



Saskatchewan
Learning

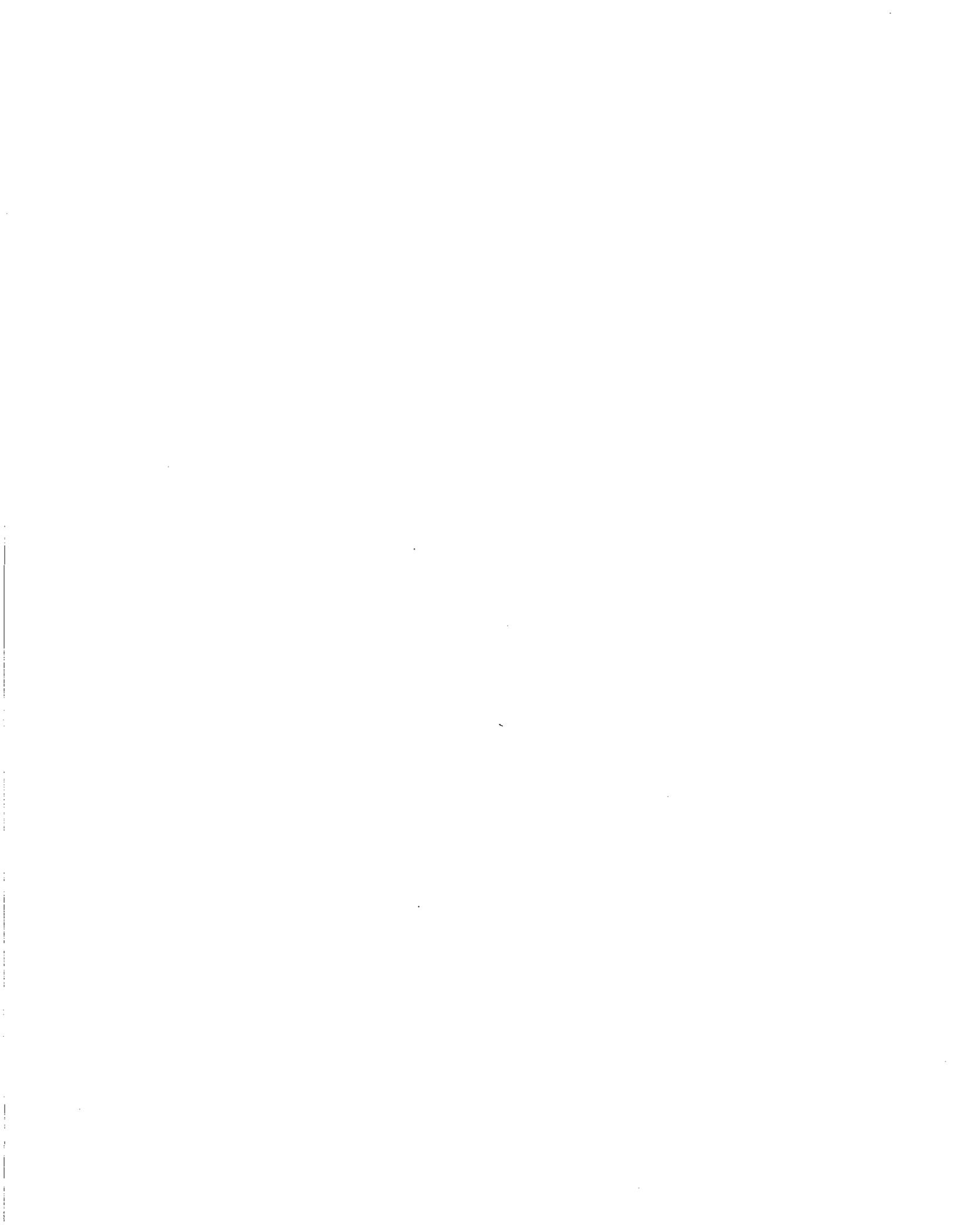
Geography

Program of Studies for the High School - Grade 10



Recycled Paper

July 1964



SUPPLEMENT TO THE GRADE X GEOGRAPHY COURSE

Course Modifications

Experience with the Grade X Geography Course during the past two years appears to show that many teachers have found it difficult to complete the course as outlined in the interim edition (1964) in the time allotted (a minimum of 120 minutes). The Provincial Geography Committee has therefore made the following proposals to help make the course more manageable:

Unit I

Do not spend much time on the earth in space since it has been taught previously. Emphasize its character and portrayal.

