments; the stock exchange; and insurance.

Understandings

Risk; short-term investments; long-term investments; stock exchange; liquidity and capital gain.

H. International Trade (Unit Eight)

Objectives

To assist students in acquiring an appreciation of the role and importance of international trade in the Canadian economy. To provide an understanding of the nature of barriers to trade.

Content

Comparative advantage; foreign lending; Canada's trade pattern; balance of international payments; imports and exports; exchange rate; International Monetary Fund; stabilization of Canadian dollar; trade barriers--pros and cons; international co-operation to reduce trade barriers; foreign investment.

Understandings

Foreign trade; comparative advantage; natural advantage; absolute advantage; balance of payments; protectionism; foreign investment; imports and exports--visible and invisible; tarrifs; and foreign exchange.

I. Role of Government in the Canadian Economy (Unit Nine)

Objectives

To give students an understanding of the role of government in the economy.

Content

Rationale for the involvement of government in the economy; public finance-revenue and expenditure; government regulation; fiscal policy; income maintenance; consumer protection.

Understandings

Government revenue; government expenditures; taxation; income redistribution; government regulation; business cycle; monetary policy; and fiscal policy.

J. Comparative Economic Systems (optional)

Objectives

To give students an understanding and appreciation of our own and alternative economic systems.

Content

The need for an economic system; common economic systems--free enterprise; socialism; communism; fascism; and mixed enterprise.

Understandings

Capitalism; communism; private (or free) enterprise; socialism; and mixed economy (or mixed enterprise).

UNIT TWO: THE ECONOMY OF SASKATCHEWAN

A. Overview of the Saskatchewan Economy

Note: Sections 1, 2, and 3 should be dealt with very briefly.

1. Historical Development

a) Indians and Fur Trade
b) Railways
c) Land Settlement
d) Scientific Agriculture
e) Depression
f) Developments to Present - Diversification

Resources:
Richards and Fung, ATLAS OF SASKATCHEWAN, pp. 16-17 (reading); pp. 6-12 (map study); p. 131 (reading).
Saskatchewan Transparencies.
Rump and Harper, LAND USE IN SASKATCHEWAN.
EXPANDING SASKATCHEWAN'S ECONOMY.
THE LAND--OUR FOUNDATION.

2. Physical Geography

a) Climatic Regions
b) Natural Vegetation
c) Zonal Soils

Resources:
Richards and Fung, ATLAS OF SASKATCHEWAN, p. 4 (map study); p. 155 (reading); p. 153 (map study); pp. 172-173 (reading); p. 96 (reading); pp. 92-93 (map study); p. 142 (reading); p. 138-139 (map study); p. 174 (reading); pp. 18-22 (map study).
SASKATCHEWAN ECONOMIC REVIEW.

3. Demography

a) Population Distribution
   i) Growth
   ii) Density
   iii) Rural-Urban Shift
   iv) Age, Distribution and Labor Force Participation
   v) Incomes and Education Characteristics
b) Population Movement
   i) Changing Community Patterns
   ii) Rural-Urban Migration
   iii) Provincial in- and out-migration

Resources:
Richards and Fung, ATLAS OF SASKATCHEWAN, p. 38 (reading); pp. 28-37 (map study).

Scharf, A REPORT ON THE DECLINING RURAL POPULATION AND THE IMPLICATIONS FOR RURAL EDUCATION.
Archer, REPORT OF THE RURAL DEVELOPMENT ADVISORY GROUP.
COMMUNITY PROFILES.

B. Agriculture in Saskatchewan

1. The Prairie Wheat Farm

a) The Farm
b) Climate and Soil
c) Crop Hazards
d) Choosing Crops and Varieties
e) Seeding
f) Harvesting
g) Equipment

2. Farm Size and Management

a) Factors of Production
   i) Land--price, interest, payments, rent, productivity, utilization
   ii) Labor--availability, quality, costs
   iii) Capital--cost, availability
   iv) Entrepreneurship and Management
b) Factor Combinations
   i) Nature of Unit--e.g. grain, mixed
   ii) Availability and Cost of Factors to Achieve Maximum Revenue/Expense Possibility

Issues:

1. What is a viable economic unit for various types of farming/ranching? (e.g. grain, mixed, specialized).
2. Should there be a Land Bank?
3. Should government restrict land speculation?
4. What problems do the increasing complexities of modern farming pose?
5. Should the government provide direction as to the kinds of crops and/or products that should be produced?
6. Should there be restrictions on alternative uses of rural land?
7. Should urban communities be prohibited from annexing prime farm land?
8. Should there be a freeze on land clearing?
9. Is irrigation a viable agricultural technique in Saskatchewan?
10. Should the government be involved in ensuring a stable and adequate farm labor supply?

Resources:

The Western Producer, PRAIRIE FARM POLICY GUIDE 1977-1978.
Newton and Richards, SASKATCHEWAN: SAMPLE STUDIES.
UNDERSTANDING CANADIAN AGRICULTURE.

For recent publications on Saskatchewan agriculture see your local agricultural representative.

3. Farm Ownership

a) Type
   i) Sole Proprietorship
   ii) Partnership
   iii) Corporation
   iv) Co-operative
   v) Communal
b) Renting/Ownership
   i) Combining Ownership and Renting
   ii) Renting Only--Private/Land Bank
   iii) Lease to Purchase
c) Absentee Ownership
   i) Domestic
   ii) Foreign

Issues:
1. What are the advantages and disadvantages of farm incorporation?
2. What are the advantages and disadvantages of co-operative farms?
3. Is the lease/purchase arrangement an answer to depopulation?
4. Should there be restriction on out-of-province land ownership by Canadians?
5. Should foreign ownership of land be restricted/prohibited?
6. Does the Land Bank serve a useful purpose?
7. Is renting a viable alternative to ownership of land?

Resources:
Canada. Department of Agriculture, FARMING IN CANADA.
CO-OPERATION AND CO-OPERATIVE RESOURCE MATERIAL FOR STUDENTS AND TEACHERS IN DIVISION IV ECONOMICS.
Rump and Harper, LAND USE IN SASKATCHEWAN.
For recent publications on Saskatchewan agriculture see your local agricultural representative.

4. Grain Marketing

a) Market Demand/Supply
b) Marketing Channels
   i) Grains: Wheat Board; Canada Grains Council: Pools; Tariffs; and the International Grains Agreement
   ii) Other Commodities: Marketing Boards; Free Markets
c) Transportation
   i) Rail Line Abandonment
   ii) Rates
   iii) Inland Terminals

Issues:
1. Are agriculture marketing controls too extensive?
2. Should the free market system apply to all agriculture products?

3. Is the Canadian Wheat Board the best mechanism for the sale of all grain crops?
4. Should the production of farm products be regulated or left to the free market?
5. Should we examine our product quality policies? (e.g. hard spring wheat vs. low grade wheat; low grade cereals for cattle fodder).
6. Does rail line abandonment make economic sense?
7. Are present transportation (shipping), rates defensible?
8. Are present grain handling facilities adequate?
9. Are there reasonable alternatives to rail transportation?
10. Are there advantages to Inland Terminals? Do the disadvantages outweigh the advantages?

Resources:
Canada. Department of Agriculture, FARMING IN CANADA.
Ruggeri, THE CANADIAN ECONOMY: PROBLEMS AND POLICIES.
Trimble, UNDERSTANDING THE CANADIAN ECONOMY.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS.
The Western Producer, PRAIRIE FARM POLICY GUIDE 1977-1978.
Canada. Privy Council, GRAIN AND RAIL IN WESTERN CANADA--THE REPORT OF THE GRAIN HANDLING AND TRANSPORTATION COMMISSION - (Hall Commission Report).

5. Government and Agriculture

a) Production--Restriction and Resource Allocation
b) Incentives/Subsidies
c) Stabilization
d) Family Farm and Rural Depopulation
e) Experimentation/Research/Services

Issues:
1. Are acreage allotments and/or quotas satisfactory methods for controlling production of crops where a surplus exists?
2. Are programs to restrict production, such as "Lift" desirable?
3. Is subsidization a reasonable method for levelling out fluctuation in agricultural income?
4. Is the "two-price" system desirable?
5. Are present measures taken/proposed adequate to maintain the family farm and prevent rural depopulation?
6. Is the amount being spent on experimentation and research adequate?
7. Should farmers bear more of the cost of services provided by government?
8. Are such acts as the Farm Credit and Farm Improvement Loans Acts defensible?
9. Should immediate and stringent anti-pollution laws be imposed as they relate to agriculture?

Resources:
Ruggeri, THE CANADIAN ECONOMY: PROBLEMS AND POLICIES.
Trimble, UNDERSTANDING THE CANADIAN ECONOMY.

Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS.
The Western Producer, PRAIRIE FARM POLICY GUIDE 1977-1978.

C. Forestry in Saskatchewan

1. Forest Resources

a) Main Species of Merchantable Timber
b) Wood Volume
c) Importance to Provincial Economy

2. Forest Inventory

Issues:
1. Are adequate measures being taken to ensure that our forest resources are maintained?
2. Should all forest resources be government owned and operated?

Resources:
Richards and Fung, ATLAS OF SASKATCHEWAN.
SASKATCHEWAN ECONOMIC REVIEW.
Mathias, FORCED GROWTH: FIVE STUDIES OF GOVERNMENT INVOLVEMENT IN THE DEVELOPMENT OF CANADA.
FOREST CONSERVATION IN SASKATCHEWAN.
Canada. Statistics Canada, CANADA YEAR BOOK.

D. Mineral Resources in Saskatchewan

1. Fossil Fuels, Pipelines

2. Minerals

a) Potash
b) Uranium
c) Coal
d) Others

Issues:
1. Does government potash takeover make economic sense?
2. What are the future prospects of the coal industry in Saskatchewan?
3. Should Saskatchewan develop its uranium resources?
4. To what extent should government take the initiative in oil exploration and heavy oil development?
5. Should Saskatchewan be exploring the use of nuclear energy as opposed to fossil fuels for electric power generation?
6. Should the Poplar River Power Project be expanded?
7. Should the coal companies of Southern Saskatchewan be compelled to reclaim the land after strip mining?

Resources:
Richards and Fung, ATLAS OF SASKATCHEWAN, p. 4 (map study); p. 155 (reading); p. 153 (map study); pp. 172-173 (reading); p. 96 (reading); pp. 92-93 (map study); p. 142 (reading); p. 138-139 (map study); p. 174 (reading); pp. 18-22 (map study).
SASKATCHEWAN ECONOMIC REVIEW.
COMMUNITY PROFILES.
FOREST CONSERVATION IN SASKATCHEWAN.
POTASH: CHALLENGE FOR DEVELOPMENT, pp. 15, 29-31, 34-38, 50-57.
New Wealth Found Below the Prairies (Appendix E).
Potash Mines in Saskatchewan (Appendix F).
Newton and Richards, SASKATCHEWAN: SAMPLE STUDIES.
Contact Eldorado Nuclear Offices in Saskatoon for information on nuclear energy.
Canada. Privy Council, GRAIN AND RAIL IN WESTERN CANADA--THE REPORT OF THE GRAIN HANDLING AND TRANSPORTATION COMMISSION - (Hall Commission Report).

E. Transportation in Saskatchewan

1. Railways

2. Roads

3. Air

4. Pipelines

Issues:
1. Is our road system an undue burden on the taxpayer?
2. To what extent are paved roads and double-laning feasible in Saskatchewan?
3. Should increased support be given to Saskatchewan railway systems?
4. Can we reasonably expect air service, passenger and freight, connecting Saskatchewan cities?
5. Considering Saskatchewan distances, is pipelining a viable alternative?
6. Are the costs of trucking on roads reasonable?

Resources:
Canada. Privy Council, GRAIN AND RAIL IN WESTERN CANADA--THE REPORT OF THE GRAIN HANDLING AND TRANSPORTATION COMMISSION - (Hall Commission Report).
Richards and Fung, ATLAS OF SASKATCHEWAN.

F. Industry in Saskatchewan

1. Business and Society

2. Development of Manufacturing

a) Manufacturing in Saskatchewan

b) Location of Industries
c) Service Industries
d) Future Growth

Issues:
1. Should Saskatchewan become more of a manufacturing province?
2. How can government encourage private manufacturing development in Saskatchewan?
3. Are Saskatchewan's manpower training policies adequate?

Resources:
SASKATCHEWAN ECONOMIC REVIEW.
COMMUNITY PROFILES.
AN INDUSTRIAL DEVELOPMENT STRATEGY FOR SASKATCHEWAN.
Mathias, FORCED GROWTH: FIVE STUDIES OF GOVERNMENT INVOLVEMENT IN THE DEVELOPMENT OF CANADA.
SASKATCHEWAN MANUFACTURERS' GUIDE.
PEOPLE AT WORK IN SMALL TOWNS IN SASKATCHEWAN.

G. Government and the Economy

Note: An alternative approach would be for the teacher to treat federal and provincial roles in the economy as one major issue; i.e., combine 2G, 3C, and 3D.

1. Budgetary Policies and Financial Management

a) Revenue Sources
b) Expenditures
c) Budget
d) Government Spending Controls

2. Government Services and Crown Corporations

3. Provincial Regulation of the Economy

Issues:
1. Is it reasonable to suggest that government spending be a fixed percentage of the gross provincial product?
2. Are there alternative sources of government revenue?
3. Is zero based budgeting viable?
4. Are government spending controls adequate?

Resources:
SASKATCHEWAN ECONOMIC REVIEW.
Preparing Provincial Budget Year Round Task (Appendix G).
Two Watch-Dogs Stand Over Opposite Poles (Appendix H).

H. Economic Growth

Issues:
Of the options open to the people in Saskatchewan to promote growth, which should be chosen?

UNIT THREE: THE ECONOMY OF CANADA

A. Overview of the Canadian Economy

Note: Sections 1, 2, and 3 should be dealt with very briefly.

1. Historical Development

   a) Fish and Fur to Machines and Computer

2. Economic Geography

   a) Resources--Location
   b) Industry--Location
   c) Population Distribution
   d) Transportation and Communication Systems
   e) Regional Disparities

3. Canada's Economic System

   a) Mixed Enterprise

Resources:

Mitchell and Millard, ECONOMICS A SEARCH FOR PATTERNS, pp. 85-104.
Balins, Sweet and Thomas, MAN'S ECONOMIC WORLD.
Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE, Chapters 4 and 34.
Buckley and Buckley, ECONOMICS FOR CANADIANS, Chapters 3 and 16.
Canada. Statistics Canada, CANADA YEAR BOOK.
Tomkins and Hills, CANADA: A REGIONAL GEOGRAPHY.
CANADIAN STATISTICAL REVIEW.
Harris, QUICK CANADIAN FACTS: THE CANADIAN POCKET ENCYCLOPEDIA.
Clarendon Press, OXFORD REGIONAL ECONOMIC ATLAS: THE UNITED STATES AND CANADA.
Krueger, et al, REGIONAL PATTERNS: DISPARITIES AND DEVELOPMENT.

B. Business and Society

1. Role of Business in the Economy

   a) Economic Responsibility
   b) Social Responsibility

   Issues:

   1. Should the major goal of business be something other than profits?
   2. Is it proper that business waits for laws from government before it does anything about pollution and consumerism?
   3. Should business be allowed to deliberately plan obsolescence?

Resources:
Pal, CANADIAN ECONOMIC ISSUES, pp. 65-72.
Donner, Kliman and Lazar, ISSUES IN CANADIAN ECONOMIC POLICY, Chapter 10.
Taylor, CANADA AND THE WORLD: FOR STUDENTS OF WORLD AFFAIRS.
Mitchell and Millard, ECONOMICS: A SEARCH FOR PATTERNS, Chapters 2 and 4.
Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE, pp. 63-68.
Buckley and Buckley, ECONOMICS FOR CANADIANS, pp. 18-19, 26-27, 202-206, 210-211.
Kent, "Can Multi-Nationals be Loved".
Naylor, THE HISTORY OF CANADIAN BUSINESS.
Peterson, SMALL BUSINESS: BUILDING A BALANCED ECONOMY.

C. Industry

1. Primary, Secondary, Tertiary, Industrial Mix

2. Productivity

3. Concentration of Power

   Forms of Concentration: Holding Companies, Mergers, Cartels, Conglomerates, Multinationals

4. Foreign Ownership

Issues:
1. Do Canadians get the optimum benefit from the present industrial mix?
2. Is Canadian "productivity" lower than American? If so, why?
3. Should there be stricter controls on monopoly and oligopoly?
4. Should restrictions be placed on corporate growth?
5. Should small businesses be protected?
6. Is The Competition Act adequate?
7. Should the operations of multinational corporations in Canada be limited? If so, how?
8. Should the government insist on more Canadian ownership?
9. Should Canada permit foreign ownership of natural resources? of banking? of broadcasting? others?

Resources:
Mitchell and Millard, ECONOMICS: A SEARCH FOR PATTERNS, pp. 44-46, 71-77, 121-136, 141-145.
Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE, pp. 366-367.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, Chapters 13 and 14.
Ruggeri, THE CANADIAN ECONOMY: PROBLEMS AND POLICIES, Chapters 2, 18 and 21.
UNDERSTANDING PRODUCTIVITY.
Kent, "Can Multi-Nationals be Loved?"
Bower, "The Sociology of Size".

Mitchell, THE POLITICS OF FOOD, pp. 37-45.
Guenther, AMERICAN INVESTMENT: DEVELOPMENT OR DOMINATION.
Levitt, SILENT SURRENDER.
Reid, FOREIGN OWNERSHIP: VILLAIN OR SCAPEGOAT.
ISSUES FOR THE SEVENTIES. AMERICANIZATION.
Laxer, CANADA LTD. POLITICAL ECONOMY OF DEPENDENCY.
Heisey, THE GREAT CANADIAN STAMPEDE.
Peterson, SMALL BUSINESS: BUILDING A BALANCED ECONOMY.

D. Labor and Labor Organization

1. Labor Force

a) Composition
b) Quality
c) Mobility
d) Manpower
e) Immigration and Emigration

Issues:
1. Should entry of youth into the labor force be delayed further?
2. Does increasing female participation in the labor force lead to increasing unemployment?
3. Is present immigration and emigration policy in need of modification?
4. Is government policy as it affects native people's entry into the labor force desirable?
5. Should a university professor be paid more than a plumber?
6. Should public education be more involved in education for entry into the labor force?
7. Have sufficient steps been taken to ensure the ultimate in labor mobility?

