



ANGLE TAB VISIBLE-NAME FOLDERS

CAT. No. 50939

**FOUND
AS
SCANNED**

12,000' snow & ice line, Mex.

Jungas
Montana
Orientes

OUTLINE FOR THE STUDY OF NORTH AMERICA
C SCHOOLS

This outline will not apply to the class which started in February but it will serve as a helpful guide in knowing what would be expected on examination for meteorology. North America will be divided into seven large regions, indicated in Goode's Atlas and in Finch and Trewartha's Elements of Geography. A general survey of the continent should be made before taking up these divisions.

- Region 1: Atlantic and Gulf Coastal Plain. Goode, p. 61.
2: Appalachian Highlands. Goode, p. 61.
3: Laurentian Upland with Greenland and Iceland. Finch and Trewartha, Plate VI, Nos. 1, 2, and 6.
4: Central Lowland. Goode, p. 61.
5: Rocky Mountains. Finch & Trewartha, Plate VI, No. 5 (in part only).
6: Cordilleran Plateaus. (U.S.A. part only) Goode, p. 61.
7: Pacific Borderlands. (U.S.A. part only) Goode, p. 61.

Region 1. ATLANTIC AND GULF COASTAL PLAIN.

Extent: Cape Cod to Yucatan. List of states in U.S.A. and in Mexico included wholly or in part in the coastal plain.

Surface: Gently sloping plain, slightly dissected, inner coastal plain, cuerdas, volcanic plugs in Mexican part much higher.

Climate: Location and significance of BS, Cfa, and Aw climates. (See Plate V of Finch & Trewartha, and pp. 20-21 of Goode, and use either names, Köppen symbols, or both)

Natural Vegetation: Major areas of forest, brush, grassland, and describe savanna, cypress, mangrove, and southern pine.

Fall Line: Definition, location by cities as Phila., Balto, Washington, Richmond, Raleigh, Augusta, Columbia, Macon.

Rivers: Location and significance of Hudson, Delaware, Potomac, James, Mississippi, Rio Grande, etc.

Shoreline features: Description of marine terraces, sea cliffs, sand bars, barrier beaches, and lagoons.

Population: Distribution of settlement, and of proportion of whites, negroes, and Mexicans. Note especially Black Belt of Alabama (soil), central Florida, & Rio Grande Valley.

Production: Intensive cotton production (Black Prairie Lowlands of Mississippi), truck crops and citrus (central Florida & Rio Grande Valley), sugar and rice in Louisiana, and oil in Texas.

Transportation: Main railways, navigable rivers, intracoastal canal. Ports: New York, Baltimore, Norfolk, Tampa, New Orleans, Houston, etc.

Region 2. THE APPALACHIAN HIGHLANDS.

Extent: Alabama to Newfoundland, between the Coastal Plain and Central Lowland. List all states and provinces included wholly or in part. Climate are areas of Cfb and Dfb with variation in rainfall.

Natural vegetation: Distribution of hardwood and coniferous forests, and some areas partly cleared.

Unaka mts.

Region 2. THE APPALACHIAN HIGHLANDS Cont.....

-----Northern Division-----

Surface: Description of Green & White Mountains, Taconic, Canadian, and Newfoundland Ranges, and lowlands of Connecticut and Annapolis-Cornwallis Valleys, and the Aroostook country.

Glaciation: Description of ground moraine, ice-scoured areas, lakes, and other glacial features.

Rivers: Significance of the St. Lawrence, Hudson, Connecticut.

Shore Features: Bays (Fundy), tides.

Population: Pattern of settlement including proportion of Yankee, French Canadian, and foreign-born.

Production: Iron-ore of Newfoundland, coal of Nova Scotia and Cape Breton Island, potatoes, lumber, paper.

Manufacturing of textiles and shoes (Boston, Providence, and Fall River), hardware and arms (Springfield, Meriden).

Transportation: Main railroads.

Ports: Boston, Portland, St. John.

-----Southern Division-----

Surface: Description of Piedmont, Blue Ridge, Ridge & Valley, and Appalachian Plateau, the Valley Front, profiles of each of above, and range in elevations.