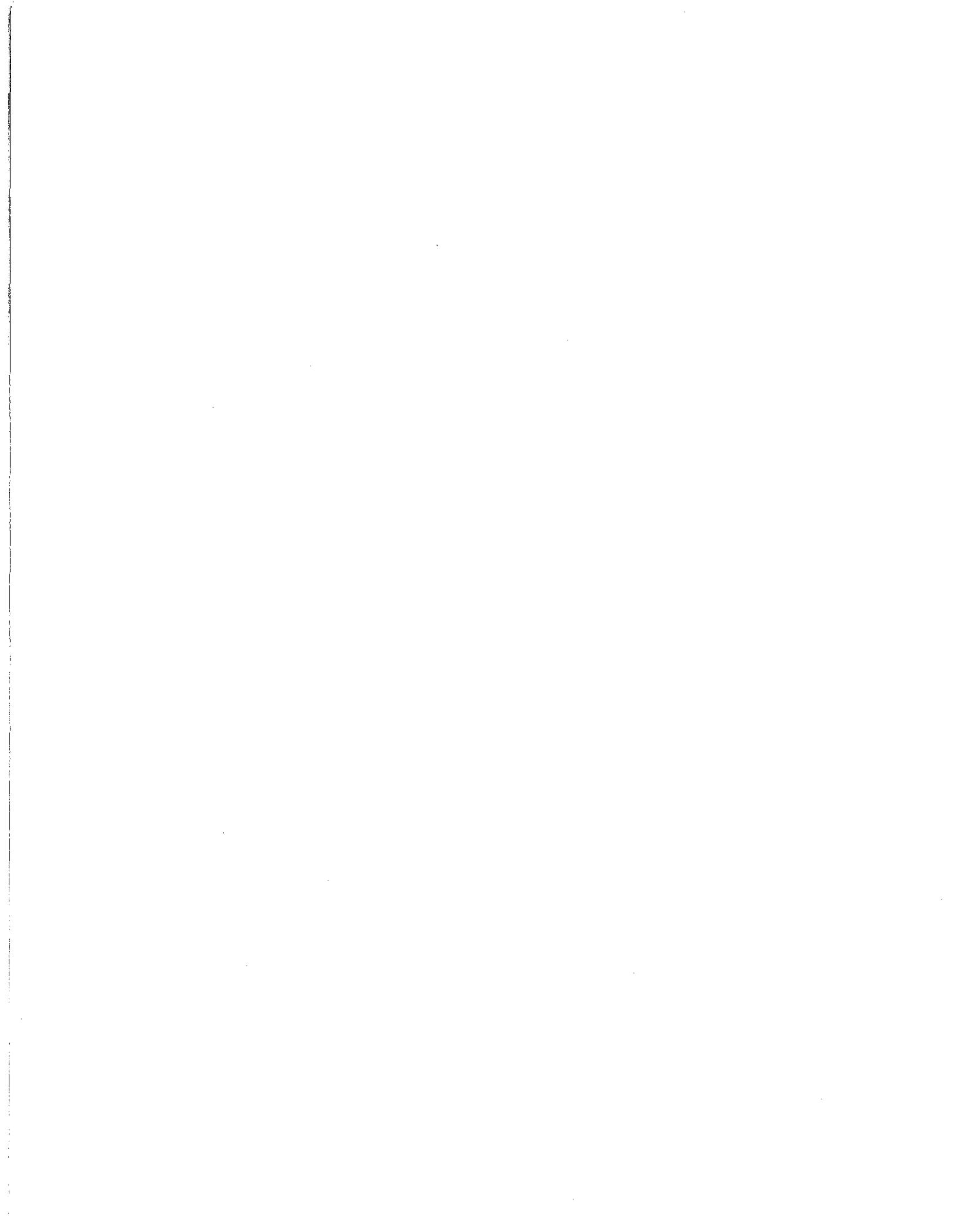
Unit II

Form of the Earth - Composition of the Earth. This chapter has been studied in earlier grades so a minimum time on it should suffice.

Units V and VI

Instead of dealing with these as separate sections, material on economic geography and population can be incorporated in the study of Unit IV under the title "Climatic Regions and Man". These topics will be treated in more detail and depth in the Grade XI geography course, so teachers may treat these sections as optional or as separate sections for Grade X. This arrangement will permit teachers to offer a basic course in physical geography included in Units I to IV inclusive and devote what additional time might be so gained by incorporating the elements of Units V and VI with Unit IV.

Teachers, of course, are free to include these units in full as part of the year's course if they have the time and opportunity to do so.



GRADE X - GEOGRAPHY MATERIALS

To be incorporated under Instructional Aids - will replace (a), (b), (c), (d).

The following list of materials is considered to be the minimum required for teaching this course. Schools will be expected to purchase these.

MAPS

World Relations Sets. Set No. P913 - 54cm. Maps included:

Density of Population	P9d
Natural Vegetation; January Ocean Currents	P9v
Predominant World Economies	P79c
Soils	P79s
Climate Types	J9c
Land Utilization	J9Lu
Occupations; Transportation	P9c
Annual Rainfall; July Currents; Tempo Range	P9o
Temperatures; January and July isotherms	P9t
Climate; Pressure, Winds, Rainfall (Northern Summer)	P9s
Climate: Pressure, Winds, Rainfall (Northern Winter)	P9w
Relief of Land	P9r
Political and Communications	P9p

CHARTS

The Science of the Earth (Mtg. No. 54) Charts include:

Picture History of the Earth
Earth as a Sphere
Relationships of Earth to Sun
Maps
Time
Inside the Earth and Layers of the Atmosphere
Wind Systems of the Earth
Changing Surface of the Earth
Rocks and Minerals
Rocks and Soil
Water on the Earth
Conservation

(Note: Listed in the Denoyer-Geppert catalogue 1966)

Geographical Terms Chart No. S100X-14 (Denoyer-Geppert)

The above are available through Moyers, Saskatoon, if not through Denoyer-Geppert.

Grade X Materials (cont'd)

TOPOGRAPHIC MAP SHEETS

1. Topographic map sheets of the students' home areas. It is suggested that one map be available for every four students.

These sheets are available from Map Distribution Service, Department of Mines and Technical Surveys, Ottawa. Price: 50¢ a sheet.

2. One copy of each of the following should be available per four students: These sheets are available from the United States Geological Survey, Washington 25, D.C. Order by the name of the quadrangle. Price 50¢.

<u>Sheet Description</u>	<u>Name of Quadrangle</u>
Youthfully dissected plains	Binger, Okla. (dentritic dissection)
Pediments	Antelope Peak, Ariz.
Floodplains	Mellwood, Ark-Miss.
Alluvial Fans	Ennis, Mont.
Karst Plains	Mommoth Cave, Ky.
Till Plains	Sun Prairie, Wis.
Knob and Kettle	Vergas and Pelican Rapids, Minn.
Aeolian Sand	Ashby, Neb.
Erosional Mountains	Warm Springs, Ga.
Volcanic Mountains	Bray, Calif.
Fault Scarp	Mount Whitney, Calif.
Alpine Glaciation	Holy Cross, Wyo.
Sea Cliffs	Pt. Reyes, Calif.
Beaches and spits	Edgerton, Mass.
Synclinal Mountains	Straburg, Ark.

AERIAL PHOTOS

These photos may be obtained from Department of Natural Resources, Surveys Branch, Regina, Saskatchewan.

1. Set of Stereographic pairs of photos of the students' home area.

2. Aerial photographs: six stereo-pairs to illustrate glaciation.

1. Alberta, Lands & Forests,	160 - 5112X 2424 - 83 & 84	Yoho Valley, Daly Glacier & Takakkaw Falls (U-shaped valley, hanging valley, etc.)
2. Same as above	160 - 5205X 2111 - 110 & 111	Athabasca & Dome Glaciers (ice-falls, moraines, train, Banff-Jasper Highway)

Grade X Materials (cont'd)

2.	3.	Alberta, Lands & Forests	160 - 5195 1759 - 90 & 91	Near Fitzgerald (ice-scoured plain)
	4.	As above	160 - 5312 1826 - 68 & 69	Elk Island Park (marginal moraine - knobs and kettles)
	5.	Canada, Mines and Technical Surveys	A17843 - 21 & 22	Near Strawberry Lakes, Sask. (till plain)
	6.	Alberta Lands & Forests	A17298 - 27 & 28	East from Moose Jaw (lacustrine plain)

STEREOSCOPES

These are required to view the stereo pairs of air photos. One Stereoscope per four students is required.