Resources:
Williams, THE STORY OF UNIONS IN CANADA.
UNDERSTANDING UNEMPLOYMENT.
Boreham, ECONOMIC THINKING IN A CANADIAN CONTEXT, pp. 382-418.
Pal, CANADIAN ECONOMIC ISSUES, pp. 382-486.
Archer, CANADA'S ECONOMIC PROBLEMS AND POLICIES, Part 12.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, Chapter 10.
Trimble, UNDERSTANDING THE CANADIAN ECONOMY, Chapter 13.
Canada. Statistics Canada, CANADA YEAR BOOK.
Sylvester and Harris, ON STRIKE.
Laxer, CANADA'S UNIONS.

2. Unions and Collective Bargaining

Issues:
1. Should union power be curbed?
2. Is there a desirable alternative to collective bargaining?
3. Should the Federal Government ensure more uniform labor legislation across Canada?
4. Would it be desirable to prohibit the existence of international unions in Canada?

5. Should the right to strike be denied workers in "essential" industries?

Resources:
See those cited under the previous heading.
Ruggeri, THE CANADIAN ECONOMY: PROBLEMS AND POLICIES, Chapter 17.

E. Government and the Economy

1. Unemployment

a) Measurement
b) History of Unemployment in Canada
c) Job Creation--Government Policies
d) Unemployment Insurance

Issues:
1. Does Statistics Canada's rate of unemployment accurately reflect the number of jobless in Canada?
2. What is an "acceptable" level of unemployment in various regions in Canada?
3. What monetary and fiscal policies are appropriate for reducing the rate of unemployment?
4. What job creation schemes are desirable? practical?
5. Does DREE create jobs?
6. Is Canada's unemployment scheme insurance or welfare?

Resources:
UNDERSTANDING UNEMPLOYMENT.
Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE, Chapters 2, 4, 5 and 6.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, pp. 60-62, Chapter 6.
Krueger, et al, REGIONAL PATTERNS: DISPARITIES AND DEVELOPMENT.

2. Inflation

a) Definition--Theories of Inflation
b) Money Supply
c) Government Policy

Issues:
1. Which of the following theories of inflation (Quantity, Aggregate Demand, Cost-Push) most accurately describe the causes of today's inflation?
2. What is an acceptable level of inflation in Canada?
3. What monetary and fiscal policies are appropriate for reducing the rate of inflation?
4. Assuming economic growth is desirable, is it possible without inflation?
5. Are wage and price controls a solution to inflation or part of the problem?

6. What influence does the size of the money supply have on the rate of inflation?
7. Is the so-called "inflation psychology" a significant factor?
8. Is inflation imported?

Resources:
UNDERSTANDING INFLATION.
Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE, Chapters 8, 9, 26, 27, 28 and 29.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, pp. 62-64, Chapter 6.

3. Monetary and Fiscal Balance

a) Inflation--Employment Trade-Off
b) Time Lags
c) Equity
d) Levels of Government Spending
e) Public Debt

Issues:
1. What mix of government monetary and fiscal policies can cope with unemployment without fanning the flames of inflation? and vice versa?
2. In combatting unemployment and inflation, is it possible to be fair to all income groups? to all religions of Canada?
3. Is government spending necessarily inflationary?
4. Is public debt inflationary? Is the public debt too large?
5. In implementing monetary and fiscal policies, the government is involved in a guessing game. Is it possible to design policies that are not outdated before they have an effect?

Resources:
See those cited under sub-units 1 and 2.
Robinson, PUBLIC FINANCE IN CANADA.
Popkin, GOVERNMENT AND THE ECONOMY--STABILIZATION POLICIES.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, Chapter 6.

4. Federal-Provincial Fiscal Relations

a) Tax Sharing
b) Equalization Payments
c) Federal Funding of Provincial Programs
d) Resource Taxation--Royalties

Issues:
1. How much decentralization is possible without destroying the federal government's ability to combat inflation and unemployment?
2. What mix of taxing powers is appropriate (federal, provincial, municipal)?
3. Should provincial governments have absolute control over resource taxation?

4. What price federalism? How much should wealthier provinces share with the less wealthy?

Resources:
Canada. Statistics Canada, CANADA YEAR BOOK.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, pp. 246-249.
Current Sources (magazines and newspapers).

5. Direct Government Intervention

a) Nationalization
b) Crown Corporations
c) Joint Ventures
d) Regulatory Agencies
e) The Competition Act

Issues:
1. Should more "key firms" be taken over by government?
2. Should government divest itself of Petro-Can, Polysar, CN?
3. How much control ought government agencies to exert over resource based industries? e.g., National Energy Board, Canadian Wheat Board, Marketing Agencies.
4. Is The Competition Act adequate?

Resources:
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, Chapter 14.
MARKETING BOARDS.

6. Government and the Economy--How Much?

Issue:
What should be the extent of government's control over and participation in the economy of Canada?

Resource:
GOVERNMENT AND THE ECONOMY--HOW MUCH?

F. Economic Growth

1. History, Rate and Nature

a) Nature of Growth
b) Past, Present and Future
c) Optimum Rate
d) Growth and
   i) Population
   ii) Regional Considerations
   iii) Separatism
   iv) Economic Nationalism
   v) Income Distribution
   vi) Automation

Issues:
1. Is economic growth desirable?
2. Should the benefits of growth be more equitably distributed among Canadians?
3. Why has Japan's growth rate exceeded that of Canada?
4. Is it reasonable to assume that the standard of living of Canadians will continue to improve?
5. What is the optimum rate of economic growth for Canada?
6. Why has Canada's standard of living declined from second to fourteenth place?

Resources:
Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE, Part G.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, Chapters 7 and 16.
Ruggeri, THE CANADIAN ECONOMY: PROBLEMS AND POLICIES, Chapters 9, 10 and 21.
Pal, CANADIAN ECONOMIC ISSUES, Part I.
Archer, CANADA'S ECONOMIC PROBLEMS AND POLICIES, Chapter 3.

G. The Economic Implications of Social Policies

Note: Teachers will select from the following as time and interest permit.

1. Poverty
2. Pollution and Ecology
3. Consumerism
4. Health
5. Welfare
6. Housing
7. Resource Use
8. Separatism (and Bilingualism)
9. Native Peoples
10. Income Distribution
11. Energy
12. Regional Disparities
13. Other

Issues:
1. Should the size of cities be regulated? Is there an optimum size?

2. What are the economic implications of pollution abatement?
3. Consumers--are they sovereigns or pawns?
4. Should pensions be indexed?
5. Can we afford the escalating costs of medical care?
6. Should Canada have a national energy policy?
7. Are the housing aspirations of Canadians realistic?
8. Is the national policy on water resources adequate?
9. Is the 200-mile fishing limit reasonable?
10. What price bilingualism? separatism?
11. What price is Canada prepared to pay to settle native land claims?
12. Is a guaranteed annual income plan feasible?
13. Is the negative income tax economically feasible?
14. Being born poor helps to ensure that one will remain poor: being born rich helps to ensure that one will be rich. Does this make economic sense?
15. Are the Atlantic provinces forever destined to be Canada's poor cousins?

Resources:

Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE.
Mitchell and Millard, ECONOMICS: A SEARCH FOR PATTERNS.
ISSUES FOR THE SEVENTIES. AMERICANIZATION.
ISSUES FOR THE SEVENTIES. POVERTY.
ISSUES FOR THE SEVENTIES. REGIONAL DISPARITIES.
Pal, CANADIAN ECONOMIC ISSUES.
Archer, CANADA'S ECONOMIC PROBLEMS AND POLICIES.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS.
Trimble, UNDERSTANDING THE CANADIAN ECONOMY.
Reid, CONTEMPORARY CANADA: READINGS IN ECONOMICS.
Riddell, REGIONAL DISPARITY.
Reid, CANADA'S POOR: ARE THEY ALWAYS TO BE WITH US.
SHAPING CANADA'S ENVIRONMENT SERIES.
Consumer Economics Texts. (See Economics 20 & 30 Bibliography)
Aaker, CONSUMERISM: SEARCH FOR THE CONSUMER INTEREST.
Packard, WASTE MAKERS.
Roseman, CONSUMER BEWARE!
Stewart, HARD TO SWALLOW.
Blythe, THE CANADIAN SOCIAL INHERITANCE.
Scott, NATURAL RESOURCES: THE ECONOMICS OF CONSERVATION.
WATER SUPPLY FOR THE SASKATCHEWAN-NELSON BASIN.
Rowland, FUELLING CANADA'S FUTURE.
MacDonald, THE WORLD OF ECONOMICS.
Canada. Statistics Canada, CANADA YEAR BOOK.
Hockin, CANADIAN CONDOMINIMUM.
Chant, CANADIAN PERSPECTIVES IN ECONOMICS.
Harris, QUICK CANADIAN FACTS: THE CANADIAN POCKET ENCYCLOPEDIA.
Pratt, THE TAR SANDS: SYNCRUDE AND THE POLITICS OF OIL.

UNIT FOUR: THE INTERNATIONAL ECONOMY AND CANADA

A. Reasons for and Nature of Canadian Trade

1. Reasons for Trade
   - Absolute, Comparative and Natural Advantage

2. Nature of Canadian Trade
   - Patterns of Visible and Invisible Imports and Exports

3. Balance of Payments

Issues:

1. Is Canada pricing itself out of world markets?
2. Is it desirable for Canada to increase her volume of trade? If so, how?
3. Is Canada too vulnerable to American economic retaliation to be able to afford an independent trade policy?
4. Should Canada pursue bilateral trade agreements with selected nations?
5. Should the Canadian dollar be pegged relative to the Amercian dollar?
6. Must Canada always have a favorable balance of trade?
7. Should limits be placed on Canadian spending abroad? E.g., holiday spending, maintaining residences abroad, Swiss bank accounts, investments.

Resources:

Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE, Chapters 22, 24 and 25.
Mitchell and Millard, ECONOMICS: A SEARCH FOR PATTERNS, Chapter 3.
Buckley and Buckley, ECONOMICS FOR CANADIANS, Chapter 15.
Canada. Statistics Canada, CANADA YEAR BOOK.
MacDonald, THE WORLD OF ECONOMICS, Chapters 33 and 34.
Steinberg, BASIC ECONOMICS, Chapter 8.
Donner, ISSUES IN CANADIAN ECONOMIC POLICY, pp. 24-35.
Ruggeri, THE CANADIAN ECONOMY: PROBLEMS AND POLICIES, Part 4.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, Chapter 12.

B. Trade Barriers

1. Types of Barriers to Trade

   a) Tariffs
   b) Import and Export Quotas
   c) Foreign Exchange Controls
   d) Political Persuasion
   e) Dumping
   f) Embargoes
   g) Boycotts
   h) Corporation Pressure

2. The Pros and Cons of Restricting Trade

3. Canadian Tariff Policy

Issues:
1. What are the significant barriers to increasing Canadian trade?
2. Should certain Canadian industries be protected from foreign competition? Which ones?
3. If Quebec separates, should the rest of Canada agree to economic association?
4. Are there certain goods now produced in Canada that should not be produced here?
5. Should we restrict the export of unprocessed raw materials in order to encourage secondary industry in Canada?
6. Should Canada limit the import of commodities which compete directly with Canadian primary producers?
7. Does Canadian tariff policy inhibit the creation of secondary industry in Western Canada?

Resources:
Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE, pp. 354-357.
MacDonald, THE WORLD OF ECONOMICS, pp. 394-400.
Buckley and Buckley, ECONOMICS FOR CANADIANS, p. 185.
Bellan, PRINCIPLES OF ECONOMICS AND THE CANADIAN ECONOMY, Chapter 17.

C. Trade Agreements

1. Types of Agreements

   a) Bilateral
   b) Multilateral (E.g. ECM and GATT)
   c) Producer Cartel (E.g. OPEC and IWA)

2. Canadian Trade Policy

Issues:
1. Should we abandon preferential trade agreements?
2. Should Canadians support complete free trade?
3. Should Canada stockpile non-renewable and/or strategic resources?
4. Should Canada make special trading arrangements with OPEC nations? (E.g. food and industrial equipment for oil.)
5. "International trade may prove preferable to inter-regional trade within a large country." Should Canada pursue such a policy? (E.g. gas, oil, coal, feed grains.)
6. Will trade agreements inevitably result in the exporting of unemployment from one nation to another? (E.g. the requirement that semi-finished products be exported as a means of encouraging employment.)
7. Should Canada participate in a North American common market?

Resources:
Pal, CANADIAN ECONOMIC ISSUES, pp. 556-558, 487-494.

Mitchell and Millard, ECONOMICS: A SEARCH FOR PATTERNS, pp. 213, 216, 223.
MacDonald, THE WORLD OF ECONOMICS, pp. 396-399.
Ruggeri, THE CANADIAN ECONOMY: PROBLEMS AND POLICIES, pp. 311-319.

D. International Concerns

1. International Aid

2. International Investment

3. Other

Issues:
1. Should the Canadian government allow foreign investment by Canadians?
2. In periods of high unemployment, can Canada afford the "luxury" of foreign aid?
3. Should Canada continue her commitment to such agencies as CUSO and CIDA?
4. Is the inevitable price of self-sufficiency a lower standard of living?
5. Does Canadian international aid benefit only Canadian industry?

Resources:
Swan and Kaluza, ECONOMICS: A CANADIAN PERSPECTIVE, pp. 446-447.
Reid, CONTEMPORARY READINGS IN ECONOMICS, Sections 12, 13 and 14.
Donner, ISSUES IN CANADIAN ECONOMIC POLICY, pp. 78-80.
Taylor, CANADA AND THE WORLD: FOR STUDENTS OF WORLD AFFAIRS.
Ruggeri, THE CANADIAN ECONOMY: PROBLEMS AND POLICIES, pp. 336-355.
Clark, CANADIAN ISSUES AND ALTERNATIVES, pp. 124-150.
Pal, CANADIAN ECONOMIC ISSUES.
UNDERSTANDING CANADA'S INTERNATIONAL TRADE POLICY.
Armstrong, THE CANADIAN ECONOMY AND ITS PROBLEMS, p. 268.
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AIS — Atlas Information Service,
230 Park Avenue,
NEW YORK, New York. 10017
U.S.A.

BBD — Belford Book Distributing Co.,
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TORONTO, Ontario.
M4M 2J4

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1330 Winnipeg Street,
REGINA, Saskatchewan.
S4R 1J8

BUT — Butterworth and Co. (Canada) Ltd.,
2265 Midland Avenue,
SCARBOROUGH, Ontario.
M1P 2S1

CCP — Copp Clark Publishing,
517 Wellington Street West,
TORONTO, Ontario.
M4V 1G1

CFEE — The Canadian Foundation for Economic Education,
155 University Avenue,
TORONTO, Ontario.
M5H 3B7

CI — Clark, Irwin & Company Limited,
Clarwin House,
791 St. Clair Avenue West,
TORONTO, Ontario.
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CMC — Collier-Macmillan Canada Ltd.,
539 Collier-Macmillan Drive,
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DEN — J. M. Dent and Sons (Canada) Ltd.,
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DON MILLS, Ontario.
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F&W — Fitzhenry & Whiteside Ltd.,
150 Lesmill Road,
DON MILLS, Ontario.
M3B 2T5

GA — Gage Publishing Limited,
164 Commander Boulevard,
AGINCOURT, Ontario.
M1S 3C7

GH — Griffin House,
461 King Street West,
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M5V 1K7

HRW — Holt, Rinehart and Winston of Canada Ltd.,
55 Horner Avenue,
TORONTO, Ontario.
M8Z 4X6

HUR — Hurtig Publishers,
10560 - 105th Street,
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MAC — Macmillan Company of Canada Ltd.,
70 Bond Street,
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M5B 1X3

MEP — Methuen Publications,
2330 Midland Avenue,
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MHR — McGraw-Hill Ryerson Limited,
330 Progress Avenue,
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M&S — McClelland & Stewart,
25 Hollinger Road,
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299 Yorkland Boulevard,
WILLOWDALE, Ontario.
M2J 1S9

NP — New Press,
30 Lesmill Road,
DON MILLS, Ontario.
M3B 2T6

OIS Ontario Institute for Studies in Education,
252 Bloor Street West,
TORONTO, Ontario.
M5S 1V6

OUP Oxford University Press,
70 Wynford Drive,
DON MILLS, Ontario.
M3C 1J9

P-H Prentice-Hall of Canada Ltd.,
1870 Birchmount Road,
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PC Publishing Centre,
Supply and Services Canada,
270 Albert Street,
OTTAWA, Ontario.
K1A 0S9

PP Press Porcépic Ltd.,
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ERIN, Ontario.
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QCF Quick Canadian Facts Ltd.,
P.O. Box 99,
Postal Station M,
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SASK-MEDIA SaskMedia Corporation,
1112 Winnnipeg Street,
REGINA, Saskatchewan.
S4P 1J6

SBS Saskatchewan Bureau of Statistics,
Executive Council,
Legislative Building,
REGINA, Saskatchewan.
S4S 0B3

SDCCD Saskatchewan Department of Co-operation and Co-operative Development,
Communication and Development Branch,
2055 Albert Street,
P.O. Box 7121,
REGINA, Saskatchewan.
S4P 3V7

SDE Saskatchewan Department of the Environment,
1855 Victoria Avenue,
REGINA, Saskatchewan.
S4P 3V5

SDIC Saskatchewan Department of Industry and Commerce,
Saskatchewan Power Building,
REGINA, Saskatchewan.
S4P 3V7

SDMA Saskatchewan Department of Municipal Affairs,
1791 Rose Street,
REGINA, Saskatchewan.
S4P 3V7

SDMR Saskatchewan Department of Mineral Resources,
TD Bank Building,
1914 Hamilton Street,
REGINA, Saskatchewan.
S4P 4V4

SDTRR Saskatchewan Department of Tourism and Renewable Resources,
1825 Lorne Street,
REGINA, Saskatchewan.
S4P 3V7

SSTA Saskatchewan School Trustees Association,
790 Avord Tower,
REGINA, Saskatchewan.
S4P 0R1

WPB Western Producer Prairie Books,
P.O. Box 2500,
SASKATOON, Saskatchewan.
S7K 2C4

Appendices

CHECKLIST FOR PROBLEM SOLVING

GROUP (INDIVIDUAL) _____

A. THE PROBLEM IS: _____

_____

B. THE CAUSES OF THE PROBLEM ARE:

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

C. THE POSSIBLE SOLUTIONS AND THEIR CONSEQUENCES ARE:

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

D. THE BEST POSSIBLE SOLUTION (AND WHY) IS:

_____

_____

_____

_____

_____

APPENDIX B

CHANGING COMMUNITY PATTERNS IN SASKATCHEWAN[1]

"Humanity is passing through an age of tumult and upheaval. Nowhere is this felt more acutely than among those engaged in agriculture." This statement was made a few years ago by a Saskatchewan farm housewife. She was directing attention to a transformation going on behind the clamour of Canada's industrial and urban expansion. To understand what she had in mind, one could visit almost any Saskatchewan rural community. Talk to old John Jones who broke trail from Ontario in 1900. Call on young Ted who is trying to make a start in farming. Look in on Jake Simmon at the village general store. Question Bill Miner who has become a town farmer. Each of them will tell you in his own way that trends are emerging to work fundamental changes in agriculture and rural life. Because Saskatchewan agriculture is so well adapted to modern farm technology, what they have to say will eventually apply in varying degree to all of Canada's rural areas.