Glaciation: Finger Lakes of New York, drainage changes, Hudson-Champlain depression.

Production: Dairy products, apples (Shenandoah Valley), anthracite coal (Scranton), Bituminous coal (Pittsburgh, Pocahontas, Birmingham). Manufacturing of iron and steel, textiles, tobacco, etc. Water power.

Transportation: Railroad routes, Ridge & Valley region as corridor.

Region 3. LAURENTIAN UPLAND WITH THE TUNDRA, GREENLAND, AND ICELAND.

Extent: Central Lowland to Arctic, name all states & provinces.

Surface: Ice-scoured, clay belts, Adirondacks Mountains, the Labrador Range, Hudson Bay Lowland. Range in elevation.

Material: Hard crystalline rocks, glacial deposits.

Glaciation: Ice caps, centers of ice accumulation.

Climate: Areas of Dfb, Dfc, ET, and EF.

Vegetation: Coniferous forest and tundra.

Drainage: Lakes (St. John, Nipigon, Winnipeg, Great Slave, Great Bear), rivers (St. Lawrence, Ottawa, Nelson, Mackenzie).

Population: Distribution of settlement.

Production: Lumber, pulp, furs, power, aluminum (Arvida), mining of nickel, copper (Sudbury), gold (Kirkland Lake), silver (Cobalt), iron ore (Mesabi, etc.).

Transportation: Railroads and special significance of airplane in this region.

Region 4. CENTRAL LOWLAND (INCLUDING THE GREAT PLAINS).

The brevity of this section of the outline is not meant to reflect the degree of importance of the region but rather the relative homogeneity of large areas.

Extent: Between Appalachian, Laurentian Upland, Rocky Mountains, and Coastal Plain. List states and provinces involved.

Surface: Plains and low plateaus (Ozarks, Kentucky, Tennessee).

Climate: BS, Cfa, ~~Cfb~~, Dfa, and Dfb.

Bedford Asbestos

Region 4. CENTRAL LOWLAND Cont.....

Vegetation: Hardwood and coniferous forest, prairie; largely cleared for agriculture.

Drainage: Great Lakes (pertly in Laurentian Upland) and connecting rivers and canals.

Other rivers: Mississippi, Missouri, Ohio, Arkansas.

Cities: Principal centers including Chicago, Cleveland, Detroit, Buffalo, St. Louis, Minneapolis, St. Paul, Omaha, Denver.

Production: Regions of darying, corn-belt, wheat-belts, grazing; manufacturing.

Transportation: Great Lakes, navigable rivers, outstanding features of railway net with coming Alaskan Highway.

Region 5. ROCKY MOUNTAINS.

The length of outline devoted to regions 5 and 6 does not reflect on the degree of importance of the regions, but on the great variation within the regions.

Extent: Southern Mexico to Bering Sea; list states of U.S.A., and provinces.

Surface: Many ranges, including location and description of Front Range, Sierra Madre, San Juan, Bighorn, Canadian Front Range, etc. Special features as hogbacks, mesas, canyons (Royal Gorge, etc.); elevations.

Glaciation: Valley glaciers, cirques, knifeedge ridges.

Climate and vegetation: Zones according to altitude (BS in plains, Dfb in coniferous forest, ET above timberline).

Elevation of cold timberline, Mexico to Alaska.

Drainage: Continental Divide, headwaters of the Colorado River, Columbia, Fraser, Yukon, MacKenzie, Missouri, Platte, Arkansas, Yellowstone, etc.

Production: Minerals and coal (Utah and Alberta), copper (Anaconda), gold, importance of mountains for irrigation.

Transportation: Routes used by principal railroads, cities on margin (Denver, Salt Lake City, Calgary, Santa Fé, El Paso).

Region 6. CORDILLERAN PLATEAUS.

Sub-divisions: Colorado Plateau, Great Basin, Columbia Plateau, Interior Plateau of British Columbia, Yukon Plateau. (The Mexican Plateau is included in Latin America).

-----Colorado Plateau-----

Extent and Nature of boundaries. Wasatch Range.