These are available from Shaw Industrial Supply Ltd., 5321-1A Street, S.W., Calgary, Alberta.

Map Projection Model

Projection Model is essential to illustrate the three basic map projections.

Available from: Shaw Industrial Supply Ltd., 5321-1A St. S.W., Calgary, Alberta.

Rock and Minerals Samples

One set of each rocks and one set of minerals for each four students. Available from Geological Survey, Department of Mines, Ottawa. Price 50¢.

After this carry on with slides, filmstrips and films, etc., under the heading "Suggested Materials", 6, 7 and 8 Geography X, Interim Edition.

*N.B. Units 4 - 5 - 6 are to be combined under title "Climatic Regions and Man".

F O R E W O R D

This Curriculum Guide for Grade X Geography was developed by a committee representing the Saskatchewan Teachers' Federation, the University of Saskatchewan, the Saskatchewan Teachers' Colleges, the Saskatchewan School Superintendents' Association and the Department of Education. The co-operation of school boards in releasing teachers from regular duties to participate in committee meetings is gratefully acknowledged.

Grade X Geography is an introductory course in physical geography which, it is hoped, will supplement the high school social studies program. It is an optional course which may be offered in lieu of the present grade X health program.

The geography committee deemed it wise to prepare a mimeographed interim edition, to be used in classrooms and evaluated before the outline is finalized. In this way, the suggestions of teachers can be incorporated into the printed program of studies.

In addition to the basic student text, the committee has recommended student and teacher references, and other instructional aids. Only through the use of a wide variety of educational aids can the objectives of the course be attained.

Members of the geography committee are prepared to assist groups of teachers who wish to make a study of the grade X course. Requests for such help should be made to the Curriculum Branch, Department of Education, Regina, Saskatchewan.

I N T R O D U C T O R Y S T A T E M E N T

An adaptation of a statement prepared for the British Columbia Department of Education Geography Advisory Committee by faculty members of the University of British Columbia Department of Geography.

Geography has been defined as that field of learning in which the characteristics of particular places on the earth's surface are examined. It is concerned with the characteristics of places and regions particularly as to:

- (a) their location in relation to other places;
- (b) variable phenomena, both natural and cultural (physical and human), which distinguish one place from another;
- (c) interaction between places.

Regional geography is the study of the distinctive areas of the earth. A region may be defined as an area of any size throughout which there is some degree of uniformity in terms of the criteria by which it is defined. The region may be as small as a farm or city block or as large as a continent; it may be a region defined by political boundaries, high mountains or climatic differences. Regional geography studies areas, seeking to discover and analyze particular patterns of phenomena such as landforms, settlement, or crops.

Geography has always dealt with the physical earth, but modern geographers believe that the significance of the elements of the physical world is a function of the attitudes, objectives, and technical abilities of man himself. Man's interest in and study of the differences which exist from place to place on the earth are related to man's search for knowledge about himself. Put in a simple way, geographical study of the earth and its places becomes interesting and meaningful if it is helping to answer the question, "Why do people do what they do where they do it?"

O B J E C T I V E S

The intent of this course in geography is to acquaint and explain to the student the basic distributions of physical and cultural phenomena over the earth's surface. Through analysis of these distributions, and some of the societal processes, an understanding of the environment, society and economy of the different regions of the world should be achieved. Further, the study of geography should lead to an appreciation of the fact that the world is one, that no region exists in isolation, that, today, all parts of the world are interdependent.

To ensure the attainment of the above, the geography program should foster in the student the development of the following understandings, skills, and attitudes:

(a) Understandings:

1. There is no split between "physical geography" and "regional geography". Geography is a chorological science (i.e., deals with distribution) which needs and uses the facts of many sciences to arrive at an understanding of differences between regions.
2. Geography is unified by its method and viewpoint and not by its subject matter. Much of its subject matter may be contained in other disciplines -- in history, in physics, in geology, in economics, etc. -- but its viewpoint is distinctive; it is the regional viewpoint.
3. The regional viewpoint infers the recognition of differences and of similarities between areas across the earth's surface. Regions are distinguished on the basis of definite criteria, both physical and cultural.
4. Classification of phenomena (physical or cultural) into categories of greater or lesser degree of generalization should lead to the understanding of areal variation in their occurrence and hence to an appreciation of regional distribution.
5. In recognizing relationships occurring between different classes of phenomena, e.g., areas of dense population coinciding with great natural resources, one must be careful to differentiate between cause and effect relationships and those relationships which are accidental.
6. The major device for demonstrating regional differences and distributions is the map. In addition the geographer uses a variety of descriptive devices including statistical diagrams of many kinds.

(b) S k i l l s :

1. To read with comprehension in the field of geography.
2. To analyze, interpret and evaluate data provided in many forms (statistical, map, or other).
3. To discover geographical relationships and to recognize regional differences.
4. To present, orally and in writing, in organized fashion, the results of geographical research.

5. To use, and construct where possible, the various tools of geography including globes, maps, charts, and graphs.
6. To make case studies, local or other, and thus develop understanding of relationships between environment and human activities.
7. To undertake geographical studies, including elementary field work, of the local area to achieve first hand understanding of the fundamental approach of the geographer.

(c) A t t i t u d e s :

1. Recognition that the state of knowledge is not finite, that new methods of research and new concepts are continually evolving, that understanding of the world in which we live is very incomplete.
2. Willingness to undertake research with an open mind and to arrive at generalizations based on unbiased appraisal.
3. Willingness to recognize that cultural differences across the world are the result of geographical, historical and societal factors rather than a result of "racial" dissimilarities.
4. A willingness to recognize that regions of similar physical environment may be occupied by very dissimilar economies and societies and that these dissimilarities are a result of numerous factors including stage of cultural and technical development, together with differences in the objectives of the peoples concerned.
5. A willingness to understand that no region exists in isolation that all parts of the world are inter-related and interdependent.

RECOMMENDED PROCEDURES

Geography describes the earth's surface with particular reference to the differentiation and relationship of areas. It is not an exact science which uses the logic of deduction. Its logic is inductive, appropriate to all the sciences. of observation and experiment. This approach in the teaching of geography is accomplished by proceeding from the specific to the universal applications which will lead to generalizations.