Development as an Agricultural Economy

While the province's history extends back over the centuries, its development as an agricultural economy has been brief and rapid. The period of peak settlement (1897-1920) is well within the memory of many living pioneers. By the late 1930's, immigration had dropped to a trickle of the former flow. The first three decades established a pattern just before the outlines of modern prairie agriculture were becoming apparent. The Homestead Act encouraged farmers to occupy small quarter-section and half-section farm units. It also required settlers to reside on their land. The "team haul" made necessary the location of villages and towns at regular six-to-seven-mile intervals along the railroad. Early optimism about the productivity of the land and population concentrations prompted the establishment of one-roomed country schools, country churches, stores and post offices. These, in turn, became the centres of social neighbourhoods where farm families could find relief from the trials of a pioneer existence.

The tractor and related mechanical equipment appeared in the province during the early decades of the twentieth century. While the stage was set for full mechanization by the late Twenties, the depression intervened and blocked any persistent trend. The Second World War both limited and stimulated the mechanization process. The shortage of steel for agricultural implements restricted available supply. The mobilization effort reduced available farm labour and encouraged the economies of machine operation. In the late Forties the first major breakthrough began and equipment flowed out to Saskatchewan farms in increasing volume. In 1946 Saskatchewan farmers purchased just over $24,000,000 worth of new machinery; by 1953 they were investing just under one

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[1] W. B. Baker. "Changing Community Patterns in Saskatchewan", CANADIAN GEOGRAPHICAL JOURNAL. Vol. 56, February 1958, pp. 44-56. Used with permission of The Royal Canadian Geographical Society.

billion dollars. Since then the slump in farm income has sharply reduced new investment. During the same period other aspects of farm technology encouraged the emergence of "science conscious" farmers. Improved plant and animal breeding practices, more accurate knowledge of soil productivity, chemical weed control, fertilizers, farm management and a host of other advances were made available to the farmer through the research of government, university and industry.

With the establishment of a major trend toward the application of mechanical and scientific methods to farm production, a subtle transformation started. Today, it is challenging and reforming the pioneer patterns on a broad front. It is this transformation that the housewife had in mind when she made the statement which introduced this article. She was pointing to trends which can now be identified and which invite interpretation. Anyone interested in the probable future pattern of rural Canada will want to have some understanding of its dynamics.

The Small-Family Farm

What, for example, is happening to the small-family farm, long held to be the ideal for a sound rural economy? The blunt answer is that it is on the way out, a victim of modern technological forces. Its place is being taken by the larger, highly mechanized, and commercialized operation. Farming as a way of life is giving way to farming as a business. The rapidity of this change is demonstrated by the disappearance between 1936 and 1956 of almost 50,000 of the pioneer 160-acre and 320-acre farms. For every five of these units there is now in their place one farm 640 acres or larger in size. Extensive capital investments are involved in the operation of the new units. In general the farmers who operate them are able to take advantage of all advances in modern technology. The resulting higher incomes permit living standards comparable to or above those of the average urban dweller. They represent the latest design in "family" farms, for they are not the "factory" farms often imagined. While these farms do tend to employ more farm labour than their smaller counterparts, by and large the chief source of labour remains within the family. Actually, the hired farm labour force in Saskatchewan has shown sharp decreases since the advent of mechanization.

The process of adjusting to farm technology means vastly different things to those who have been unable to take full advantage of the trends. Well over one-half of the 103,000 farms reported for Saskatchewan in 1956 are far removed from the picture book farms so often found in magazines. The situation on these farms is highly complex. More research will be required before their dilemma can be fully assessed. In general they seem to be stalled on the lower rungs of the development ladder. Some of them have been able to obtain credit for mechanical equipment but can obtain no credit for land purchase to fully utilize their equipment investment. Often they find themselves competing for available land, whether for sale or for rent, with larger operators better able to finance. As a result, such farms are often top-heavy with equipment investment; their profit margins narrow or even negative.

While lack of an adequate amount and a proper form of credit seems to be the central difficulty, there are other deep-rooted social and psychological aspects. Operators on these farms are not inclined to make use of farm science; many could not afford to do so even if they were interested. A recent study of small farms indicates a suspicion of credit; yet credit is an essential feature of any modern business. Many such farmers find their social situation satisfying, even though their incomes are inadequate by any economic standard. Frequently the insecurity of leaving the farm for an urban occupation is greater than the insecurity of remaining on the farm. Generally, the children on such farms are not encouraged to complete a high school education. Since they also tend to belong to families larger than the average, sooner or later most of them migrate to the city. When they do, they suffer the consequences of an inadequate education. Further complications develop as the parents find themselves unable to bear the tax burden necessary to finance modern standards of public service.

In a very real sense, the families on small farms represent a group of citizens caught in one of the pressure spots of a rapidly changing society. Many, if not most of them, are subject to forces which they can neither understand nor control. They belong to what might well be a chronically depressed group in modern agriculture. Few agricultural policies are at present in effect which would relieve their situation. Parity prices are assumed by many farm leaders to be the solution. This is difficult to demonstrate in the light of the high production costs and other complex factors associated with such units. A number of studies suggest that up to one-third of these families would migrate out of agriculture if they could afford it or if they could acquire skills which would qualify them for urban occupations. Many of those who are forced to migrate should not leave agriculture, to which they are best adapted by both interest and skill. In such instances, migration represents a distinct loss to the agricultural industry.

Even the farmers who have adjusted to the modern farm technology are still faced with insecurities. The wheat surplus of the past few years has restricted annual income. At the same time, the costs of production have been mounting. Saskatchewan also experiences greater yield variability than any other province in Canada. These three situations continue to make farming a high-risk operation calling for management ability of the highest order. Significantly, almost all of the young men attending the University of Saskatchewan's School of Practical Agriculture come from the modern family farms.

Farm Population

Population dynamics reflect, in part at least, the basic adjustment in farm production. In only one census year since 1901 has there been any increase in the proportion of the total population of Saskatchewan classified as rural-farm. That was in 1936 when urban jobs were not available and the flow of migrants was reversed. Under normal conditions farm regions always produce surplus populations. Declining economic opportunity in farming and attractive employment in urban centres have accentuated this surplus. In 1951, rural farm population in the province for the first time made up less than one-half of the total.

In the past, the chief destination of farm migrants has been the heavily industrialized areas of Ontario and British Columbia. In recent years, Saskatchewan's own industrial and urban development has been absorbing a growing proportion. Indeed, it can be said that much of Canada's present urban industrial growth would have been impossible without drawing upon the rural labour supply. The only other large potential source would be sharply increased immigration from other countries. It would be short-sighted if this were done in the face of necessary reductions in the rural labour force.

The bulk of the rural migrants is in the work-productive age group. Both males and females tend to leave the home community in greatest numbers during their early Twenties. A conservative estimate would be that from sixty to seventy percent of the young people at present born and living on the farm will eventually settle in an urban centre. Few would argue with the need for this transfer if improved opportunities were available for attaining an acceptable standard of living. When those who must move complete a high school or college education, gains are realized both by the migrants and by the economy as a whole.

As with the adjustment in the pioneer farm unit, there is a negative as well as a positive side to the transfer of farm population. Migration is always a highly personal matter. The decision to leave the community in which one has grown up is seldom an easy matter, particularly when the whole family is involved. The donor communities are depleted of population. In many Saskatchewan communities the extensive migration of young people has left a concentration of the very young, the middle-aged and the very old. Rural communities in particular invest heavily in the development of youngsters, only to have them leave when they are ready to contribute to community development. The receiving communities in turn should be concerned about the quality of the migrants. If they are ill-equipped, then a penalty is inflicted on both migrants and community. In a society that literally breeds demand for skilled persons, poorly-educated citizens represent a distinct social cost.

In general it is the low-income areas that have too many people in agriculture in relation to land resources, if desired income levels are to be attained. Farm families in the higher income areas seem more aware of the need or are better able to make an early assessment of economic opportunities and to prepare for alternatives. It may seem strange that surplus youth tends to be most immobile in areas where migration would result in sharp gains for the remaining families. As indicated, freedom of movement out of these areas is restricted by a number of complex factors. In Saskatchewan, only limited alternative employment is available on a part-time basis. For those who remain, increase in size of holdings and efficiency of operation are not readily attained. Inadequate educational preparation further restricts alternatives. Other families are handicapped through age, illness, or debt burdens.

Whatever the future may hold in store for the farm population, it is fairly certain that, barring any major depressions, the movement to urban industrial centres will continue. The trend to mechanized and

commercialized family farms is by no means completed. Urban industrial occupations are liable to continue to be attractive. Despite marked advances in rural levels of living, differences persist for many farm families. If movement of people from rural to urban areas is to continue, we should be more concerned about the quality of both those who migrate and those who remain in agriculture. Every profession in Canada needs well-educated recruits. An increasing number of technological stations must be manned in our expanding economy. A major human resource is at present being neglected in our rural areas. Similarly Canadian agriculture cannot lag behind the rest of the economy; areas in a state of chronic depression despite sincere effort require various forms of assistance to permit potentially competent farm operators to increase their efficiency and to remain on the farm.

The Rural Residence Pattern

Changes in farming operation and urban migration influence the number and closeness of neighbours in the countryside. Pioneer expectations were that fairly dense settlement would prevail. Census data show that this expectation was being realized until the 1930's. Since that time the number of persons per square mile has been decreasing (Figure 1). By 1951, Saskatchewan's population density was less than three in the prairie region and just under five in the park region. This trend has a direct bearing on the rural residence pattern (Figure 2). Not only does density determine the distance separating neighbours, it also determines the cost of bringing expensive public services to farm families; social space has a price tag on it.

Most agricultural peoples of the world live in villages and go out to the fields each day. In Saskatchewan, as in other Great Plains states, an isolated rural residence pattern has prevailed. It would be difficult to imagine many ways in which a more expensive pattern could be designed. Recent trends are making it even more expensive. In most instances, each of the 50,000 quarter-section and half-section farms which have disappeared represented a farmstead. In many Saskatchewan districts this shows up in a reduction as high as sixty percent of the originally occupied homes per township. This contraction is the converse picture of the more dramatic suburban expansion.

To this should be added the emerging trend toward town-resident farmers. A majority within ten miles of their farms. But as early as 1951, this group included twenty percent of all farmers in the prairie region. The 1956 census shows that it has since increased to over twenty percent for the province as a whole. While many of those who relocate express a desire to return to farm residence at a later date, it is highly improbable that they will do so. Parents and children establish many personal ties with town families. They become involved in the organized life of the urban centre. In the meantime, the farm home may be neglected or moved into town. The coming of television, rural electrification, centralized schools, and all-weather roads may slow down or even reverse the tendency to relocate. There are areas, however, where all of these conditions already exist but the more recent pattern continues to develop. More subtle community factors seem to be involved.

For those who, either by choice or of necessity, remain on the farm, the problems of distance and costly public service will continue. Much could be done to relieve the situation by adoption of the French Canadian pattern of line settlement. Main market roads could be selected and developed. Farm families could be assisted to relocate along such trunk lines. Not only would service costs be reduced but some of the earlier "neighbouring" would be re-established. There are practical difficulties in such an adjustment but a few communities are showing imaginative leadership in this direction.