Surface: Plateaus (Kaibab), canyons (Grand), elevations of canyons, plateaus, and small ranges (Henry Mountains).

Climate and Vegetation: BW in canyons, BS, and Dfb on the mountains.

Drainage: Colorado and tributaries; Boulder Dam and Lake Mead.

Population: Indian (Navajo).

Production: Grazing, dry farming, irrigation, minerals, coal (Utah).

Transportation: Difficulties of bridging canyons (Denver and Rio Grande R. R. route).

Region 6. CORDILLERAN PLATEAUS Cont.....

-----Great Basin-----

Extent: Area of interior drainage.

Surface: Alternating ranges (Humboldt), and basins (Great Salt Lake).

Climate and vegetation: BW, creosote bush, salt bush, yucca; BS, brush and grass.

Drainage: Short streams to closed basins (Lake Bonneville).

Production: Copper (Bingham, Bisbee); gold (Virginia City, Ely); potash (Searles Lake).

Cities: Reno, Las Vegas, Salt Lake City, Ogden.

-----Columbia Plateau-----

Extent: Parts of Washington, Oregon, and Idaho.

Surface: Rolling or dissected lava plateau with a few mountains as Blue Mountains of Oregon; scablands.

Climate: BW, BS, Dfb.

Glaciation: Drainage changes, Grand Coulee Dam.

Population: Mostly in irrigated areas.

Production: Wheat (Walla Walla), irrigated apples (Yakima, Okanagan, Wenatchee).

Cities: Spokane, Boise, Pocatello, Walla Walla.

-----Interior Plateau of British Columbia-----

Extent: North of Columbia Plateau, between Coast Range and Rocky Mountains.

Surface: Dissected plateau, 3,500 feet (Selkirk and Purcell Ranges).

Climate and vegetation: Dfb and Dfc; coniferous forest.

Population: Sparse, mostly in valleys (Okanagan).

Production: Salmon, lumber, furs.

-----Yukon Plateau-----

Extent: Between Alaskan and Brooks Ranges.

Surface: Flat-topped hilly areas alternating with valleys; elevation 0 - 6,000 feet; swamps along lower Yukon River; frozen soils.

Climate and vegetation: Dfc, light forest; and ET, tundra.

Drainage: Yukon and Tanana.

Population: Settlement pattern (Indians, Eskimos, whites).

Production: Gold, coal, potatoes, oats and vegetables.

Cities: Fairbanks, Tanana, Dawson, Whitehorse.

Region 7. PACIFIC BORDERLANDS.

Extent: From Aleutian Islands to Mexico.

Surface: Young rugged mountains and trough-like valleys.

Climate and vegetation: BW, BS, CS, DS, Dfb, and Dfc with corresponding vegetation. Divisions given below.

-----Sierra Nevada-----

Surface: Block mountains with a steep eastern slope, elevation 14,500 feet with canyons 5,000 feet deep; peaks (Mt. Whitney, Table Mountain).

Material: Mostly granite.

Glaciation: Yosemite Valley, hanging valleys.

Climate: Contrast eastern and western slopes.

Production: Forest, summer grazing, minerals (Mother Lode), importance of Sierra Nevada for irrigation of Great Valley.

Transportation: Principal passes.

Region 7. PACIFIC BORDERLANDS Cont.....

-----Cascade Range-----

Surface: Volcanic peaks abundant (Lassen, Rainier, Shasta),
Crater Lake, Columbia River gorge.

Production: Forest, water power in the Willanette-Puget
Sound Valley and east margin of range.

-----Puget Sound-Willamette Valley-----

Surface: Broad lowland trough with moraines.

Climate: Cfb, with rather dry summer.

Production: Lumber, dairy products, fruits.

Transportation: Corridor to the Valley of California.

Cities: Portland, Seattle, Vancouver, Tacoma.

-----Valley of California-----

Surface: Broad alluvial plain with alluvial fans.

Climate: BW, BS, and Cs.

Drainage: Sacramento and San Joaquin Rivers.

Production: Citrus fruits, grapes, vegetables, barley, rice
by irrigation.