The following procedures are recommended:

- (a) Exposition and explanation used in conjunction with diagrams, charts, slides, films, filmstrips, maps, globes, or other instructional aids.
- (b) Field trips with direct observation of geographical phenomena related to the topics being studied.
- (c) Student study of appropriate maps, globes, aerial photographs, films, filmstrips, charts, and collections.
- (d) Committee assignments and student projects.
- (e) Making the greatest possible use of library resources to supplement the student textbook.
- (f) Constructing tests and examinations which measure the students' ability to interpret maps, globes, charts, graphs, statistical data, and geographical descriptions, and to illustrate his answers with sketch maps and diagrams.
- (g) Undertaking a "sample study" of a selected region (See HISTORY AND GEOGRAPHY TEACHING MATERIALS, University of British Columbia, to be published by Gage in 1964.).

I N S T R U C T I O N A L A I D S

(a) Wall Maps:

While many of the wall maps obtained for the social studies program may be utilized, there are many additional maps which should be obtained as funds permit. Before purchase, maps should be previewed.

The following maps would be useful. (May be obtained from Commercial Printers, 1935 Albert Street, Regina.)

J208	Hemisphere Projections (Denoyer-Geppert)
J209	World Projections (Denoyer-Geppert)
J210	Conic Projections (Denoyer-Geppert)
P79s	Soils (Philips)
J 9c	Climate Types (Philips)
J9Lu	Land Utilization (Philips)

The following Philips' maps are excellent: (May be obtained from Moyer Vico Ltd., 331 First Avenue North, Saskatoon).

P9d	Density of Population
P9v	Natural Vegetation
P9c	Occupations: Transportation
P9o	Annual Rainfall
P9t	Temperature
P9s	Climate: Pressure, Winds, Rainfall (Northern Summer)
P9w	Climate: Pressure, Winds, Rainfall (Northern Winter)
P9r	Relief
P9p	Political and Communications

(b) C h a r t s :

Some of the Denoyer Geppert Science of the Earth Charts are very good:

DGSII - 6	Inside the Earth and Layers of the Atmosphere
DGSII - 7	Wind Systems of the Earth
DGSII - 8	The Changing Surface of the Earth
DGSII - 9	Rocks and Minerals

(c) Topographic Sheets :

Topographic maps of your local area may be obtained from Map Distribution Service, Department of Mines and Technical Surveys, Ottawa. The cost is 40 cents per sheet.

(d) Aerial Photographs and Stereoscopes :

Vertical and oblique air photographs may be obtained from the R.C.A.F. Aerial Photographs Division, Ottawa. Stereo pairs for use with stereoscopes are excellent aids. Write to the above address for a catalogue.

(e) S l i d e s : A number of companies have produced slides on specific regions and on landforms. For example,
The Ginn Map Slides may be used in lieu of wall maps:

Set 1	The United States and Canada
Set 2	Latin America, Africa, and Australia
Set 3	Eurasia

(f) Filmstrips :

Most filmstrip distributors have filmstrips dealing with volcanoes; geological action of wind, ice, and running water; meteorology; landforms and crustal movement. Preview before purchase.

(g) F i l m s :

Appropriate films to supplement the materials in the textbook ELEMENTS OF GEOGRAPHY, by Smythe and Brown (Macmillan) may be selected from the Department of Education Manual and Supplement under the Dewey decimal code as indicated below:

Chapter	I:	523.1; 523.2; 629.1
Chapter	II:	525; 525.5
Chapter	III:	912
Chapter	IV:	551
Chapter	V:	551; 552

Chapters IV - XIII:	551
Chapters XIV - XIX:	551.5
Chapter XX:	911
Chapter XXI:	631.4
Chapter XXII:	
Chapter XXIII:	911; 915.4; 915.6; 916.1; 916.7; 917.29; 918.1; 191; 918.3
Chapter XXIV:	911; 915.1; 916.8; 917.3; 917.4; 917.5; 918.2; 918.3
Chapter XXV:	911; 914.2; 915.2; 917.12; 919.3
Chapter XXVI:	911; 914.8; 917.9; 917.18; 917.19
Chapter XXVII:	911; 914.91; 917.19
Chapter XXVIII:	911; 917.2; 917.28; 918; 631.4
Chapter XXIX:	630; 633; 634; 636, 636.5; 676; 677 678; 914.2; 914.3; 914.7; 914.92; 914.94; 915.2; 915.3; 915.4; 915.9; 916.1; 917.1; 917.7; 917.9; 917.11; 917.12; 917.16; 917.19; 919
Chapter XXX:	665; 666; 669; 915.9; 916.8; 917.1; 917.14; 917.19
Chapter XXXI:	627; 631.7
Chapter XXXII:	385; 386; 387; 388; 389; 665
Chapter XXXIII:	633; 634; 639; 662; 663; 664; 665; 669; 674; 676; 677; 678; 910; 911; 914; 914.1; 914.2; 914.3; 914.4; 914.5; 914.6; 914.7; 914.8; 914.91; 914.92; 914.94; 914.95; 915; 915.1; 915.2; 915.3; 915.4; 915.5; 915.6; 915.9; 916; 916.1; 916.7; 916.8; 917.1; 917.11; 917.12; 917.13; 917.14; 917.15; 917.16; 917.17; 917.18; 917.19; 917.2; 917.28; 917.29; 917.3; 917.4; 917.5; 917.6; 917.7; 917.8; 917.9; 918; 918.1; 918.2; 918.3; 918.4; 918.5; 918.6; 918.7; 918.8; 918.9; 919; 919.3; 919.4
Chapter XXXIV:	631.4; 631.7; 634; 639; 638; 665; 669
Chapter XXXV:	See Code Nos. for films on countries listed in Chapter XXXII which concern Pygmies, Bush- men, Negroes, Australoid and European types.

- Chapter XXXVI: 942.1 Commonwealth of Nations
- Chapter XXXVII: Select film titles from Code 917 and subdivisions thereof which concern Canadian cities their growth and functions.

NOTE: For interpretation of the Codes see the pink pages in the Visual Education Manual and Supplement.

(h) Free Materials :

The following publications may be obtained from the Saskatchewan Department of Agriculture:

- Soil Erosion by Water
- Grassed Waterways for Gully Control
- Save the Soil
- A Look at Canadian Soils

GRADE X GEOGRAPHY

Time Allotment:

A minimum of four periods per week (120 minutes) of regular student class time is required.