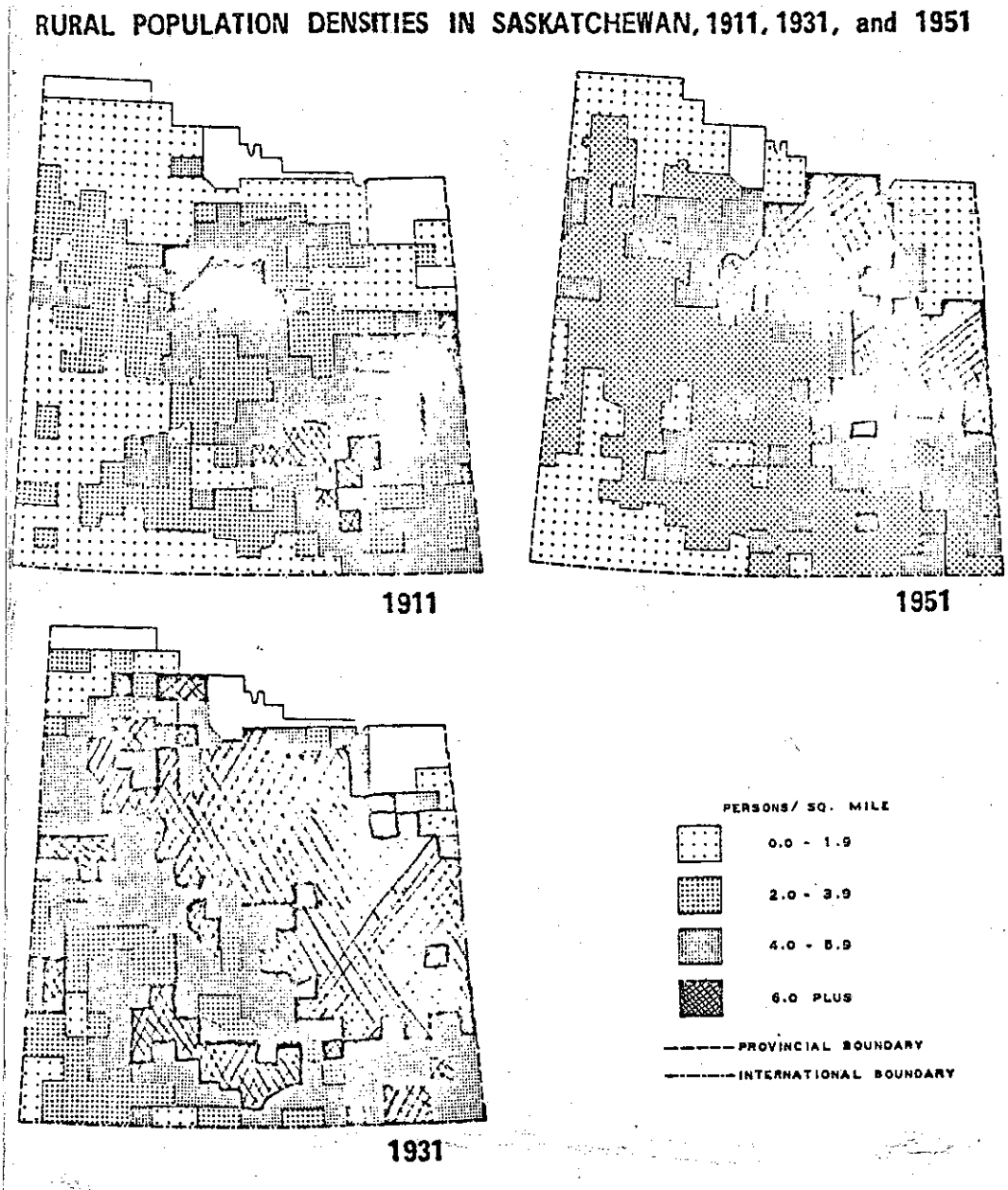


Figure 1

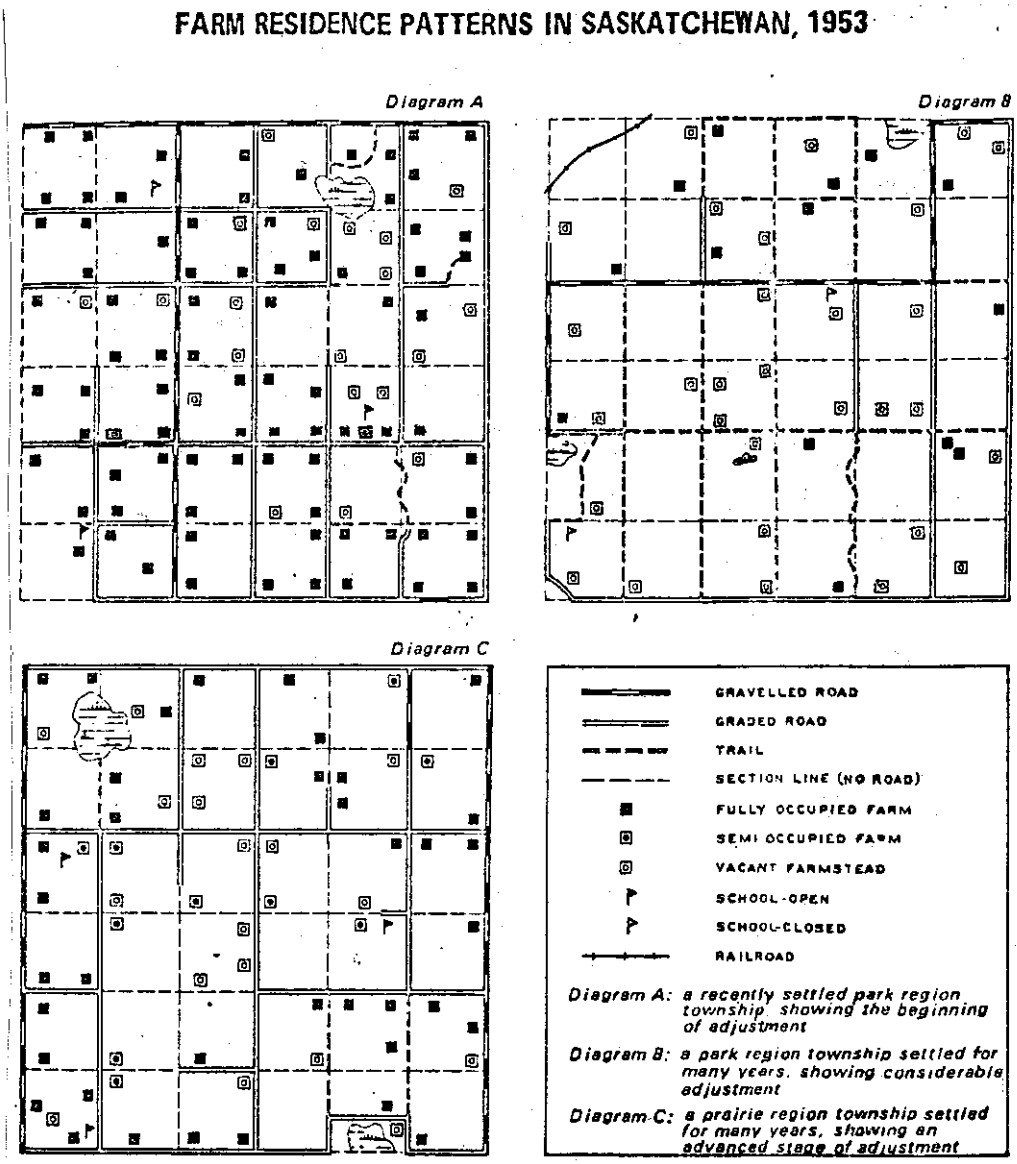


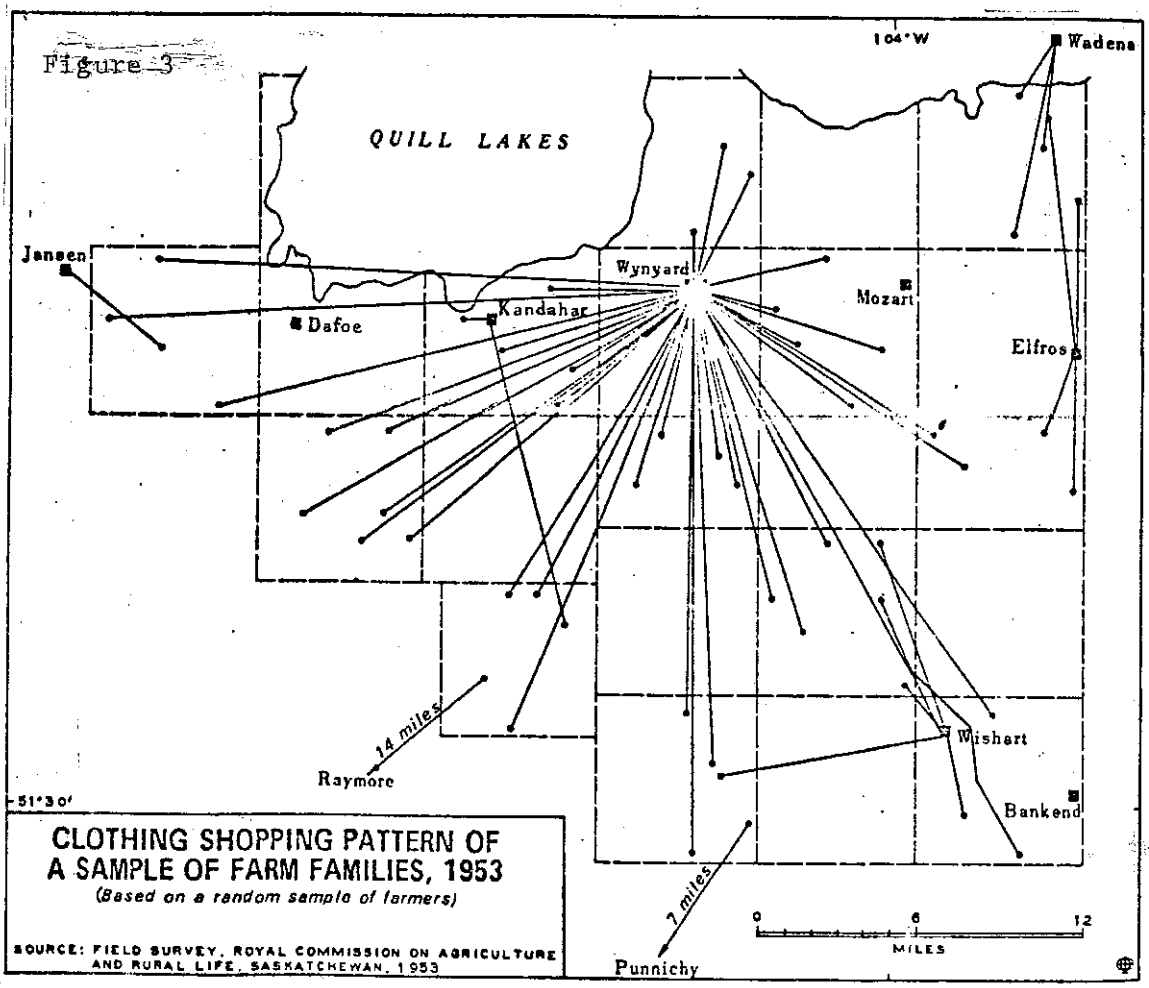
Figure 2

Rural Trade Centres

Both pioneer patterns of residence and trade distribution are being affected by an accumulation of other changes. There are at least 800,000 fewer horses in Saskatchewan today than in 1926. The automobile and truck have helped to send old Dobbin to the pastures or to the canning factories. In the days of the "horse haul", distance was measured in terms of miles. Today it is measured in time. New conditions of travel have brought about a shrinking of both time and space. There are very few farms today without an automobile, a truck, or both.

Even though the farm population has become sparse, in terms of time families may be as close to their neighbours as they ever were. As

rural roads are improved they will be brought even closer. Beyond this, greater ease of travel has extended the farm family's shopping horizon. Rising rural living levels, radio, the press and television have contributed to a more critical and selective purchasing pattern. The village of an earlier day with its often gloomy general store has been unable to satisfy this demand. As a result, farmer patronage has been shifting to the larger, more favourably-situated centres (Figure 3). As the favoured centres draw upon an expanded trading population increased specialization becomes economically feasible. The grocery, hardware and women's wearing apparel stores take the place of the general store. In the course of time, commercial recreation services expand to complement the retail trade. Professional personnel--doctors, lawyers, dentists, teachers--quite clearly prefer these larger centres and tend increasingly to concentrate in them. Provincial and local government administrative centres gradually shift in the same direction.



This tendency toward the reorganization of the rural trade pattern produces a number of curious consequences. When the pioneer quarter-section and half-section farms become outmoded under modern technology, they can be absorbed into balanced farm units. Obviously, this cannot occur in the instance of the pioneer villages except over long periods of time. The total number of incorporated and unincorporated centres of all sizes in the province approaches 1,500. Less than one-third of

these centres were large enough to merit individual listing in the 1956 census. Saskatchewan was credited with eight cities, ninety-eight towns and 377 villages. No other Canadian province has as many small centres or as high a proportion of its population living in them.

Despite the apparent trend in farm-family patronage, the surprising fact is that the proportion of centres in each population size class has remained almost constant in the 1911-56 period. This suggests that there are a number of systematic relationships between classes of centres and that these relationships tend to persist. It also suggests that centres differ, not only in size, but also in the functions which they perform.

In the light of this evidence, it is difficult to conclude that in the foreseeable future all or even most of the small villages now suffering a decline in farmer patronage will disappear. What seems more likely is that some reduction will occur in the number of retail outlets of the small villages, but they will continue to meet farm family needs for convenient services: groceries, mail, gasoline and oil, public school, church, curling and so on. On the other hand, the larger centres will provide specialized modern merchandising as well as professional, recreation and administrative amenities. To this extent the large and small centres have complementary functions to perform.

While there is reason for this optimistic assessment of the future of the small village, those whose livelihood depends upon the volume of trade are facing difficult times. Competition between the village merchants is certain to increase. This basic fact leads to much bitterness not only between merchants living in the same village but also between village merchants and the mobile farm family. In numerous instances, villages are losing confidence in their future. Not having access to any factual analysis, a situation of low morale can prevail. Sooner or later this is reflected in many subtle social and psychological tensions. Again it is a case of a special group of citizens caught in one of the pressure spots of rural social and economic change.

Local Government

Most of the trends thus far identified are based largely upon the decisions of individual farm families. The farmer need consult with no one other than perhaps his family and banker when he decides to double the size of his farm by buying out a neighbour. Similarly, he can change from horses to tractor or shift his patronage from village to town. When individual decisions of many farmers living in the same area are added together, however, a number of consequences emerge which require collective adjustments. No farmer, in deciding to double the size of his farm, consciously decides at the same time to close his local school. Yet in the aggregate this is just what does happen.

When Saskatchewan was first settled, thousands of one-roomed country schools were established on the initiative of the parents. Even by 1922, almost five percent of the original units were no longer operating. By 1953-54, over thirty percent of the 5,221 school districts established

by that time were no longer in operation. In 1944, provision was made for the establishment of some sixty larger school units of administration, each including approximately eighty of the original districts. While the trend toward the closing of country schools was initiated well before the larger unit, it has since been accelerated. Population decline, the teacher shortage and rising educational standards are the primary motivating factors. There is little doubt that in the next decade the majority of the one-roomed schools will be replaced by centralized schools. This has already happened in the neighbouring province of Alberta. An important aspect of the regrouping of schools is that town and country schools are being integrated. Farm and town families are losing many of their former differences in experience and responsibility.

Other local government units have been going through the same process. Hospital districts were established in the early twenties. In the last two decades, larger health units have been established over much of the province. Agricultural representative districts have been set up which include a number of municipalities. The one type of local administrative unit which has continued to resist adjustment is represented by approximately 300 nine-township municipalities established in 1909. It is fairly certain that their days are numbered. The development of a motorized agricultural industry has created widespread demand for a system of all-weather roads. Since Saskatchewan has more miles of road than any other province in Canada, heavy public investments will be involved. The nine-township unit established to satisfy the needs of a simpler society cannot provide the necessary standard of modern service. Discussion is now under way on the merits of municipal reorganization. The county system, or some modification of it, is expected to take its place.

One of the costly consequences of social and economic change is the lag which persists between individual and collective decision-making. Local government reorganization proceeds on a painful, piecemeal basis over the years. Changes are resisted until the majority of farm families are convinced of the urgency of the need. Aside from the delay in providing costly modern public services, a growing confusion is apparent in the relationship between the various administrative units which have some claim on the farmer's tax dollar. As the confusion mounts, the farm family finds itself increasingly less able to exercise democratic control over those to whom responsibility is delegated. Indifference and hostility to the provision of needed services is one result. Indeed, there is evidence that the lag in rural public service is one important factor in pushing farm families off the land into other occupations or into urban residence.

The Rural Community

Agriculture and rural life are traditionally associated with strength in community and small group experiences. The growing concern for the social problems rooted in the mass society of urban concentrations tends to confirm these sentiments. At the heart of the small rural community are the myriad voluntary organizations which give it meaning. Today

these organizations find themselves crowded together in contracting communities. Competition for available leadership is often extreme. One small village of 600 population reported some 150 organizations with accounts in the local bank. There is every indication that voluntary associations are shifting in the direction of a larger community. In it, the close personal contact and neighbourliness of an earlier day will be much more difficult to develop and retain.

Rural Values

Finally, a word must be said about trends in rural attitudes and values. It is now apparent that social and economic adjustment means radical changes in almost every aspect of rural living. It is one thing to identify the direction of change; it is quite another matter to evaluate the desirability of change. Is it enough to point out that the trend to urbanization promotes higher levels of living or that centralization means more and better services? There are serious students, and many of them farm operators and housewives, who value those close personal relationships which give depth and meaning to living. Others place high value on the opportunity for intimate association with nature. How to maintain these values in an era of modern technology presents a problem which is not to be taken lightly.

Conclusion

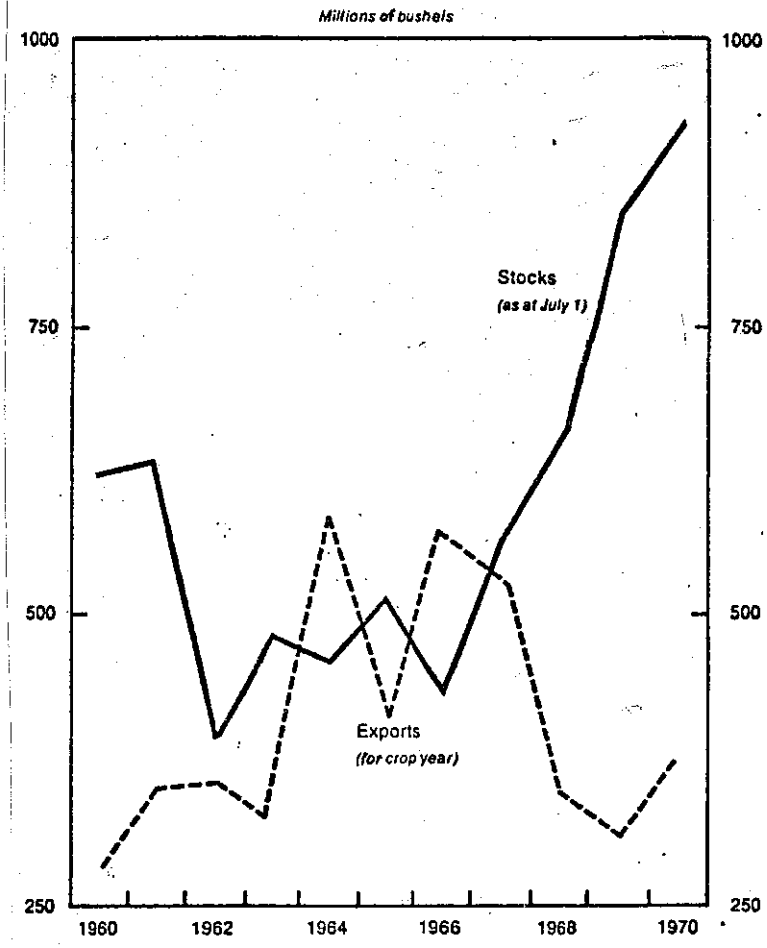
Humanity is passing through an age of turmoil and upheaval, and rural folk are feeling this most acutely. While no one can foresee in detail the nature of the agriculture and rural life which shall prevail in the future, the broad outlines are already apparent. The changes anticipated are both good and bad from the viewpoint of the man on the land. Those able to take advantage of the trends are likely to enjoy satisfaction in their occupation. Those, who for various reasons find themselves unable to adapt, may be placed at a relative disadvantage. Progress is always a potentiality and not an inevitable consequence of change. Special programmes will be necessary to soften the pains of technological advance. To attempt to stop or even to slow down the tide of change would be too costly for farmers in the long run.

Table 1: Summary Statistics of Canadian Wheat Production

	(crops years: August 1-July 31)					
	1959/60	1965/66	1966/67	1967/68	1968/69	1969/70
Acres seeded (thousands)	23,065	28,282	29,692	30,121	29,423	24,968
Yield per acre (bushels)	17.9	22.9	27.9	19.7	22.1	27.4
Production (millions of bushels)	413.5	648.9	827.3	592.9	649.8	684.3
Exports (millions of bushels)	277.3	584.9	515.3	336.0	305.8	375*
Domestic Requirements (millions of bushels)	147.6	156.9	155.4	168.2	159.8	165*
Carry-over at year-end (millions of bushels)	537.6	420.1	576.8	665.5	849.8	950*

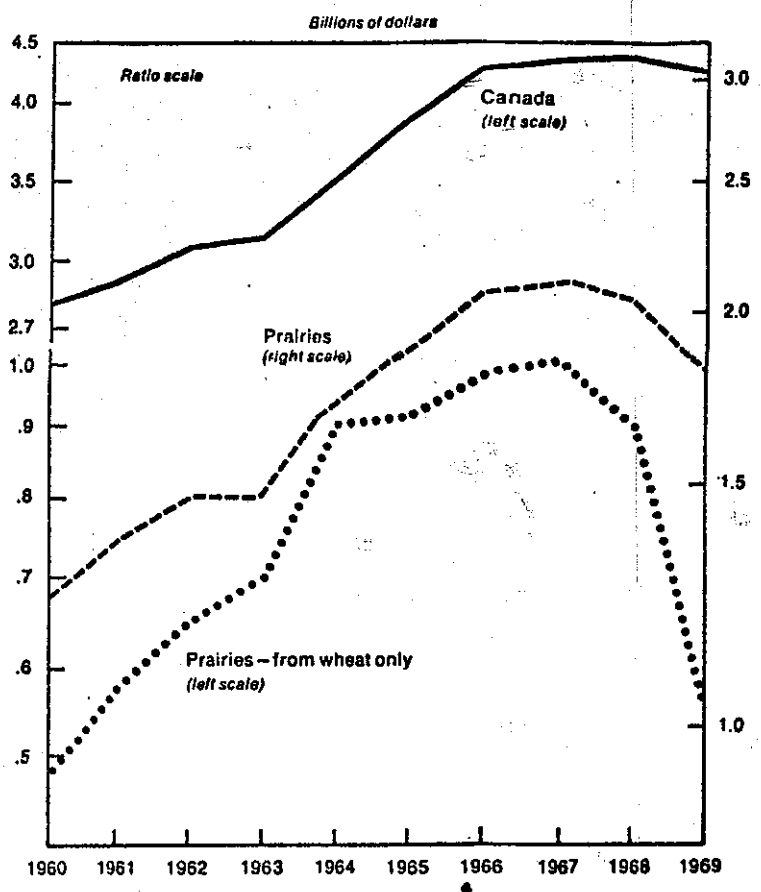
*Government estimate

Chart 1: Canadian Exports and Stocks of Wheat



1970 plots based on government estimate

Chart 2: Farm Cash Receipts



1969 plots based on B of M estimate

Appendix

The Wheat Marketing Machinery

The Board of Grain Commissioners - The Board was established in 1912 to administer the Canada Grains Act. It consists of three commissioners reporting to the Minister of Agriculture. Its main functions are:

1. to manage and operate grain elevators at six points in the west;
2. to provide official inspection, grading and weighing of grain;
3. to license all parties closely connected with the grain trade; and
4. to maintain the Grain Research Laboratory at Winnipeg, the main centre of research on the chemistry of Canadian grains.