Cities: Sacramento, Stockton, Fresno.

-----Pacific Coast Ranges of United States-----

Extent: From southern California to Canada

Surface: Parallel ridges and valleys (Santa Clara).

Climate and vegetation: Cs and Cfb; forest, brush, and grass.

Shoreline: Little coastal plain or continental shelf, bold
headlands, few harbors (San Francisco, San Diego, Seattle).

Population: Concentrated in valleys near the sea (Los Angeles,
San Francisco Bay regions).

Production: Fruits, vegetables, oil (Los Angeles), lumber
(northern California, Oregon, and Washington).

-----Coast of British Columbia and Alaska-----

Extent: U. S. A. border to Aleutians.

Surface: Lofty rugged mountains (Mt. McKinley), and small
coastal valleys (Matanuska).

Glaciation: Many large glaciers present.

Shoreline: Inland passage, fiords, Aleutian Islands.

Climate and vegetation: Cfb, Dfb, ET, low timberline.

Production: Lumber, salmon, gold, and coal.

P.S. Add to the above the details of your notes, and the text
by Newbigin. It will be better to follow the ten sub-divisions
of North America.

Cotton - extends into S. App.

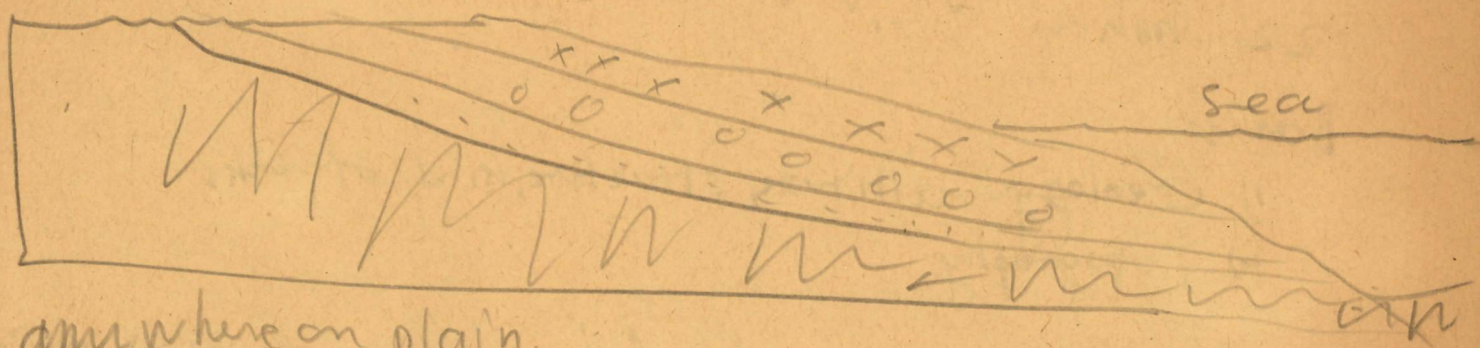
Tobacco - N.C. (Duke University)

Dairying

Near Richmond, Va. coal worked in
war time - wages effect.

5. Miss. embayment region, up to Cairo

6. W. Gulf C.P. section, like (4) physiograph.



anywhere on plain.

Max. el. is 1000 ft. on Rio Grande usually less.

Drainage:

Susquehanna (Baltimore, Ches. Bay) Hudson, & Conn. now often get into Tidewater but as bays.

Hampton Rds. best harbor in world, perhaps.

Remember there are 2 Colorado R.

Climate:

Maryland n - cont. humid long summers.

Md. to Rio Grande,

Tip of Fla, what?

Mid lat. steppe hits s. Texas.

Resources: Cotton, Tobacco (Dukes & Reynolds)

phosphates in Fla., around Tampa, placers in Coastal

Plain gravels,

Oil in Texas salt domes

Sulphur

Salt,

Turpentine, Resin. Cotton, Tobacco, dairy

Bloemer, Apr. 20

N. America

8 major physiographic provinces
22 minor ..

Bases

- 1) Geology - altitude, structure, kind of rock,
- 2) Topography

Geomorphology is study of land from genetic point of view.