The following chart provides suggested periods of time for the study of each topic. It should be understood that these suggestions are provided primarily as guides, and that experienced teachers are encouraged to adapt the course to meet particular situations.

Unit	Suggested Class Time
I. The Planet Earth: Its Character and Portrayal	4 weeks
II. The Form of the Earth	7 weeks
III. Climate	6 weeks
IV. Climatic Regions and Their Effects Upon Man	8 weeks
V. Economic Geography	7 weeks
VI. Population	2 weeks
Review	2 weeks

Authorized Texts:

The authorized text for students is the revised edition of ELEMENTS OF GEOGRAPHY, by Smythe and Brown (MacMillan). It would be desirable for each student to have the CANADIAN OXFORD SCHOOL ATLAS, Second Edition (Oxford University Press).

Student References:

The following reference books should be available for student use through the school library. Students should be directed in their use of reference material by specific assignments from the teacher.

1. GEOGRAPHIC FUNDAMENTALS, by Stone and Inch (McGraw-Hill).
2. WORLD GEOGRAPHY: PHYSICAL, by Dury (Nelson).
3. WORLD GEOGRAPHY: HUMAN, by Suggate (Nelson).
4. LAND, CLIMATE, and MAN, by McCaffray and Hunt (Holt, Rinehart and Winston).
5. WORLD GEOGRAPHY, by Bradley (revised edition available in 1964) (Ginn).
6. GOODE'S WORLD ATLAS - Tenth Edition (Gage).
7. A DICTIONARY OF GEOGRAPHY, by Moore (Longmans). Price \$.75.

NOTE: For additional references, see Appendix I.

Recommended Teacher Sourcebook:

ELEMENTS OF GEOGRAPHY: Physical and Cultural, by Finch et al (McGraw-Hill) is considered to be the best single teacher reference now available. Every teacher is expected to make extensive use of this book.

Teacher References:

1. HISTORY AND GEOGRAPHY TEACHING MATERIALS, University of British Columbia, 1962. (To be published by Gage in 1964).
2. A GUIDE TO MAP PROJECTIONS, by Bower and German (Longmans). Price \$1.00.
3. WEATHER WAYS, Meteorological Branch, Department of Transport, Ottawa.
4. ELEMENTARY MAP INTERPRETATION, by Jennings (MacMillan). Price \$1.45.
5. PRACTICAL WORK IN GEOGRAPHY, by Garnier (MacMillan). Price \$4.95.
6. MAN AND THE EARTH, by Hoyt (Prentice-Hall).
7. NEW VIEWPOINTS IN GEOGRAPHY, Twenty-ninth Yearbook of the National Council for the Social Studies, Washington, D.C.
8. PHYSICAL GEOGRAPHY, Fourth Edition, by Lake (MacMillan). Price \$4.25.
9. SASKATCHEWAN: THE PHYSICAL ENVIRONMENT AND ITS IMPACT ON POPULATION AND THE ECONOMIC BASE, by Richards (University of Saskatchewan).
10. Background Papers: RESOURCES FOR TOMORROW CONFERENCE, Department of Northern Affairs and National Resources, Queen's Printer, Ottawa. Price \$15.00.

C O U R S E O U T L I N E

Unit I:

THE PLANET EARTH: ITS CHARACTER AND PORTRAYAL

(a) Understandings to be developed:

1. The earth is one of nine planets which revolve around the sun, a relatively small star, and thus forms part of the solar system.
2. The positions of the moon relative to the earth and sun account for visible variations in its illumination.
3. The relationships between sun and earth lead to: timing of 24-hour day; the contrasts between day and night; the period of the year; the differences in the amount of solar energy received latitudinally; the seasons; weather and climatic differences; differences in vegetation and soils and thus to differences in agricultural potential and in habitability from region to region.
4. The spherical shape of the earth necessitates the use of a special system of angular measurements whereby specific locations may be identified.
5. A system of standard time zones and an International Date Line are necessary in order to avoid confusion in communications.
6. Different types of map projections are designed to provide accuracy in shape or area, or to provide for a special use (e.g. the Mercator).

(b) Suggested organization of content:

The Earth in Space: history of ideas concerning the universe; the arrangement of stars; stars and planets; solar systems (or planetary system); planets and their satellites.

Earth Motions and Their Implications: the motions; day and night; the equinoxes; the solstices; the seasons; latitude and longitude and their determination; standard time; International Date Line.

Map Projections: principles of map projection; three basic groups of projections - to a plane, cylinder, or cone; mathematical projections.

Map Reading: directions, scale; methods of describing position; map symbols; uses of maps to depict natural features, induced features, or distribution of a single phenomenon.

(c) Suggested activities:

1. Have students submit evidence of the earth's sphericity.
2. Provide opportunities for practice in identification of major stars and constellations, including the "Big Dipper" (Ursa Major) and the Pole Star. Discuss the relationship of the latter, in space, to the polar axis.

3. Have some students construct a model to demonstrate earth/sun seasonal relationships.
4. Assign exercises to develop skill in locating points of latitude and longitude.
5. Construction of a sundial.
6. By using a sextant or simple instrument, have students discover differences in seasonal height of the sun.
7. Using tabular data, have students map seasonal changes in length of daylight at various latitudes at different seasons.
8. Assign exercises in which students are asked to calculate the longitude, given Greenwich Mean Time and local time.
9. Construction of open mesh wire hemisphere, cylinder, and cone for use with light to illustrate projections to a plane.
10. Mapping exercises: classroom, school and grounds to scale; mapping a small area (village or park) by "pace and compass" method; reduction of local topographic map sheet to smaller scale using method of squares; enlargement of small part of local map sheet using similar technique; simple sketch maps of local areas.
11. Examination and use of magnetic compass.

Unit II:

THE FORM OF THE EARTH.

(a) Understandings to be developed:

1. There is a pattern to the earth's structure.
2. Rocks are classified according to mode of origin and various properties.
3. The parts of the earth are in a state of balance. When this balance is disturbed, readjustment, the result of internal movements, takes place.
4. External processes assist in the sculpturing of the earth's surface.
5. The hydrological cycle refers to the intimate relationships which exist between atmospheric, surface, and sub-surface waters.
6. Typical landscapes can be associated with specific agents of gradation, and often with typical climates.
7. Regional landscapes have developed over great periods of time and should be considered in terms of geological time periods.