The Canadian Wheat Board - The Wheat Board is a crown corporation created by the Federal Government in 1935 to maintain stability in the market for Canadian wheat. At the present time, the Board consists of five members appointed by the government. It has no capital, and relies on bank credit to finance its operations, with repayment guaranteed by the government. Its principal functions are:

1. to administer a guaranteed minimum floor price for wheat, oats, and barley through the payment of initial prices on these grains;
2. to negotiate elevator charges;
3. to allocate delivery opportunity among producers during times of elevator congestion through a marketing quota system and to control the flow of grain;
4. to establish the selling price for the various grades of wheat;
5. to negotiate sale of wheat for export itself and through export agencies, and to carry on a sales promotion program;
6. to control the quantities, grades, shipping period and export positions for all export sales of wheat;
7. to return to the producers all funds received less only necessary costs for marketing and administration;
8. to act in an advisory capacity to the government.

Farmer's Deliveries and Payment for Wheat - A delivery permit book is issued to each producer at the start of each crop year. It sets out the number of acres sown in the previous spring or fall to the various crops together with the number of acres being summerfallowed or producing forage crops. Thus acreage serves as the main determinant of the delivery quotas for the individual farmer.

Initial payments - net of handling and transportation charges, are made on delivery of wheat to the grain elevator. The amount of the payment per bushel is recommended to the Federal Cabinet by the Wheat Board. If the Cabinet approves, an Order-in-Council giving effect to the price is issued. In due course, after all the wheat delivered to the Board has been sold, the profits from the sale are distributed to

producers as a final payment. Initial payment for No. 1 Northern in the 1969-70 crop year was $1.50 (20¢ lower than in the previous year).

The International Wheat Agreement - In 1947, wheat importing and exporting nations drew up an international agreement to provide price and quantity controls in the world wheat market. The first agreement became effective in 1949-1950 and provided for maximum and minimum prices at which a guaranteed quantity of wheat would be traded. The prices laid down were for No. 1 Northern in store at the Lakehead. The I.W.A. was revised periodically and the last agreement ended on July 31, 1967, with only the administrative provisions extending until July 1, 1968, when the International Grains Arrangement came into force.

International Grains Arrangement - During the Kennedy Round Trade Negotiations, a Cereals Sub-Group was set up. Canada and the other major wheat exporters (the United States, Australia and Argentina) attempted to obtain higher price ranges than those provided by the expiring International Wheat Agreement. Increases were obtained and the new arrangement resulted in maximum and minimum prices of No. 1 Northern at the Lakehead of $2.38½ per bushel, $0.21 above the previous I.W.A. levels. The I.G.A. also provided a schedule of maximum and minimum prices for most other major classes and/or grades of wheat moving in international trade. The agreement, however, lacked any overall purchase commitments by importers and, in view of heavy supply conditions, the minimum prices came under great pressure almost from the start and, in fact, were soon breached. Another feature of the agreement was that all members, including both wheat importing and exporting countries agreed to make a specific quantity of grain available either in kind or by a cash contribution to a multi-lateral food aid program.

APPENDIX C

A PRAIRIE WHEAT FARM[1]

The Farm

Stonehenge, the wheat farm of Mr. Wilbur Thornton, is located in west-central Saskatchewan about 150 miles southwest of Saskatoon. The nearest urban centre is Kindersley, which is nine miles to the east. Since the farm comprises one section of a prairie township, it covers one square mile or 640 acres. When Mr. Thornton established the farm in 1918, it was considered large because, at that time, the average prairie farm consisted of only a quarter section, or 160 acres. Since then, the combining of small farms has increased the size of an average prairie farm to a section, and in dry west-central Saskatchewan Mr. Thornton's farm is now smaller than average. Holdings of four sections and more are common. In this semi-arid region where Mr. Thornton's farm is located, many farmers feel that they need at least 800 acres to farm profitably.

When Mr. Thornton bought his farm in 1918, he paid $20 an acre for it. If he were to sell it today, he could probably get at least $125 an acre. This price would include the buildings, but not the equipment.

Of the 640 acres making up Stonehenge, 630 acres are cultivated and 10 acres are occupied by the homestead, or farmstead. The homestead contains the house and all the farm buildings, plus a large vegetable garden, an orchard, a pond, and a shelterbelt of planted trees.

The vegetable garden occupies an L-shaped plot between the two sets of rows that comprise the shelterbelt on the northern and western sides of the homestead. Find this 100-foot-wide garden strip in the aerial photograph and on the sketch plan of the farm. Normally the garden produces enough vegetables to meet household requirements plus a small surplus of potatoes for cash sale.

1. By locating Kindersley on an atlas map of Saskatchewan, find the approximate location of the Thornton farm.

2. What factors have probably helped to increase the dollar value of the farm since 1918?

3. Stonehenge has a fairly flat surface. How could the flatness affect the (i) use of large farm machines, (ii) drainage, and (iii) soil erosion?

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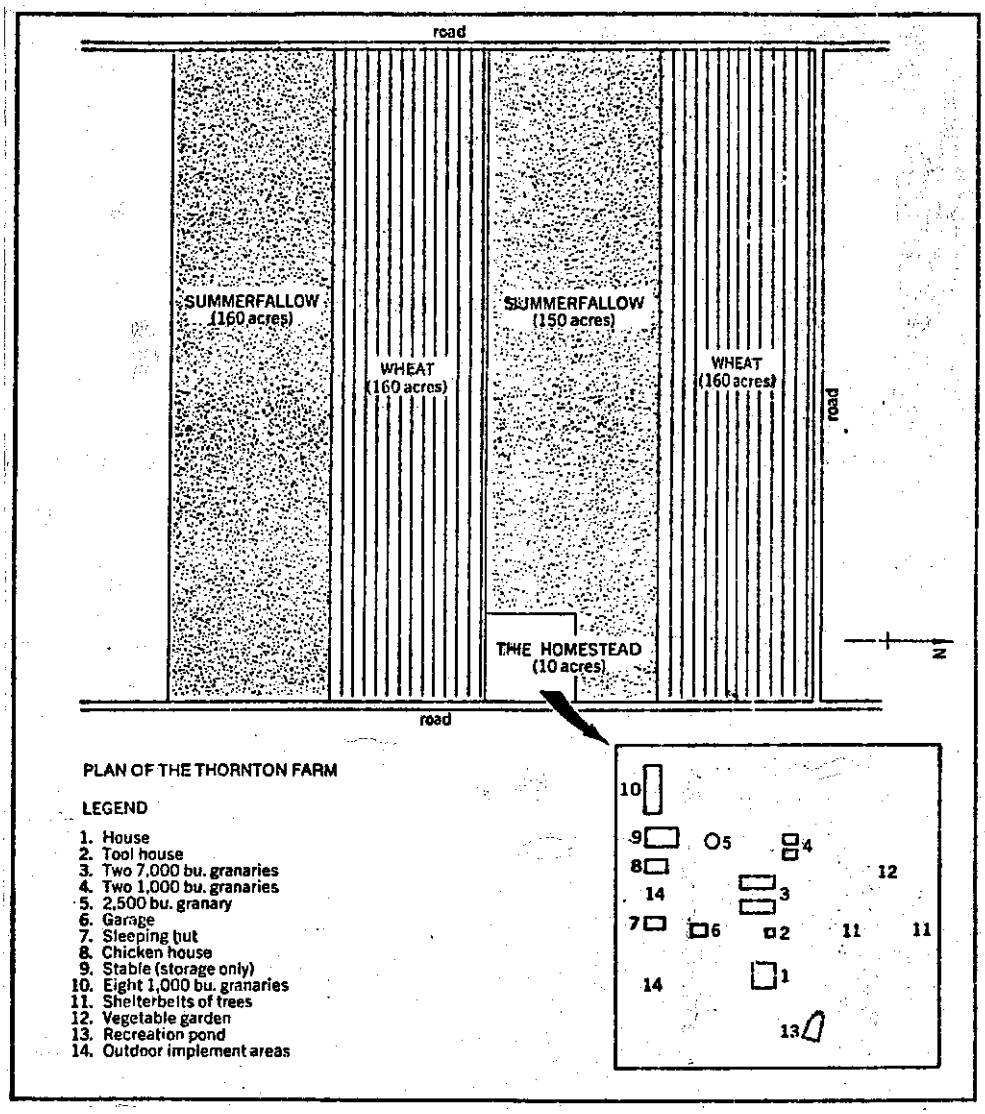
[1]W. Bruce Braund, and William C. Blake. STUDIES IN CANADIAN ECONOMIC GEOGRAPHY, pp. 1-16. Used with permission of McGraw-Hill Ryerson Limited, Scarborough, Ontario.



The Shelterbelt and Orchard

It took Mr. Thornton three years to plant the 13,000 trees that make up the 17 rows of the shelterbelt. Principal species included are caragana, ash, elm, willow, and poplar. Away from the homestead in the generally treeless prairie, native trees are found only in small groves clustered in stream valleys and scattered hollows. The shelterbelt reduces airflow downwind for a distance of at least 20 times its own height, thereby protecting the garden and house from strong winds from the north and west. In this way, the shelterbelt reduces home heating costs and controls snow drifting, in addition to beautifying the farmstead.

Seedlings for the shelterbelt were supplied free by the provincial government. Following instructions provided by a government official,

Mr. Thornton planted the trees according to established practices. A farm shelterbelt requires two or more adjacent rows of trees to protect the buildings and service area. The rows are five feet apart. The intervals between trees in the rows increase gradually inward from one-foot intervals in the outer row of caragana to four-foot intervals in the inner row of ash. Shallow cultivation is carried out periodically between the rows of trees to control weeds and grass.

Several varieties of apple and plum trees together constitute the orchard. Trees of at least two (and preferably three or four) varieties of the same kind of fruit are necessary for cross pollination and hence the production of fruit. Rabbits, mice, and pocket gophers are, however, a threat to prairie orchards. Trapping, poisoning, shooting, and fencing are all commonly employed to protect the trees from these pests. In recent years the battle has been lost on Stonehenge farm; rabbits have stripped bark from most of the fruit trees, and have caused many of them to drop off in production and even to die.

4. What are the values of a shelterbelt?

5. Why did Mr. Thornton plant the shelterbelt on the northern and western sides of the homestead?

Water Supply

Water supply is a problem on Stonehenge. Water for the livestock used to be obtained from a 60-foot-deep well on the farm, but unfortunately the water from this well is not suitable for human consumption. Drinking water for human use must be brought by truck in barrels from a well located several miles from the farm. Rainwater from the roof is stored in a 70-barrel-capacity cistern built under the floor of the house, and is used for washing and other household needs. When rainfall is insufficient to maintain an adequate supply in the cistern, water must be trucked in from an open dugout or pond on a nearby farm. Like many others in the township, the dugout was excavated by the municipal government for use by the local citizens. This particular community pond is 300 feet long, 100 feet wide, and about 15 feet deep. Dugouts are the commonest artificial storage structure for surface water on prairie farms. In addition to supplying domestic water for general use, they often provide water for watering livestock and for irrigating gardens.

Mr. Thornton created a small pond on the homestead by using stone removed from his fields to build a dam across a draw. A draw is a natural water runway that drains the fields during the spring thaw and rainstorms. Find the location of the draw in the aerial photograph of the farm. Since the draw is occupied by late barley, it stands out as a dark strip arcing towards the homestead across the light-coloured grain fields. The pond is used for swimming and other recreation; it adds beauty and colour to the homestead.

6. Why is rainwater, rather than well water, used for household uses such as washing?

7. Why would a farmer in west-central Saskatchewan be willing to let the government dig a pond for community use on his farm?

The People

A few years ago Mr. Thornton decided to give up the active operation of his farm because of his advancing age. He did not, however, want to give up his home of many years, and so he entered into a leasing arrangement with Mr. Jim Daley. The crop-sharing lease they agreed to is the most common lease arrangement for prairie farms. Under its terms, Mr. Thornton receives one-third of the crop produced, supplies the land and buildings, pays land taxes and fire insurance on buildings, and provides repair materials for buildings and fences. As his part, Mr. Daley supplies the machinery and seed, pays all operating expenses, and provides the labour for producing the crop and maintaining the farm. He also pays the full costs of trucking the crop to market, including the cost of shipping Mr. Thornton's fraction of the crop. They share the cost of other expenses of mutual benefit, usually on the same basis as the division of income, with Mr. Daley paying two-thirds and Mr. Thornton the other third. Each of them independently insures the crop against hail damage and pays the cost of storage for his portion of the crop.

Mr. Thornton lost his wife, Eva, several years ago, and his children have all left the province. His son, Tom, is an engineer in Alberta; his married daughter, Winnifred, lives with her husband and family in California; and his unmarried daughter, Mary, nurses in east Africa. With his family scattered, Mr. Thornton lives on the farm only during the milder weather. In winter he visits relatives and friends in warmer parts of the continent. Like Mr. Thornton, many prairie wheat farmers leave their farms during the long, cold winter to visit friends and relatives or to enjoy warmer weather in the south. Large numbers have moved out of their farm homes and taken up residence in nearby towns and cities. The farms are then either leased to a tenant, who may or may not live on the farm, or are operated by the owner only during the grain-producing period.

When Mr. Thornton is at home, Mr. Daley eats with him in the farmhouse, but sleeps in a small hut on the homestead. Then, when Mr. Thornton leaves, Mr. Daley either moves into the main house or goes to stay in the Okanagan Valley of British Columbia where he likes the comparatively mild winter weather. One of Mr. Daley's brothers comes from Saskatoon to help with the seeding, and another brother, who owns a nearby farm, helps with the harvesting. Otherwise, Mr. Daley performs all the work himself by using efficient, modern machinery.

8. What features of the lease arrangement make it fair that Mr. Daley receives twice as much of the wheat crop as does Mr. Thornton?

9. Why have so many farm people moved to cities and towns in recent years?

Climate and Soil

Although prairie weather presents the farmer with a number of hazards, such as drought and early frosts, it is highly favourable to grain production if these hazards can be overcome. In most years, rainfall is heaviest during the period when the moisture needs of the crops are greatest. Then, when the crops need warm, dry weather for ripening and harvesting, sunny and rainless weather is normal. Teamed with the rich prairie soils, this ideal weather pattern has made the western prairies the nation's breadbasket, producing vast quantities of top-quality grains.

The soil of Stonehenge is a clay loam. This means that the soil consists of a mixture of clay, silt, and sand particles, plus organic matter, with clay particles in the majority. Such soil is heavy and sometimes hard to cultivate, but it holds moisture better than do soils containing a large percentage of sand or silt.

Stonehenge is located in a soil region known as the Brown Soil Zone. Here the soils are rich in minerals, fairly well supplied with humus (decaying plant and animal matter), and brown in colour. This combination of characteristics is the result of the conditions under which the soils were formed; the low rainfall kept leaching of soluble minerals to a minimum, while the cover of natural grass provided a good supply of humus, which gave the soil its brown colour. To the north and west, where rainfall is higher, the grass is longer and thicker, thus providing more humus and a soil with a dark brown colour. It is in these two types of soils, brown and dark brown, that most of western Canada's grain is grown.

The brown and dark brown soils of Saskatchewan are among the most fertile in the world. Of the 16 chemical plant nutrients known to be required for the healthy growth of plants, only one--phosphorus--is in short supply in these soils. Nitrogen is deficient in some cases where crops are planted on stubbleland (i.e., fields planted to a crop in the previous year), but nitrogen is seldom deficient on fallow land (i.e., fields left out of crop production in the preceding year). Since Mr. Daley fallows his fields every second year, nitrogen deficiency is not a problem at Stonehenge. Were Mr. Daley to follow a three-year rotation system of grain-grain-fallow, which is practised on some farms in the region, he would have to add nitrogen to his fields to ensure maximum yields.

To maintain soil fertility, at least as much plant food must be returned to the soil as is removed by harvesting a crop and, in the case of phosphorus, more must be applied than is removed. The addition of fertilizers to the fields of Stonehenge would maintain soil fertility for future use as well as increasing present crop yields. This is because fertilizers build up a reserve of plant foods and help plants to make better use of moisture. Like many prairie farmers, however, Mr. Daley does not apply fertilizers to the grain fields. When the weather is favourable and crop hazards such as plant diseases and insects do little damage, he enjoys good yields, despite the fact that fertilizers have not been used during the entire 50-year life of the farm.

10. Why do better soils form under grasslands like the prairies than under forests?

11. During 1966, in Saskatchewan, the average increase in wheat yields obtained by adding fertilizer was 4.9 bushels per acre. Why don't all prairie wheat farmers add fertilizer to their grain fields?

Crop Hazards

The climate and soils of the prairies generally favour the growing of wheat. However, consistently good yields can only be attained if special measures are taken to overcome the common crop hazards. Climatic risks, plant diseases, and insects are the chief crop hazards.

Success in agriculture on the Canadian prairies depends largely on the farmer's ability to cope with the climate. The efficient prairie grain farmer meets the problem by planting drought- and frost-resistant varieties of grain, while at the same time employing techniques designed to control soil erosion and prevent the excessive loss of surface water and soil moisture supplies.

Drought is the chief threat to grain crops in west-central Saskatchewan, where the average annual rainfall is both low and unreliable. Rainfall varies markedly from season to season in the region. Between 1957 and 1966, the yearly totals ranged from a high of 16.1 inches in 1963 to a dismal low of 8.9 inches in 1961. Unless large supplies of moisture have been conserved in the soil from previous years, a dry year like 1961 can result in widespread crop failures.

Unseasonable frosts and destructive storms are the other main climate risks. Frosts may occur in any month; those occurring in late spring or early fall inflict the greatest crop damage. Untimely rainstorms sometimes delay seeding, cultivation, and harvesting; and thunderstorms often bring damage from hail, wind, intense rain, or even lightning. The average annual hail loss in Saskatchewan is about four per cent of the crop. In July of 1957 a single hailstorm in Saskatchewan caused about $17 million damage. Against such destructive power, insurance against hail damage is the only protection available. Like many other prairie farmers, the operators of Stonehenge buy hail insurance every year.