I) Atlantic - Gulf Coastal plain of U.S.

Bands: shoreline or strand. Drawn on maps at mean tide.

Fall "zone" (not line), marked by falls & rapids.

Geol: Rocks change here. Seaward they are unconsolidated gravels, sand, clay, some coquina. Inland find granites, gneisses, schists, slates. Texas, fall line not so distinct.

Topog: A fault, the ? fault, in Texas.

Banding provinces:

L. E. & Cape C. part of it, but all inland from them is N.E., part of app. highlands. S. of Philly or Trenton, piedmont appears west of it.

Physiography:

Section 1: C. C. to C. Hatteras. The embayed section. - the streams are drowned. Harbors. Fall line marks the innermost extent of drowning. Below it waters are saline.

N. Y. C. ~~is~~ in fall zone

Section 2: Sea island section, C. H. to Jacksonville

3: ~~Marion~~ Floridian section, Ja. to Tampa.

4: E. Gulf Coastal Plain

by sandstone.

App. plateaus

Mohawk R. to N. Fla, (Term. R.) He dislikes T.V.A.
Adirondacks part of Laurentian. Catskills in the high
plateau.

Central lowlands on west.

About 3000 ft - level of ridges in N & S provinces,
higher than its valleys.

S. of Cumberland R. it is called Cumberland,
gets thinner.

"Allegheny mts." is name for east. escarpment of
plateau, which is dissected. In south sometimes called
"Cumberland mts." Not a flat plain at all, very rolling.
But was once a plateau.

Resources

Coal. Best in world c. Pittsburgh, W. Va., Ky. - bituminous.
Anthracite around Scranton, N. of Reading prong.
A little in Fla.

Oil & gas. not the heading but the 1st, & an important one.
W. Pa, natural gas used for domestic

Building Stone

Asbestos - Bedford, Quebec

Iron - Birmingham, 2nd most imp. in U. S.

Cement - Lehigh, Pa.

Bloomington Apr. 24

Get mother to send my ~~or~~ ~~copy~~ physiographic
province map

Piedmont.

Susquhanna cuts gap between Reading Prong & Blue Ridge - here, & in Ala., Piedmont & App. valley & Ridge provinces contact, nowhere else.

300 - 1200 ft. A few isolated monadnocks get up to 2000. A peneplain. Since peneplanation, slightly uplifted, so streams are slightly entrenched.

A block fault has left, near Richmond, a basin filled in with sediments, among which are coal, submarginal except in ways when it is worked.

Blue Ridge - Susq. to N.W. corner of Ga.

Presidial mts. 1800 - 5000 more. Mt. Mitchell, highest in E. U.S., 6,684 ft. (N.C.)

South of James R., it broadens out, to include Smokies in N.C., with a ridge to their east known locally as Blue Ridge. N. of James, just a ridge.

Unaka mts. at Va-Tenn - N.C. intersection

Bound on west by great valley.

Underlain by crystalline rocks, mostly granite.

Valley & Ridge

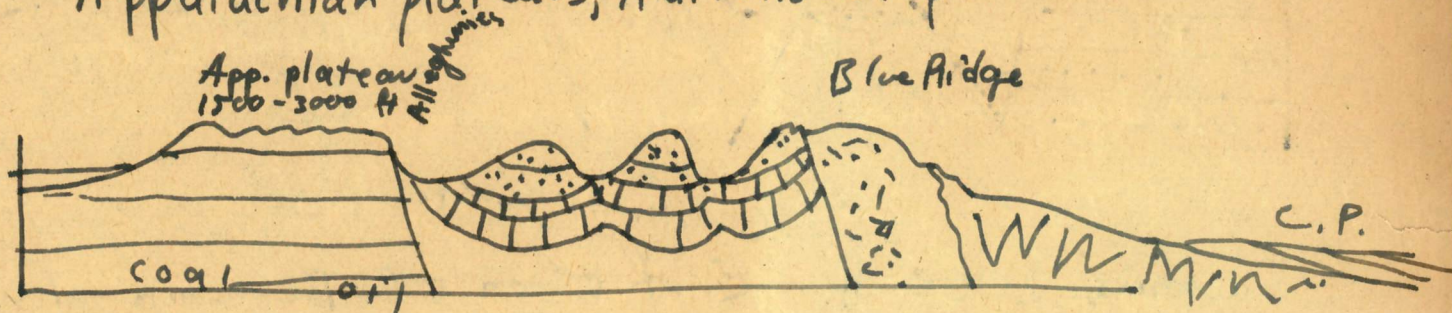
Along the east of it, the "Great Valley", called Shenandoah. Folded limestone, shale, sandstone. Ridges capped