(b) Suggested organization of content:

Composition of the Earth: origin, composition, and physical nature of the baryshpere, lithosphere, hydrosphere, and atmosphere.

Rocks and Minerals: general nature and composition of rocks; classification of rocks according to origin; resistance of rocks to erosion.

Structures of the Earth's Crust: definition and origin of tectonic forces; structures due to vulcanism; structures formed by movements of the earth's crust.

Weathering: mechanical weathering; chemical weathering; mass wastage.

Landforms Make by Rivers: hydrologic cycle; the effects of water in motion; parts of a river and its related areas; description and importance of river stages; scarplands; river capture or stream piracy.

Landforms Made by Groundwater: features associated with groundwater; artesian wells and associated features; Karst topography.

Landforms of Desert Areas: agents of erosion and deposition in arid regions; wind effects -- sand-blasting, dunes, loess; effects of water -- wadis, alluvial fans, playa lakes and salt flats, canyons, mesas, badlands.

Landforms Made by Ice: formation of glaciers; glacial periods; possible causes of the ice ages; alpine glaciation -- present distribution, erosional features, depositional features, use of glaciated mountain regions by man; continental glaciation -- present distribution, maximum extent in the Pleistocene, erosional features, deposition, meltwaters and resulting landforms, glacial ponding.

Landforms Made by Currents and Waves: the oceans -- nature and movements; features of coastlines -- continental shelf, formation of sea cliffs and terraces, shorelines of emergence and submergence, coral reefs.

The Pattern of the Earth's Structure: the distribution of land and sea; the earth's structural units; the basic pattern of the continents; the geological time-table.

(c) Suggested activities:

1. Have students make charts to show such things as cross-sections of the earth, intrusions and extrusions, rift valleys, synclines and anticlines, hydrologic cycle, a river course indicating gradational characteristics.
2. Encourage library research by pupils by the preparation of reports on groundwater resources in Saskatchewan, the Moho Project, Karst topography, theories regarding glaciation, characteristics of oceans.
3. Have your class organize a field-trip to observe differences in surface deposits, to collect rock specimens, to observe the work of gradation, to prepare sketch maps.
4. Assign exercises requiring the study of topographic maps and aerial photographs.
5. Provide opportunities for mapping exercises of many kinds such as showing the areas of the world characterized by volcanic action, the area of North America covered by the Keewatin and Labrador ice sheets, the major ocean currents of the world.
6. The construction of models to illustrate landforms made by rivers, groundwater, desert areas, ice, currents and waves may be undertaken by groups of students.

Unit III:

C L I M A T E

(a) Understandings to be developed:

1. Variations in weather are the result of frequent changes in the physical characteristics of the atmosphere.
2. Climate is a generalization of long-term weather conditions.

3. The elements of climate include temperature, pressure and winds, and precipitation.
4. Climatic regions of the world are classified according to temperature and precipitation differences.
5. Regional patterns of natural vegetation are determined largely by regional patterns of climate.
6. Climate and natural vegetation determine the distribution of the major soil groups

(b) Suggested organization of content:

Nature of the Atmosphere: Composition, height, layers, significance of the troposphere.

Temperature: methods of measuring and recording temperature; insolation; factors affecting temperature.

Pressure and Wind: methods of measuring and recording pressure; the planetary wind and pressure system; modifications of planetary wind system; the effects of the contrast between large land and water masses.

Precipitation: methods of measuring and recording precipitation, humidity; types of precipitation.

Meteorology: the weather map; value of weather forecasts; factors to consider in preparing simple forecasts of local weather.

The World Pattern of Climates: the problem of selecting satisfactory criteria for delimiting climatic belts; the relationship between pressure and wind belts and the main areas of precipitation; seasonal shifts in the limits of climatic regions; location of climatic belts and their relationship to wind and pressure belts.

The World Pattern of Natural Vegetation: location and characteristics of evergreen tropical rain forest, deciduous forest, coniferous forest, tropical grassland, temperate grassland; desert, tundra, and Mediterranean woodland.

The World Pattern of Soils: definition of soil; composition of the soil; the soil-forming process; the soil profile; the great soil groups and the role of climate in their formation; characteristics of soil groups; distribution of soils over the world.

(c) Suggested activities:

1. Have students prepare charts to illustrate such things as the vertical zonation of the atmosphere, the planetary winds and pressure systems, weather map symbols, and soil profile.

2. Encourage library research through the preparation of reports: recent investigations carried out in the atmosphere, and hurricanes in the southern United States, are typical topics for study.
3. This unit provides many opportunities for useful map exercises. The following are examples: a map of North America to show the tracks of the mid-latitude cyclones in winter and in summer; maps of the world to show seasonal distribution of precipitation, the distribution of natural vegetation, and the distribution of soils.
4. Many interesting activities can be carried out in connection with the study of climate and meteorology: constructing a barometer to record pressure and preparing a graph for a month: recording maximum and minimum local temperatures for a month, calculating the mean temperature for the month, and preparing a graph to illustrate the data; using precipitation data prepare maps of Saskatchewan showing the distribution of precipitation for a three or four year interval; setting up a weather station at school, recording temperature, pressure, precipitation, humidity, cloud types and wind direction, with a view to attempting the forecast of local weather based on the data collected.
5. Organize a field trip to observe the soil horizons found in a road cut.
6. Have students perform experiments to illustrate capillary action and leaching action.

Unit IV:

CLIMATIC REGIONS AND THEIR EFFECTS UPON MAN.

(a) Understandings to be developed:

1. Man's activities are closely related to climatic conditions.
2. The division of the world into climatic regions is based essentially on temperature conditions, with each region subdivided on the basis of rainfall.
3. The type of climate in warm temperate lands is determined by the great seasonal shifts of winds and pressure systems that reflect earth-sun relationships.
4. The westerly winds and the middle-latitude cyclonic disturbances influence the climate of the cool temperate lands. The interiors of these lands are strongly affected by continental air masses.
5. Polar and arid lands are sparsely populated because of unfavourable climatic conditions.
6. Climatic "zones" change with altitude as well as with latitude.
7. Man has utilized each of the climatic regions in particular ways.