Wind damages crops by its drying action in hot weather, causes soil erosion by drifting, and reduces water supplies by speeding up evaporation. To reduce these harmful effects of winds, many prairie farmers have built special fences, planted shelterbelts of trees, and developed special techniques to protect their fields from soil drifting.

Every year, plant diseases cause heavy financial losses for the farmers by reducing crop yields and by lowering the quality of the grain grown. Common root rot, for example, can lower wheat yields by as much as 15 per cent. Rusts and smuts are among the most damaging plant diseases. The rotation of crops and the planting of chemically treated,

disease-free seeds of disease-resistant varieties are the methods commonly used to combat these plant diseases.

Through the years, the fungus known as rust has been a serious hazard to wheat production in Saskatchewan. Although rust is a greater problem in the wetter parts of the province, it is still a threat in west-central Saskatchewan. The best method to combat this hazard is to plant varieties of wheat that are resistant to rust. Since new races of rust are constantly appearing, new varieties of rust-resistant wheat must be continually developed and introduced. The rust is of two types--those that attack the leaves of the wheat plant, and those that damage the stems.

Sawflies, grasshoppers, and wireworms are among the insects that cause serious damage to prairie grain crops. The hazards arising from insect infestations are usually met by sowing insect-resistant varieties, treating seeds with chemicals before planting, spraying and dusting drops with chemical insecticides, and keeping fields clear of green growth every few years.

Weeds present a problem on Stonehenge, as they do on all farms. Some of the methods used to control them are the sowing of seed that is free of weed seeds, sowing more seed to the acre to help the crop compete better with the weeds, cultivating the soil to kill growing weeds, and spraying with chemical herbicides.

12. What characteristics of the climate in west-central Saskatchewan (i) help and (ii) hinder wheat growing?

13. What does the following table tell you about the significance of rainfall in the growing of wheat in south-central Saskatchewan?

14. What are insecticides and herbicides, and how are they used by farmers?

Average Annual Rainfall and Wheat Yields in West-Central Saskatchewan

Year	Inches of Rainfall	Yields per Acre
1957	10.68	16.4
1958	11.06	15.0
1959	11.98	13.3
1960	10.98	15.3
1961	10.17	12.1
1962	14.56	17.9
1963	16.12	30.4
1964	14.91	16.4
1965	14.74	20.3
1966	13.89	33.6
1967	11.34	21.3
54-year average	13.24	52-year average 16.1

Choosing Crops and Varieties

A simple two-year crop rotation system is used on Stonehenge. Each year half of the cropland is planted to wheat while the other half is in summerfallow. See this pattern on the farm plan. The field planted to wheat will be summerfallowed the following year, while the fallowed land will be sown to wheat. In some years, if the stubble land contained three or more inches of available water at seeding time the fields were reasonably free of weeds, grain could be sown for a second year with good results. This would create a three-year rotation system of grain-grain-summerfallow, which is normal in the moister parts of the adjacent Dark Brown Soil Zone. Barley, oats, or flax rather than wheat would be planted in the second year. Although some of their neighbours use the three-year rotation if moisture conditions are favourable, Mr. Daley and Mr. Thornton prefer the wheat-only, two-year cropping plan because of its simplicity.

Wheat and barley are the best grains to grow on the Brown Soils, and on the heavy clay loam of Stonehenge, wheat usually gives higher returns than barley. Therefore, the fields of Stonehenge are devoted almost entirely to wheat growing. The only areas not sown to wheat are a few scattered sloughs, which are low-lying areas often flooded after heavy rains. These wetter spots are usually planted to oats or barley because coarse grains mature faster than wheat and this compensates for the fact that sloughs must be planted later than the drier areas.

The fall-planted winter wheats that predominate in eastern Canada cannot be grown with any degree of success on the prairies because they would rarely survive the harsh winters. Spring wheat, which is planted in the spring and harvested in the fall must be grown instead. Although yields for this type of wheat are lower than those obtained with winter varieties, the hard spring wheat is of a higher grade than the soft winter wheat.

Wheat yields vary widely from year to year, depending mainly upon the amount of moisture available in the soil, especially during the critical growing period from May to July. In west-central Saskatchewan the average wheat yield for the fifty-one year period preceding 1967 was 16 bushels per acre; but the yearly average varied from a high of 33.6 bushels per acre, in the record year of 1966, to a disappointing low of only 12.1 per acre in 1961.

Growers like Mr. Daley can choose from a wide selection of grain varieties. Each variety has its advantages and disadvantages, and it is up to the individual farmer to choose the varieties with characteristics best able to meet the crop hazards that normally cause damage to crops in his district. Selkirk and Thatcher are the two varieties of wheat currently grown on Stonehenge. Selkirk has good resistance to stem rust, smut, and spring frost, but only fair resistance to leaf rust and poor resistance to root rot. Thatcher, which does well under dry conditions, has good resistance to smut and spring frost. Unfortunately it has only fair resistance to root rot and poor resistance to both stem and leaf rust. Mr. Daley is now gradually introducing some of the newer varieties that have been developed since Thatcher was released in 1936 and since Selkirk was licensed in 1953.

15. According to the following table, how does the quality of the wheat grown in west-central Saskatchewan compare with that grown elsewhere in the province?

AVERAGE GRADING OF WHEAT GROWN IN 1967

Area	Per cent No. 1 Northern	Per cent No. 2 Northern	Per cent No. 3 Northern	Per cent Below No. 3 Northern
West-Central Saskatchewan	49	62	6	1
All of Saskatchewan	24	59	13	4

Courtesy Saskatchewan Dept. of Agriculture

16. What is the chief advantage gained by using a three-year crop rotation system instead of two-year rotation?

17. What type of wheat, if any, is grown on the farms in your area? Why do the farmers grow it rather than another type?

Seeding

Good seed is an important factor in the production of high-quality grain. To be good, the seed must be relatively free from disease, weed seeds, and admixtures of other varieties and crops. The only seeds that consistently meet these high standards are seeds that have been inspected and certified by the government. Every few years, therefore, Mr. Daley buys certified seed to provide seed stock which is true to variety. For most sowing, however, he uses home-grown seed, which is called commercial grain. Before it can be used successfully as seed, the commercial grain must be cleaned carefully to remove weed seeds, imperfect and small kernels, and other impurities. This operation is performed in a specially designed commercial cleaning plant in Kindersley. As well as cleaning the seed, the commercial plant also treats it with a dressing that contains both a fungicide to control diseases and an insecticide to combat wireworms.

Mr. Daley is careful not to seed too deeply. Seeding depth for wheat should be no greater than three inches and need be no more than enough to place the seed in moist soil. Mr. Daley sows a bushel and a peck of seed per acre.

The highest yields result from seeding as soon as the land is fit to work. This normally means that seeding begins early in May and is completed in about two weeks. Mr. Daley and his brother work very long hours during seeding time, often working until 10 p.m. by the headlights of the tractor. The sooner the crop can be planted, the better chance it has of producing high yields. The oats and barley are seeded immediately after the wheat.

The seed bed is prepared and the seeds planted in the same operation. Because the seeding is done on clean summerfallow, no pre-seeding tillage is required. A cultivating machine, called a discer, is drawn across the fields behind a tractor. The discer has numerous sharp-edged round plates that cut into the soil to loosen it for seeding. A long seed box on top of the discer holds the wheat seeds. A number of tubes, one for

each disc, allow the seeds to drop to the ground where the action of the discs breaks up the earth and covers the seeds with two inches of soil.

A packer is drawn along behind the seeder-discer during seeding. The packer is an implement that packs the soil down after the seed is placed in the soil. Then, a few days after seeding, a harrow is drawn across the newsown fields to further pack the soil, as well as to help level the surface and control weeds.

18. Why does Mr. Daley work such long hours during seeding time?

19. Why is the wheat planted before the oats and barley?

Summerfallowing

To grow well, hard spring wheat requires up to 18 inches of water in the soil during the year. Since west-central Saskatchewan has an annual average precipitation of only 13.3 inches, it is obvious that additional water is necessary for successful crop production. The deficit is usually met by moisture previously stored in the soil by snowfall or fallowing. Summerfallow is the most important practice for increasing the reserve of moisture in the soil. This practice consists simply of withdrawing the land from active crop production during the growing season and keeping it cultivated to control weed growth and to maintain the surface in condition to take in water.

If weeds are allowed to grow too long on the fallowed land, they remove much of the moisture the fallowing is intended to conserve. To be most effective, summerfallow cultivation should be started in late May or early June and continued as needed to control weeds during the rest of the growing season. In cultivating the summerfallow, Mr. Daley is careful to keep the trash cover left from harvesting at the surface to prevent wind and water erosion and to reduce evaporation of previous soil moisture. He accomplishes this by using a heavy-duty cultivator with a rod-weeder attachment instead of using disc implements that would bury the trash cover.

Harvesting

The harvesting begins in late August or early September, the exact date being determined by the moisture content and the firmness of the wheat kernels. Normally it takes Mr. Daley about a month to bring in his wheat crop. If damp weather seriously interrupts the work, the harvesting is not completed until sometime in October.

Mr. Daley uses a tractor-drawn swather to cut the wheat. The swather cuts the stems about eight inches above ground level and heaps stalks in a swath on the resulting stubble. The wheat is then left in the fields to allow the kernels to become hard and dry before threshing.

The threshing is done with a large self-propelled machine known as the combine harvester, or combine. At one time the reaping and threshing

were completed in one operation by the combine, but today most prairie farmers prefer to separate the cutting and threshing operations. This practice reduces some of the risk of crop damage because it enables swathing to be done before the wheat is completely ripe. The risks avoided are those resulting from leaving the crop standing in the field longer; strong winds and hail are a greater threat to ripe wheat standing in a field than they are to swathed wheat lying on the stubble.

The combine picks up the swathed wheat, breaks the wheat kernels from the stalks, and spreads straw on the ground to act as a protective trash cover. The kernels are collected in a tank on the combine. When full, the tank is emptied into a three-ton truck that transports the wheat to several small granaries on the homestead. After the harvest is completed, the grain is trucked to railside country elevators at Kindersley, nine miles away.

Equipment

Not too many years ago, horses supplied most of the motive power on Stonehenge and other prairie farms. Today, however, modern motor-powered machines have entirely replaced the horse as well as doing many farm jobs formerly done by hand.

Today a typical large grain farm has two or more tractors, one or more self-propelled combines, several types of tillage machinery, spraying equipment, a swather, a grain loader, a truck, and a car. It is not unusal for this machinery to total more than $50,000 in value.

20. The type of farming practised by Mr. Daley is called "dry farming" because it is designed to make the best use of a limited supply of moisture. What are the principal methods he uses to conserve moisture?

21. What help is the federal government presently giving to wheat farmers? Is it the right kind of help? Is it too generous or not generous enough?

APPENDIX D

This article was prepared by Randy Warrick,
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A SASKATCHEWAN FARM

A. Introduction

1. Location

This farm is located in the Dark Brown Soils Zone, in the Saskatoon - Humboldt farming area. Specifically the farm is fifty miles east of Saskatoon near the hamlet named Dana.

2. Soils

The soils in this area are of the Dark Brown type, a loam clay combination. These soils retain moisture well and have a high nutrient status and will do well in dry years.

3. Rainfall

Saskatchewan has had an average rainfall of 7-11 inches. The average precipitation from 1931 to 1960 in the Humboldt-Saskatoon area is 13.2 inches.

However, the right timing of rainfall is the most important criterion.

a) June
- usually month of heaviest rainfall
- also month of maximum growth
- however, high June rainfall does guarantee high yields.

b) May
- moisture needed for germination

c) July
- moisture needed for heading out

4. Terrain and Natural Vegetation

a) Rolling hills
b) Surface rocks and stones - stonepicker essential
c) Trees
- poplar
- willow
- wild berries - Saskatoon
- Chokecherry
- Pincherry
- Raspberry

d) Several species of edible mushrooms
e) Many species of flowers
f) Prairie grass where unbroken - this whole area once covered by bush (60%) and prairie.

B. Farm Physical

1. Size - division of land

This farm consists of six quarters of land - 70% under cultivation - 30% pasture land and unbroken areas.

2. Type - Mixed Farm

a) Livestock
- Cattle - 150 head of cross-bred Charolais and Hereford
- Pigs - a farrowing operation producing 600 weanlings a year

NOTE: Uncultivated land used for hay and pasture of livestock. Some cultivated land is also used to grow feed.

b) Crops
- Wheat - 50% of seeded acreage
- Coarse grains (oats and barley) - 30% of seeded acreage
- Rapeseed - 20% of seeded acreage

3. Yard

a) House - a 10-year old, 2-bedroom bungalow moved onto the farm
b) Buildings
- Farrowing barn - large enough to accommodate 10 sows at one time
- Feed lot operation - cattle shelter, sheltering barn for sows not farrowing, hay and straw storage
- Shop - rapair centre for all farm machinery, welding, etc.

c) Water Supply
- A 180-foot deep well dug in 1971 and water system installed in the house and barns at the cost of $2,500.00
- Later, water also trenched out to feed-lot operation

C. Farming Operation

1. Seeding

Seeding begins with the preparation of the land and the treating of the seed.

The grain is cleaned of foreign weed seeds, dirt, and cracked or damaged seeds. It is then treated with a chemical to reduce its affinity to diseases and to control insect pests.

In this area, stones and rocks on the surface are problematic, therefore, the first step in the preparation of the soil is to pick these rocks by way of a stonepicker. A cultivator is then used to till the soil, thereby aerating it and destroying whatever weeds are already growing.

Spraying. The soil is then treated with chemicals to reduce weed growth. This is done by using a sprayer to apply chemicals in liquid form or a special applicator to apply chemicals in granular form.

Seeding. A seed drill is then used in the actual planting of the crops. It can be adjusted for seeding rapeseed (a tiny seed) and wheat (a comparatively large kernel).

2. Spraying (after crops are up - post-emergence)

2-4D used to control broad-leaf weeds (wheat, oats, barley).

Carbyne, Hoe-Grass - used to control wild oats, millet, Persian darnel (wheat, rapeseed).

3. Summerfallow

First operation - cultivator - as soon as seeding is complete.

Further operations as they are needed to ensure proper weed control thus preserving nutrients and moisture.

4. Haying

Sweet clover (part of seeded acreage) is swathed in early July, baled and hauled into storage.

10,000 bales are needed to feed cattle over the winter.

5. Harvest

When the grain is nearly ripened it is swathed and left to dry and ripen. The swaths are then picked up by combines, threshed, and trucked to on-farm storage bins.

Sunny, warm weather is needed to ensure that the grain harvested is dry. If it is not dry, a grain dryer must be used before it can be delivered to the elevator.

6. Grain Delivery

Truck - 3-ton grain trucks - 325 bushels of wheat capacity.

Distance to elevator - 10 miles.

Amount of grain to be delivered in one crop season approximately 15,000 bushels.

7. Winter Work

a) Repair of all machinery for spring
b) feeding cattle and assuring shelter

c) farrowing operation continues year-round
d) repair of farm building and additions are made if needed

D. Farm Management

1. Credit and Borrowing

Farm Credit Corporation - loan for inital purchase of farm land, machinery, house, to provide possibility of viable farm operation.

Farm Start - loan for basic unit of livestock production.

FFIB - grants for water development.

Local bank - operating expenses.

2. Income Tax

a) Must be filed yearly by all farmers
b) Income Tax is paid on Net Income after deductions of operating expenses, depreciation on machinery, buildings, and equipment.

3. Farm Income

1976 - $40,000 gross income
- $10,000 net income

1977 - $50,000 gross income
- $ 9,500 net income

E. Life on the Farm

1. Schooling

Three children bussed 10 miles to a centralized School District at Bruno. Approximately 400 students, K-12.

Any specialized training such as for deaf, blind, mentally retarded not available locally. Children must be sent away from home.

2. Road Maintenance

Rural Municipality is in charge of all road maintenance. Municipal taxes are paid yearly to pay for this service and other municipal services.

3. Supply and Service

The nearest major supply and service center is 50 miles from farm base. Some services are available locally (10 miles distance

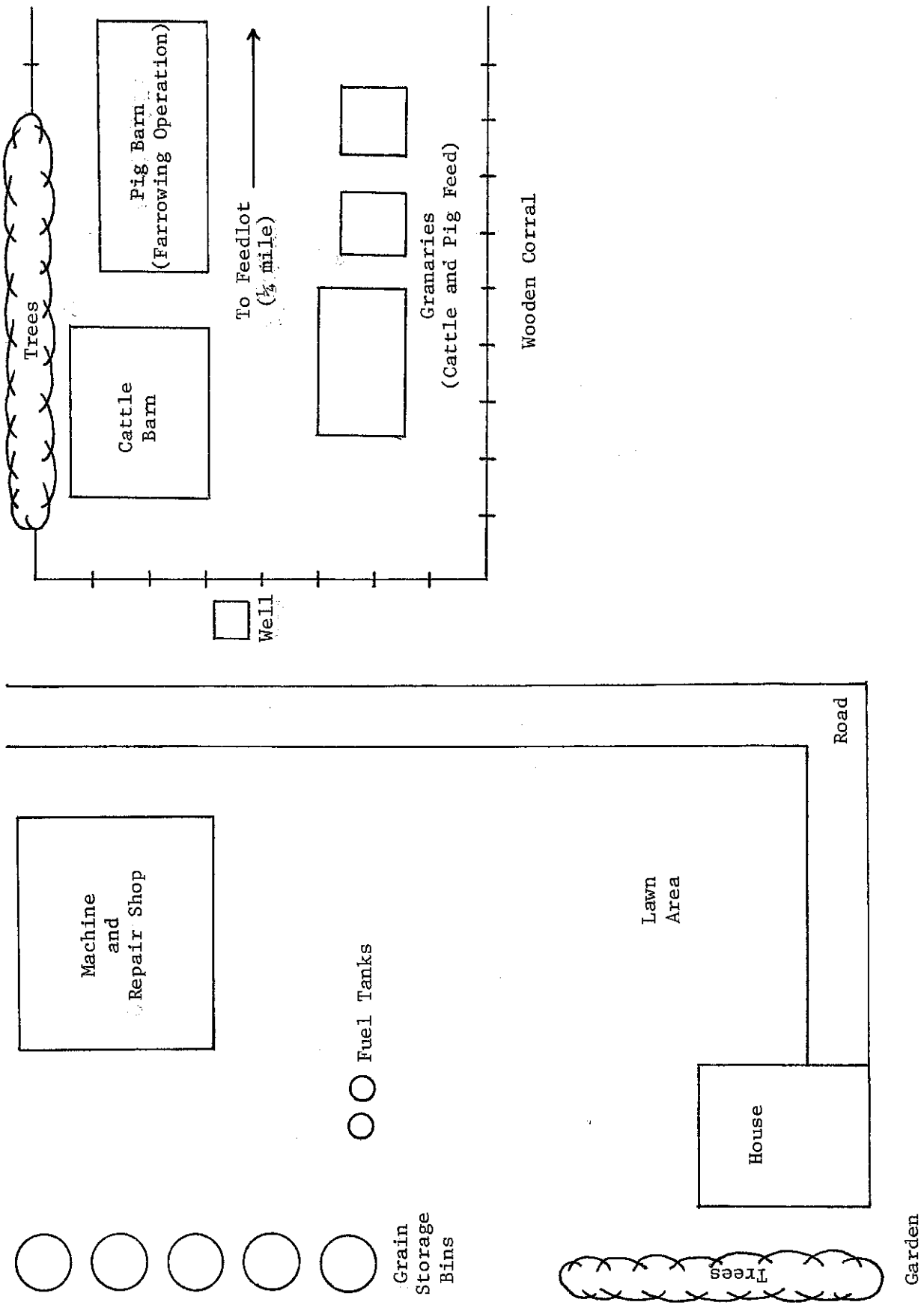
to nearest town) but any major repair problem or purchase of machinery must be done in the larger center.