(b) Suggested organization of content:

The Hot Lands: location and distinguishing features of the five, climatic regions (equatorial lands, east coast regions, monsoon areas, savanna areas, and dry areas) - rainfall, winds, pressure systems, soils, and natural vegetation; land use patterns of the three equatorial forest areas; the tropical east coast lands of America, Africa, and Australia - effect of trade winds, reasons why this area is unsuitable for settlement; monsoon wind patterns.

The Warm Mid-Latitude Lands: three main climatic regions (west coasts, eastern coasts, monsoon lands of Asia) - climatic controls, temperature, precipitation; man's utilization of the Mediterranean lands in Europe, Africa, America, and Australia; comparison of these Mediterranean lands with the warm mid-latitude east coasts - precipitation differences, land use patterns; monsoon areas of Asia - comparison of climate with warm mid-latitude east coasts, land use; savanna lands - wet and dry seasons, man's utilization of these lands; dry lands - chief climatic controls, uses made of dry lands.

The Cool Temperate Lands: the three climatic regions (west coasts, interior regions, and east coasts) - location and climatic characteristics, the influence of climatic and cultural differences on the utilization of land.

The Cold Lands: two regions (west coasts, interior regions and east coasts) - differences in temperatures and precipitation, and their influence upon man's use of these regions.

Arctic Lands: location, climate, differences in the development of the Arctic lands of North America and Eurasia.

Mountain Areas: effect of altitude upon rainfall, differences in man's development of mountain regions in South America, Asia, Europe, and North America.

(c) Suggested activities:

1. Arrange a class debate: "Resolved that the uses men make of the earth are determined more by cultural influences than by factors of the physical environment."
2. Show on an outline map the steppes and deserts across the world, indicating the chief uses of each region. Similar maps and statements may be completed for other regions of natural vegetation.
3. Organize a sample study of the Canadian Prairies and have students appraise the statement that these form "a mighty kingdom of grain and grass".
4. Select regions to illustrate how the main occupations of the people have been influenced by: latitude; height of land above sea level; nearness of land to the sea; direction of the prevailing wind; mountain barriers; ocean currents.

Unit V:

ECONOMIC GEOGRAPHY.

(a) Understandings to be developed:

1. Types of farming and agricultural practices are determined by the natural environment, the culture, technology and the objectives of the people.
2. The demand for and utilization of minerals are determined by the stage of technological development.
3. The production of hydro-electric power is limited by the factors of water supply, suitable dam sites, and proximity to potential markets.
4. Transportation facilities are basic to economic progress.
5. Industrial development is determined by combinations of environmental factors.
6. Individuals and governments must assume responsibility for the wise use and skillful management of natural resources.

(b) Suggested organization of content:

Agriculture: distribution, optimum growth conditions, and significance of cereal crops, non-cereal food crops, and industrial crops; distribution, optimum conditions, differing fodder needs, and differing roles of domestic animals; agricultural practices in the less agriculturally advanced areas of the world, and in the more agriculturally advanced areas of the world.

Forestry: distribution of forests over the surface of the earth; economic significance.

Mineral Wealth: the mining of metals; smelting and processing of metals; energy-producing minerals; the metallic ores; the non-metallic ores.

Water Power: historic importance; present-day significance; conditions limiting production of hydro-electric power; location of the world's major areas of production of hydro-electric power and potential sites of importance.

Transportation: development, importance, advantages and disadvantages of transportation by land, water, and air.

Manufacturing: requisites for the location of industry; major manufacturing reasons with reasons for their prominence.

Conservation of Natural Resources: a brief treatment of conservation measures applied to soil, water, forests, fish and wildlife, and minerals, with an emphasis on the application of principles to the local area.

(c) Suggested activities:

1. The preparation of outline maps to show: distribution of major food commodities; textile products; minerals; water power development; steamship, air, and railway routes; flow bands of international trade.
2. Field trips to places such as: South Saskatchewan Dam; power plants; Squaw Rapids; experimental and forestry farms; Saskatchewan Museum of Natural History; Western Development Museum,; Estevan coal mines; potash plants at Saskatoon or Esterhazy; sulphate plant at Chaplin.
3. Construction of charts and graphs to illustrate relative production of major commodities, imports and exports of major trading nations of the world, interdependence of factors significant to industrial development.
4. Encourage reports, discussion, and debates on topics such as: relative advantages and disadvantages of transportation by land, sea, and air; the conservation responsibilities of the individual and various levels of government; the relative advantages of power production from coal, hydro-electric, and atomic sources; the influence of science on farm practice and production in Saskatchewan; current measures being taken to improve agricultural production in under-developed countries; prospects for future industrial development in Saskatchewan; difference in Oriental and Occidental agricultural practices; rail-line abandonment in Western Canada; Canada's foreign wheat sales policies; Hudson Bay as a grain export route; Government subsidies for short air line routes; the Columbia River treaty with the United States; the economic future of northern Saskatchewan; the economic importance of the Canadian forestry industry.
5. The construction of models or diagrams to illustrate: a canal with its locks; ports and harbour facilities; a coal mine; oil drilling; potash mining, salt wells.
6. Extend invitations to speakers for certain topics related to this unit.

Unit VI:

P O P U L A T I O N .

(a) Understandings to be developed:

1. Man has been classified into races-according to physical traits which can be inherited only.
NOTE: Emphasize that race is a purely biological term and has no cultural, religious, or linguistic connotations. Further, there is no "pure race".
2. People of different skin colour and of different cultures often belong to the same race.

3. There are several theories to account for the distribution of people over the world.
4. There is an extreme unevenness of distribution of the world population.
5. World population is increasing rapidly and the problem of supplying the needs of life is becoming more pressing.
6. Geographical factors tend to control the presence or absence of people in all parts of the world.
7. Problems of supplying the needs of life arising from overpopulation can be alleviated.
8. Cities may be classified according to origin, function, and in other ways.

(b) Suggested organization of content:

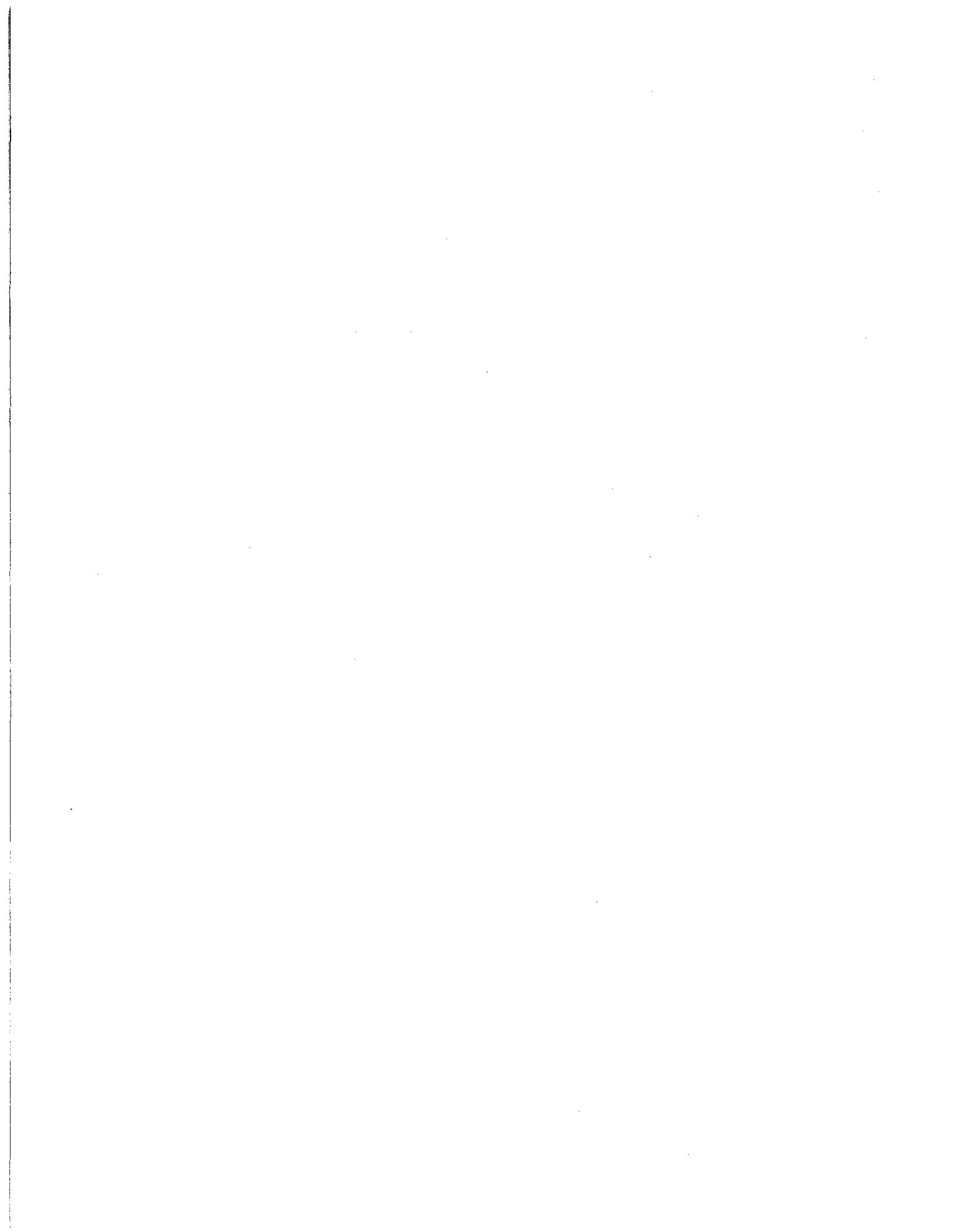
Races and Race Distribution: understanding the term "race"; identification of races by inherited physical characteristics; a theory of human migrations; suggested racial groupings.

Density of Population: growth of population; population distribution; characteristics of densely populated areas; solving the problem of over-population; characteristics of favoured environments.

Urban Geography: factors determining the location of urban settlements; the method of carrying out a detailed study of an urban area.

(c) Suggested activities:

1. Have students collect pictures of people which would assist in classifying people according to:
 - (a) physical characteristics,
 - (b) cultural characteristics.
2. Have students prepare a report which explains why cultural characteristics are more important than physical characteristics.
3. Ask students to develop a chart showing the races of mankind and the characteristics of each.
4. Using a base map, teach students graphical methods of comparing the populations of the continents.
5. Organize a class discussion dealing with the economic, social, and political problems which might well be associated with areas which are sparsely populated or overpopulated.
6. Have students carry out a detailed study of one of Saskatchewan's urban centres.



APPENDIX I

RECOMMENDED LIBRARY REFERENCES

GEOLOGY and EARTH SCIENCES SOURCEBOOK, Heller (Editor), (Holt, Rinehart and Winston)

THE EARTH and ITS MYSTERIES, Tyrell (Clarke, Irwin)

THE SKY and ITS MYSTERIES, Beet (Clarke, Irwin)

THE SEA and ITS MYSTERIES, Colman (Clarke, Irwin)

A GUIDE TO EARTH HISTORY, Carrington (Clarke, Irwin)

TREASURE IN THE ROCK, Bush (Longman's of Canada Limited)

THE YEAR OF THE NEW MOONS, Wilson (Longman's of Canada Limited)

KEMP'S HANDBOOK OF ROCKS, Grout (Van Nostrand)

PREHISTORIC LIFE ON EARTH, Peterson (Clarke, Irwin)

COLOUR GEOGRAPHIES, Herdman (Longman's of Canada Limited).

Titles in the series: Great Plain of China, Coasts of Britain, Farms in Britain, Towns in Britain, Industry in Britain, London, Forests and Savanna: West Africa, Mining in South Africa, Rice Fields in India, Island Harvests: The Far East, Grasslands of the Southern Continents, Atlantic to the Great Lakes, The Prairies, North American Cities, West Indies and Gulf Coast, Lands in the Desert: The Middle East, Mediterranean Lands, Contrasts in Russia, Rivers in Europe, Industrial Neighbors. (NOTE: These booklets sell for approximately 65 cents each)

MAN and HIS WORK, Herbertson (MacMillan of Canada)

MOUNTAIN, Fenton (Doubleday)

ROCKS and THEIR STORIES, Fenton and Fenton (Doubleday)

ALL ABOUT OUR CHANGING ROCKS, White (Random House)

RESTLESS EARTH, Wyler and Ames (Abelard and Schuman)

BIOGRAPHY OF OUR EARTH, Gamon (Mentor Books), (paperback)

THE STORY OF OUR EARTH, Curtis (Lyons and Carnahan)

GEOMORPHOLOGY, Lorbeck (McGraw-Hill)

EXPLORING MARS, Gallant (Doubleday)

THE EARTH WE LIVE ON, Moore (Knopf)