4. Recreation

Flying lessons taken by the farmer and his wife.

Children participate in school activities and other community recreation but distance from town often makes this difficult.

Plan of the Farmyard



APPENDIX E

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NEW WEALTH FOUND BELOW PRAIRIES

Long existing on its grain-growing industry, Saskatchewan has now added a new jewel to its bag of riches. From deep in the earth, far below the wheat fields, comes a valuable mineral resource--potash.

How the potash came to be there, over half a mile below the surface of the earth, is still only theory. But it is a theory based on the geological history of the area, taking into account the events of the past millions of years. In the rocks which underlie Saskatchewan is recorded the flooding of seas, movements of the earth, and types of climate which at various times during ancient history have occurred in the Saskatchewan area.

It is believed that some 350 million years ago, during a period in geological history known as the Middle Devonian Age, a great sea covered what is now Saskatchewan. As the waters evaporated, vast layers of salt crystalized on the sea bottom. Out of the evaporating sea water the potash salts were the last to crystalize and thus settled on the top of the salt beds. The sea again filled with water and this time common marine rocks were deposited over the salt. As time passed, the waters receded and the layers of salt were buried to depths of hundreds of feet by sand, silt and rock.

The Saskatchewan potash beds occur in the top of what is known as the Prairie Evaporite Formation. The remainder of the formation which is more than 600 feet thick in places near the centre of the basin, consists mainly of massive halite with clay and anhydrite imbedded throughout. Halite is the technical name for common table salt when it is in place as a mineral.

Potash mineralization is found in the upper 150 to 200 feet of the Prairie Evaporites. The three predominant minerals in the potash bearing formation are halite, sylvite and carnallite. Where halite and sylvite occur together, a mechanical mixture called sylvinite is formed. Sylvinite is the ore preferred over carnallite for mining since it contains 46.3 per cent more K20 equivalent and is not contaminated with undesirable magnesium.

Individual beds of these minerals may be 20 feet in thickness, however, the sequence of occurrence is not always the same. Even in one locality the sequence may vary. In some wells the upper beds may be predominantly carnallite grading, down into sylvite-rich beds whereas in others the sequence is reversed or sylvite might be found throughout. In addition, the potash salts vary in texture from fine grained to very coarse grained, the latter found mainly in the lower part of the formation.

This belt of potash deposits, sometimes 100 miles wide, extends on its northern edge from Lloydminster on the west in a southeasterly

direction to east of Esterhazy on the Manitoba border. Generally the beds dip gradually in a southerly to southwesterly direction. Thus depths of the deposit range from 3,000 feet below the surface at the northern edge to 7,000 feet near the International Boundary.

Potash was deposited in the earth when ancient seas dried up. Being soluble, potassium salts tend to accumulate in the seas.

In ancient geological times sea waters covered much of the earth surface and as these seas evaporated and dried they left behind deposits of potash salts.

Later encroaches of water, however, would dissolve the earlier deposits of potash and so today intact deposits of these ancient salts are relatively rare.

In Saskatchewan potash deposits occurred during the Middle Devonian Age and lie in a geological formation known as the Prairie Evaporite. This formation, ranging from sliver thin to over 700 feet deep in places, lies between 1,300 and 9,000 feet beneath the prairie surface.

The formation results from an ancient sea that covered large portions of Alberta and Saskatchewan and parts of Manitoba and North Dakota. It is Saskatchewan's good luck that as this sea dried, potash salts tended to accumulate in its Saskatchewan portion.

As a result of the cyclical drying of the sea, potash in Saskatchewan was deposited in three layers. The top layer is known as the Patience Lake member, the middle layer as the Belle Plaine member and the lowest layer as the Esterhazy member.

The principal potash product, potassium chloride, comprises about 30 per cent of each of the three layers. Only the Patience Lake member and the Esterhazy member are actually mined, however, since ore from the Belle Plaine member is difficult to process.

Potash is the name for various soluble salts containing potassium but usually it means potassium chloride [(KCL)].

Between 90 and 95 per cent of world potash production is used as fertilizer and in the trade potash is graded on the basis of its potassium oxide (K20) equivalent. Potassium oxide is neither a natural mineral nor a manufactured product, but provides a standard of comparison for potassium compounds.

In the fertilizer trade, potash refers to potassium chloride rated to the equivalent of 60 per cent K20 and this product is known as muriate of potash. Production is often quoted as tons of K20, representing 60 per cent of the actual weight of the potash product.

The word "potash" itself derives from an old method of producing potassium by leaching wood ashes and evaporating the resulting solution in a large iron pot. The residue in the pot was called "pot ash". The "pot ash" was used in the manufacture of soaps, glasses and medicines.

Natural potash deposits were first discovered in Germany in 1839. About the same time a German scientist discovered that potassium was an important plant food. As a result of these two events, the first potash refinery for extracting potassium chloride from raw potash was established at Strassfurt, Germany in 1861 and very quickly agriculture became the major consumer of potash.

The German potash industry, which included mines now located in East Germany and those in Alsace which only came under French sovereignty after the First World War, enjoyed a monopoly during those formative years and later emerged as the leader of a European cartel of potash producers. It is generally conceded that during their years of influence the European cartel kept potash prices just low enough to discourage widespread investment in the industry.

Until the oubreak of World War I, Germany was the sole source of potash for the North American market. With the outbreak of hostilities, however, the United States was denied German potash and was forced to get what potash it could from such expensive sources as lake brines, distillery wastes, flue dusts and seaweeds. As a result, potash prices rose from $45 to almost $500 a ton during the war.

Although foreign supplies were available again after the war, the United States was understandably anxious to develop a domestic source of potash. When in 1925, drilling for an oil well near Carlsbad, New Mexico, turned up a substantial thickness of potash salts, the federal government was quick to aid in the mapping of the deposit. The results were positive and in 1931 large scale mining operations began potash production at Carlsbad. That was also the same year potash production began in the Soviet Union, although it is only in the past decade or so that large scale potash production has been undertaken in Russia.

The development of alternate sources of potash in the United States, Russia and Poland was the first break in the world wide control of the potash industry by the European cartel. Following the break-up of Germany after the Second World War, the United States became the world's leading producer of potash.

With the emergence of the Canadian and Russian potash industries over the past 15 years, there are now five major potash producers: Canada (23.6 per cent), Russia (27.9 per cent), East Germany (12.3 per cent), United States (10 per cent), and European producers (26.2 per cent). Other producing countries like Chile, Peru, Finland, Netherlands and India produce less than one per cent of world potash production.

Exports

Saskatchewan's largest customer for potash is the United States where, in 1974, approximately 70 per cent was sold.

Other major markets are among Pacific nations. Vancouver is the export point for potash, and among the Pacific nations transportation costs are low enough to allow competition among other exporting countries.

The first three attempts at shaft mining potash in Saskatchewan encountered serious problems in penetrating the Blairmore and one of the attempts was abandoned. Eventually, a method of lining the mine shafts with heavy steel walls was developed and development accelerated.

In order to reach the potash at these great depths, drillers or shaft sinkers must penetrate a number of water-bearing formations. The most treacherous of these is the Blairmore sandstone formation.

This is 200 to 300 feet of "quicksand" containing salt water. Water pressures in this area range from 400 to 800 pounds a square inch--25 to 50 times air pressure at sea level.

Different mines use different methods to get through the Blairmore but they all inevitably have to contend with the problem.

Compared to most coal and metal mining, potash mining is remarkably straightforward.

Simply stated, the sinking of a shaft to reach Saskatchewan potash deposits involves excavation of a shaft about 18 feet in diameter to ore deposits about 3,000 feet in the ground.

Where the shaft encounters water bearing formations, the area in the vicinity of the shaft is first frozen by pumping in refrigerants and the walls of the shaft are grouted to prevent water seepage.

Heavy steel lining is used to wall the shaft where it passes through the Blairmore and both ends are tightly sealed.

Highly mechanized mining equipment is used to dig out potash deposits underground and the ore is carried to the surface where common salt and other impurities are refined from the ore to leave potassium salt products.

With present mining methods, about 35 per cent of underground potash deposits are recoverable by shaft mining and about 70 per cent of potash deposits are recoverable by solution mining.

Being a relatively young industry, Saskatchewan potash mines are among the most technologically advanced in the world and consequently enjoy lower operating costs when operated at full capacity.

Contributing to the development of potash mining technology have been several Canadian agencies.

Both the National and Saskatchewan Research Councils have undertaken basic research where it sould be of benefit to the entire industry and governments have funded university research projects of specific interest to the potash industry.

The Saskatchewan Research Council, for example, has undertaken considerable research into solution mining techniques and the problem of disposing of salt wastes, and both the National and Alberta Research Councils are researching methods of moving potash and other solids through pipelines.

There have been no fundamental changes in the elementary techniques of mining potash. The methods used have been adapted from other mining industries such as underground coal mining, salt solution mining and brine evaporation.

Potash technology has concentrated on refinements to basic mining technology to suit various environments and the necessities of the refining process.

There are two basic methods of mining underground deposits of potash in Saskatchewan.

One is called solution mining and in simple terms involves pumping hot water into potash formations where it dissolves the potash salts. The resulting brine is then brought to the surface and potash products are refined. The process is naturally more complicated than the explanation, however, and involves many technological problems.

At present there is only one solution mining operation in Saskatchewan, Kalium's mine at Belle Plaine and many of the processes involved in the mine are kept a closely-guarded secret by the company.

Although solution mining allows access to potash deposits inaccessible to a shaft mining operation, its main drawback at present is the fact that is an extremely energy intensive operation and hence subject to soaring energy costs.

The principal method of potash mining in Saskatchewan involves the sinking of shafts to ore deposits and mining of the deposits by men and equipment.

POTASH FIRST FOUND IN 1942

Potash in Saskatchewan was first discovered in a core sample from an exploratory oil well being drilled near Radville in 1942.

Shortly after it was found in another core sample in the area. The potash, however, was over a mile deep in the ground and provoked little interest.

In 1946 another exploratory oil well near Unity discovered potash. This time the core sample showed potash at a depth of 3,466 feet and the sample graded over 21 per cent K20 over an 11 foot section.

Although the depth of the ore was still deeper than European and New Mexico deposits, the high quality of the deposit (European potash ores average only 15 per cent K20) excited considerable government and commercial interest.

The vast majority of wells drilled in oil exploration are not cored, so federal and provincial government agencies undertook to assemble and evaluate potash samples incidental to the search for oil and gas.

Rich potash beds were discovered under a large portion of Southern Saskatchewan that soon indicated Saskatchewan had one of the richest and most extensive potash deposits in the world.

The first attempt at commercial production of potash occurred at Unity in 1951. An effort was made to solution mine the potash, but when this failed, conventional shaft mining was tried.

By 1960, the shaft was approximately 1,800 feet deep when it was flooded to within 360 feet of the surface and the site was abandoned.

In 1956 the Potash Company of America, which also mines in New Mexico, began shaft sinking at Patience Lake near Saskatoon and production from the mine began in November, 1958.

A year later production was suspended because of water seepage in the shaft. Operations didn't resume until 1965 after extensive modification to the shaft and milling operation.

The International Mineral and Chemical Corporation (IMC) began shaft sinking in the Esterhazy area early in 1957. IMC was the first company to successfully overcome the shaft sinking problems.

The IMC shaft reached potash deposits in 1962 at a depth of 3,132 feet and since then, this mine, the largest in the province, has been in continuous operation.

In 1967 a second shaft, named K-2 by the company, was completed at a distance of about six miles from the original K-1 shaft. The two mines are now connected underground.

Saskatchewan's third producing potash mine is also the province's only solution mine. Kalium Chemicals Limited began production in October 1964 with a plant near Belle Plaine, between Regina and Moose Jaw, where potash beds are 5,200 feet beneath the surface.

In 1968 another three potash mines came into production in Saskatchewan, followed by two more in 1969 and another in 1970.

The capital costs of each ranged between $60 and $90 million and the estimated total investment by the industry now is about $1 billion. Estimates put capital costs in the order of $2.5 billion in terms of present day dollar values.

APPENDIX F

POTASH MINES IN SASKATCHEWAN

Below is a list of potash mines in Saskatchewan, their locations, their ownership, and their rated production capacities in tons per year (as of mid-1978).

1. International Minerals and Chemical Corp. (Canada) Ltd.

   Operates two mines near Esterhazy with a combined capacity of 1,730,000 tons. Also operates an additional 600,000 ton capacity mine on behalf of PCS Esterhazy, for a grand total of 2,330,000 tons. Owned by International Minerals and Chemical Corp., Libertyville, Illinois.

2. Potash Company of America

   Operates a mine at Patience Lake, east of Saskatoon. Capacity: 460,000 tons. Owned by Ideal Basic Industries, Denver, Colorado.

3. Kalium Chemicals Ltd.

   Operates Saskatchewan's only solution mine at Belle Plaine. Capacity: 937,500 tons. Owned by Pittsburg Plate Glass Industries Inc., Pittsburgh, Pennsylvania.

4. Cominco Ltd.

   Operates a 720,000 ton capacity mine at Vanscoy. Owned by Canadian Pacific Investements, Vancouver, British Columbia.

5. Central Canada Potash Ltd.

   Operates a 900,000 ton capacity mine at Colonsay. Owned 51% by Noranda Mines, Toronto, Ontario; and 49% by CF Industries Inc., Chicago, Illinois.

6. Allan Potash Mines Operators Ltd.

   Operates a mine at Allan. Owned 40% by Texas Gulf Potash Co., Raleigh, North Carolina; and 60% by the Potash Corporation of Saskatchewan. Texas Gulf has an allocated rated capacity of 365,000 tons per year, and PCS Allan has 548,000 tons, for a total operating capacity of 913,000 tons.

7. The Potash Corporation of Saskatchewan

   Operates mines with rated capacity as follows:

   a) PCS Lanigan: 600,000 tons
   b) PCS Rocanville: 732,000 tons
   c) PCS Cory (near Saskatoon): 732,000 tons.

See also the notes under IMC and Allan Potash re PCS Esterhazy and PCS Allan. A Saskatchewan Crown Corporation headquartered in Saskatoon.

Total rated capacity of Saskatchewan mines is 8,324,000 tons per year, of which PCS controls 3,212,000 tons, or approximately 39%.

In 1977, total potash production was 6,700,000 tons, about 80% of rated capacity.

APPENDIX G

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PREPARING PROVINCIAL BUDGET YEAR-ROUND TASK

by Yvonne Zacharias

In less than a decade and a half, the Saskatchewan government's budget has swelled from $271 to about $1,400 per capita, forcing those holding the purse strings to take a cold, calculating look at how the government spends its money.

The public, politicians and bureaucrats have started to seek some of the reasons for burgeoning government spending and to question whether more dollars have bought a better quality of life.

And with more money to spend, the process of drawing up a budget has become a complicated process, turning into virtually a year-round project.

One booklet published by the provincial finance department has compared budgeting to a poorly written play. "By the time one manages to get the characters and the plots sorted out, it's almost over".

Only two months after the provincial government has announced its budget for the upcoming year, it starts setting the stage for the year after with a call going out to all departments in early May for estimates of their expenditures.

These estimates are submitted to the budget bureau which is the staff arm of the treasury board, a five-member committee led by the finance minister. The current five members are Finance Minister Walter Smishek, Health Minister Wes Robbins, Consumer Affairs Minister Ed Whelan, Environment Minister Neil Byers and Industry and Commerce Minister Norm Vickar.

Sometime in the fall before the budget bureau has begun in earnest to analyse estimates, cabinet ministers hold a planning conference to look at the broad direction of government spending, projected revenue and the over-all level of the budget at which it decides to aim.

Once the estimates are submitted, the budget bureau's team of analysts questions a program's costs, its relative priority, its effectiveness in meeting its stated goals and recommend direction for action, according to Dave Innes, budget bureau director.

It is here that the government puts programs through the test to see whether they measure up to its own standards and how a program meshes with or duplicates other programs.

The results, which are never made public, are for scrutiny by the

budget bureau and the treasury board to help them in determining how the public dollars will be distributed.

The bureau's analysis and recommendations complete, the treasury board looks at projected revenues, studies the entire picture of expenditures laid out by the budget bureau and comes to some tentative conclusions in December.

The cabinet then sequesters itself for three days, usually in the first two weeks of January, to make its final decision.

While some provinces have a system of channeling the work of analysts straight to cabinet for a final decision, Mr. Innes said Saskatchewan has a strong treasury board tradition, providing a central board through which the government can assemble its priorities, bring all its programs together into one picture and see where the province is heading.

But when the government decides how it will spend $1 billion, it has less leeway than you might think.

Mr. Innes said about two-thirds of the budget is "locked into" major expenditures such as health care, education, municipal grants and others.

He said the budget bureau does not question the basic assumptions behind these established programs which are slotted onto an "A" budget, devoting most its time to scrutinizing the "B" budget or the new programs and initiatives on which the money left over from the "A" budget is spent.

Though the level of funding for "A" budget items may fluctuate and their status may be challenged, Mr. Innes said it contains items such as medical care insurance, the health services plan and social assistance payments for which it feels it has no choice but to continue spending money.

The government does not actually deliver some "A" budget programs and therefore does not have direct control over their efficiency or levels of funding, Mr. Innes said.

He said the budget bureau is not designed to handle "zero-based budgeting" in which every item on the budget is "challenged, assessed and pulled apart" until you are at the point of zero dollars.

Once a government program is established, it is fairly secure since Mr. Innes said there is "certainly a built-in resistance to outright elimination" of programs. There is "a certain amount of politics with a small 'p' which enters into this since a group of people feel deprived if a program is withdrawn".

But departments are asked to review areas which may be redundant or superfluous and these are destined for the "x" budget.

With more and more money being spent on programs, the search was on

in 1972 to find a standard, systematic way of measuring output for the amount of money and energy put into a program.

The government hit on a "program-based management information system" (PMIS). Basically, the PMIS works by feeding specific information on a program into a system and working it through a mathematical formula with the results indicating how much the government is getting out of a program for what it is putting in.

This system allows program managers to detect areas where they could improve their programs while the documents it produces contain information assisting the budget bureau and treasury board in evaluating a program's expenditures and performance when drawing up the budget, Mr. Innes said.

About one-third of all government programs are put through this system, Mr. Innes said.

On the opposite side of the coin, the money spent by the government has to come from somewhere and when cabinet ministers meet in the fall to take a look at the over-all picture of expenditures, they also examine options to change the level of revenue.

At this point, the finance department's taxation and fiscal policy branch headed by Robert Douglas compiles options.

If the government finds itself short of dollars for the level of programming at which it is aiming, its options are simple though never popular politically. It can cut programs, raise taxes in a number of key areas or both.

The provincial government's top sources of revenue are federal payments, personal income tax and education and health tax. Revenues from resources, the liquor board and corporate income tax revenues are next in line.

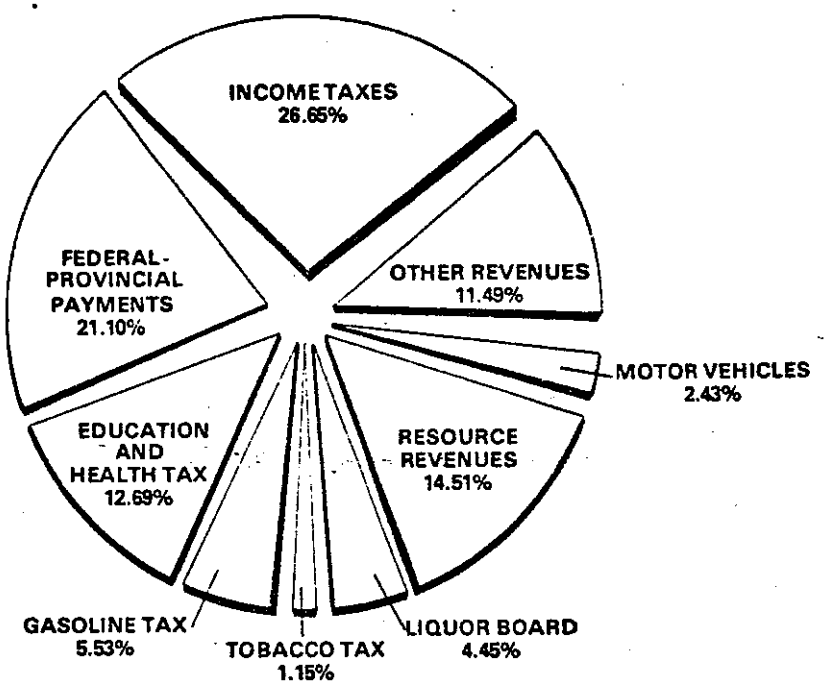
Other than the consolidated fund or general revenue, the province has established the energy and resource development fund for revenue from the province's mineral income tax and royalty surcharge on gas and oil.

Mr. Douglas said the reason for this fund is these resources will be depleted and the revenues from them are temporary. "It is fiscally prudent to set those revenues aside and use them for capital expenditures and developing the economy of the province".

If this money was rolled into the consolidated fund, the province would incur a level of expenditure which would be too high to be funded from ordinary tax sources in the future, Mr. Douglas said.

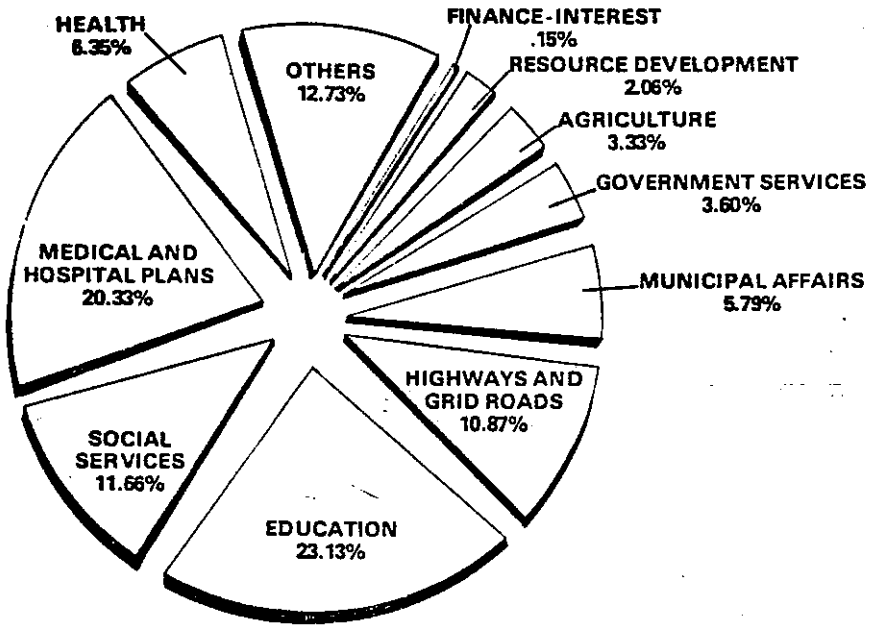
Mr. Douglas said the branch is always looking ahead about four or five years in its revenue projections.

GOVERNMENT OF THE PROVINCE OF SASKATCHEWAN
1977-78 ESTIMATED BUDGETARY CASH INFLOWS



Percentage of Total Cash Inflows			Amount
	Income Taxes		
	Individual Income Taxes	$310,563,000	
	Corporation Income Taxes	82,214,000	
26.65	Total Income Taxes		$ 392,777,000
	Federal-Provincial Payments		
	Equalization	$ 64,900,000	
	Post-Secondary Education	3,600,000	
	Revenue Guarantee	11,600,000	
	Established Programs Financing	142,424,000	
	Statutory Subsidy	2,110,000	
	Federal-Provincial Programs	86,248,900	
21.10	Total Federal-Provincial Payments		310,882,900
12.69	Education and Health Tax		187,000,000
5.53	Gasoline Tax		81,500,000
1.15	Tobacco Tax		17,000,000
4.45	Liquor Board		65,500,000
	Resource Revenues		
	Mineral Resources		
	Petroleum and Natural Gas	$ 99,100,000	
	Metallic Minerals	2,399,000	
	Mineral Acreage Tax	2,500,000	
	Potash	95,250,000	
	Other Minerals	2,534,480	
	Lands, Forests, Game, Fur, Fisheries and Water	12,078,840	
14.51	Total Resource Revenues		213,862,320
2.43	Motor Vehicles		35,760,000
11.49	Other Revenues		169,301,050
100.00	TOTAL BUDGETARY CASH INFLOWS		$1,473,583,270

GOVERNMENT OF THE PROVINCE OF SASKATCHEWAN
1977-78 ESTIMATED BUDGETARY CASH OUTFLOWS



Percentage of Total Cash Outflows			Amount
6.35	Health		$ 96,143,330
20.33	Medical and Hospital Plans		307,590,210
11.66	Social Services		176,455,960
	Education		
	Department of Continuing Education	$126,612,270	
	Department of Education	223,540,430	
23.13	Total for Education		350,152,700
	Highways and Grid Roads		
	Highways — Ordinary	$ 57,169,030	
	Highways — Capital	85,525,000	
	Grid Roads	21,813,710	
10.87	Total for Highways and Grid Roads		164,507,740
5.79	Municipal Affairs		87,630,030
	Government Services		
	Ordinary	$ 28,236,010	
	Capital	26,216,700	
3.60	Total for Government Services		54,452,710
	Agriculture		
	Ordinary	$ 44,286,180	
	Capital	6,063,040	
3.33	Total for Agriculture		50,349,220
	Resource Development		
	Tourism and Renewable Resources		
	Ordinary	$ 21,629,900	
	Capital	1,944,000	
	Mineral Resources	7,596,390	
2.06	Total for Resource Development		31,170,290
.15	Finance — Interest		2,306,030
12.73	Others		192,586,340
100.00	TOTAL BUDGETARY CASH OUTFLOWS		$1,513,344,560

APPENDIX H

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TWO WATCHDOGS STAND WATCH OVER OPPOSITE POLES

Though it sometimes hurts, the provincial government feeds two hands so they can bite it whenever it attempts to misuse public money.

And the presence of these two watchdogs--the comptroller who issues most of the government cheques and the auditor who examines the government's books after the expenditures are made--are often credited with keeping the government on its toes.

As the two who pounce when errors are about to be made or have been made, Willard Lutz, auditor, and L. S. Schneider, comptroller, are not always popular.

But, without their positions, both question whether the provincial finance system would work.

The two offices have no say when deciding in what areas government money should be spent. But each is stationed at an opposite end of the same system to ensure that the government rarely slips up in its method of spending money and recording those expenditures.

With the comptroller's office working as a pre-audit and the auditor's office working as an after-audit, few mistakes slip through, according to the two government spokesmen who head these offices.

Mr. Schneider said his office ensures cheques are not issed when there is no legislative authority for them in the budgetary estimates, when the money in the account from which the cheque is drawn has run out or when the cheque has not been properly signed and approved at the departmental level.

And his word is almost final. Mr. Schneider said if he refuses to issue a cheque, the only body which can over-rule his decision is the treasury board consisting of five cabinet ministers.

Though his office does not issue cheques for all government departments, its tentacles reach into any government department or agency that draws money from the consolidated fund or the government's general revenue.

Mr. Schneider said before any agency, board or other government body opens a bank account, "it has to come through here". Since 1974, the comptroller's office has been responsible for approving the bookkeeping system or changes to it in any new agency or department for which it does not issue cheques.

Though the comptroller wields a big stick, his power is at the same time limited by geographical distance from some offices and by the fact

he does not control cheques issued by such major spenders as the Medical Care Insurance Commission and the Saskatchewan Hospital Services Plan.

A government office in La Ronge, Prince Albert or some other centre would have to issue its own cheques because it could not wait for cheques from the comptroller and expect to operate smoothly.

But Mr. Schneider said the government has developed what he calls an "impressed system" where regional offices are given a limited amount of advance money on which to write cheques. These cheques are then channelled through the comptroller's office before the office is given additional funds so "there is a limited amount that can go wrong," he said.

He points out that the auditor-general of Canada has been urging for the establishment of an office like his in the federal government.

But Mr. Schneider said the office would quickly be eliminated if it were there only to antagonize. Instead, it often assists government departments by advising them how to go about obtaining money, he said.

And when departments are in danger of running out of money, the comptroller rings the warning bell and advises them to seek a special warrant for funds which were not appropriated in the government's budgetary estimates.

Before 1968, the provincial comptroller's and auditor's offices were together but Mr. Schneider said the government recognized they should be separate since the auditor acts as a watchdog over the comptroller. Once the comptroller has punched out the red tape, it is then up to the auditor to unravel it and see if mistakes were made.

Auditors are not out to detect fraud though they sometimes find it while checking how the government spent its money, how it recorded those expenditures, whether it exceeded the amount it could legally spend or placed itself in a position where it could not pay the bill, according to Mr. Lutz and Ron Meldrum, a deputy provincial auditor.

And government auditors do not check how each dollar is spent. Instead, they establish a "materiality level" of spending or the point at which they start to become concerned whether money has been misused.

"What do I care if they put $10 into the wrong account?" Mr. Lutz said. "What is $1 million in $750 million? It's really nothing."

A materiality level is often determined by the size of a department's, agency's or Crown corporation's budget but the auditors say there is no strict formula for determining the level.

"You use a combination of a percentage of the total budget plus a sensitivity factor," Mr. Meldrum said. For example, if a corporation with a budget of several million dollars loses 30 trucks valued at $100,000, the amount is not a large percentage of the total but the circumstances surrounding the loss cause it to be viewed as substantial.

Though the auditor's office does not check every detail, "we try to touch on every area of the system," Mr. Lutz said, adding that this spot check will turn up weaknesses in the system of internal controls which stand in the way of complete and accurate records.

The auditor's office has been undergoing some major internal changes to help alleviate a serious staff shortage and to streamline its accounting procedures. A national accounting firm was hired to assist the auditor's office in preparing an audit manual and in developing a standard procedure for handling all situations.

Unable to attract many chartered accountants from private firms, Mr. Lutz said the office has taken to "growing our own" by hiring an increasing number of articling students from accounting courses.

Despite a recruitment problem which has left 10 of the office's 58 positions vacant, "we have never cut down on our work to the point of not being able to express an opinion" on the financial operations of a government agency or to audit his statements, even if this has meant 75-hour work weeks for some staff.

However, the auditor's office has been unable to continue the practice of sending out management letters to all areas of government. In these letters, it pointed out areas where they could improve their accounting procedures.

Mr. Lutz pointed out that he is responsible to the legislature, not the government, and he is quick to emphasize his office is totally free from political interference.

"An election doesn't mean anything in this office," he said.

APPENDIX I

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THE "PINSTRIPERS" EARN EXTRA FUNDS

M. I. Meiklejohn and Co., stocks, bonds and securities.

The sign is missing but in almost every other way the investment and financial services branch of the provincial finance department is like the investment arm of a large private corporation.

Each morning around 9 a.m., the phones in the branch start ringing with regular investment dealers calling to see if the government has any money to invest that day.

And the three money traders in the branch start playing a giant poker game with government money for chips. By noon, the traders must have the government's surplus cash tied up in bonds, notes and other forms of securities.

The government invests its money in Canadian treasury bills, provincial treasury bills, bank notes, trust companies, corporations and finance companies depending on the interest rates offered to the government and the quality of the paper issued by the companies to the investor.

With deals to be initiated and concluded in less than four hours, "things have to be done quickly and smoothly." Mr. Meiklejohn said. A breakdown in telephone communications with the major money markets in Eastern Canada is a major catastrophe for the division since it can cost the province about $225 a day on $1 million if it is not invested.

As the government's budget has increased, shooting up over the $1 billion mark, the Monopoly game has grown.

At any one time, the branch has between $300 and $500 million from the government's consolidated fund or general revenue, not immediately required for expenditures, invested in a short-term securities, often ranging between 30 and 60 days.

In addition, it has between [?] and $400 million from pension funds, insurance, trust accounts, workers' compensation board funds and other areas described as permanent funds to be invested in long-term securities.

Add $180 million to the amount and you get a grand sum of close to $1 billion for wheeling and dealing by the investment and financial services branch.

Mr. Meiklejohn, who wears a pinstripe suit and looks like a recent recruit from the accounting department of a major corporation, but actually moved from the provincial auditor's office to the branch about 15 years ago, said he can recall when the branch had only $5 million to invest in short-term securities. "I grew up with it," he said.

With about $1 billion to invest annually, the branch has become an important area for generating revenue through interest payments for the government. Mr. Meiklejohn said the branch made about $30 million last year from interest on government money and this year the figure will be higher.

For some who have a hard time keeping track of how much money is left in a personal bank account before payday, the big question would be how the branch knows the exact amount of surplus money on hand to invest on any given day.

It doesn't according to Mr. Meiklejohn who said it is impossible to tag the amounts to the last cent.

But the division would rather err by investing too much than too little since it can always borrow from the bank to meet expenditures which have fallen due. The interest it pays on a short-term bank overdraft is less than the interest the government loses by not having its money invested, Mr. Meiklejohn said.

Mr. Meiklejohn said the branch is given a fairly free hand in investing the money but there is broad legislation governing it and the branch must follow guidelines set out by the provincial investment board headed by the finance minister.

On the debits side of the government ledger, the division is responsible for borrowing to meet the capital requirements of the province. To date, the province has borrowed for two major Crown corporations, Saskatchewan Telecommunications, Sask Tel and the Saskatchewan Power Corporation's, (SPC) capital requirements, meeting the cost of other capital requirements such as highways and office buildings out of general revenue.

Though other provinces have gone into debt for such capital requirements as office buildings and highways, the general rule here has been to borrow only when the agency requiring the money will generate revenue to pay back the debt, Murray Wallace, deputy-finance minister, said. Obviously, office buildings and highways do not generate revenue whereas Sask Tel and SPC do.

Mr. Meiklejohn said when a decision is made to borrow, the province compares interest rates in the United States, Canada and Europe where it has established syndicates of about 21 investment dealers and five banks who continually provide the province with advice on market conditions.

The province then arranges a price meeting with the syndicate in the country which has the lowest interest rate. Mr. Meiklejohn said the syndicate offers a price to the province for its bonds and, if satisfactory, purchases them from the province and goes out to the public to sell them.

Though borrowing outside the Canadian money market is riskier because of the fluctuations in the rate of exchange on the dollar, the province borrowed money on the United States money market for the first

time in the 1970's last year and it also borrowed for the first time on the Eurobond market.

Mr. Meiklejohn said the province has borrowed in the United States because the Canadian money market cannot raise all the money required in Canada, cheaper interest rates and the close tie between the economies of the two countries.

When the province borrowed last year, interest rates in the United States were 1¼ to 1½ per cent cheaper than in Canada, he said.

If the Canadian dollar is worth less than the American dollar when the province makes its interest payments twice a year, it must increase the number of Canadian dollars it pays out which some critics say contributes to inflation at home.

But Mr. Meiklejohn said the fluctuations in the rate of exchange between the Canadian and U.S. dollars always balance out in the long term.

And any additional dollars which may have to go out of the province because of a devalued Canadian dollar are more than made up by the cheaper interest rates in the United States.