Bloomer, Apr. 22

Appalachian Highlands division

Provinces:

New Eng., Piedmont, Blue Ridge, Valley & Ridge,
Appalachian plateaus, Adirondack province



Rocks are preCambrian to Pennsylvanian

400 - 6000 ft, in general around 2500 ft.

All eastern U.S. notes C.P.

Fall line the c. boundary.

Laurentide Mts., c. 2000 ft., dissected beneath Laur. upland.

? just n.w. of St. L. R. Thousand Is., Scioto R., boundary marked by escarpments, plainly. In Ky & Tenn, escarp. is vague, to Fall line, in Ala. Niagara escarp is a cuesta.

Limestone, shale, old granite in App. H., C.P. rocks are gneiss.

Ala., Ga., S.C., N.C., Tenn, Ky, W. Va., Va., Md., Del., Pa., N.J., O., N.Y., Conn., R.I., Mass, Vt., N.H., Me., Quebec, Gaspé, P.E.I., Bay of Chaleur,

Provinces

1) New Eng. province

Conn., R.I., Mass, N.H., Vt., Me., parts of Quebec, N.S., New Brunswick, Gaspé

Hudson R. is w. boundary, Champlain valley, Richelieu R. valley

E. Boundary — fall line
S. " — " "

A long arm, the Reading prong, extends in Pa. thru N.J., called locally the Highlands. Green Mts. Conn. valley



Taconics, 2000 ft. — Conn. to S. Vt.
E. of them the Berkshire valley, then the Green Mts, Mass to N. Vt. The 3 together are commonly known as "The Berkshires."

Green in Quebec called Catemium, Boundary, & Shickshock Mts.

N. N.H. & Me. are White Mts., Mt. Washington 6296'

S. N.H., Mt. Monadnock

These are all residual mts, formed by erosion.

Most N.E. surface is a peneplane, rolling

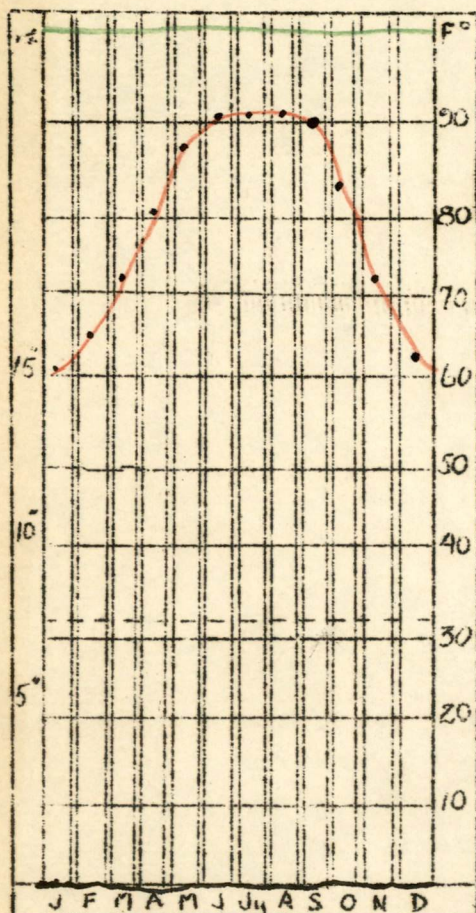
Connecticut R., S.W. Me. to L.I. sound. A Lowland valley, with some lava flows (Mt. Holyoke)

Boston basin

Glaciation has made N.E. a manufacturing region, by keeping it from being fertile.

Mason Gaffney

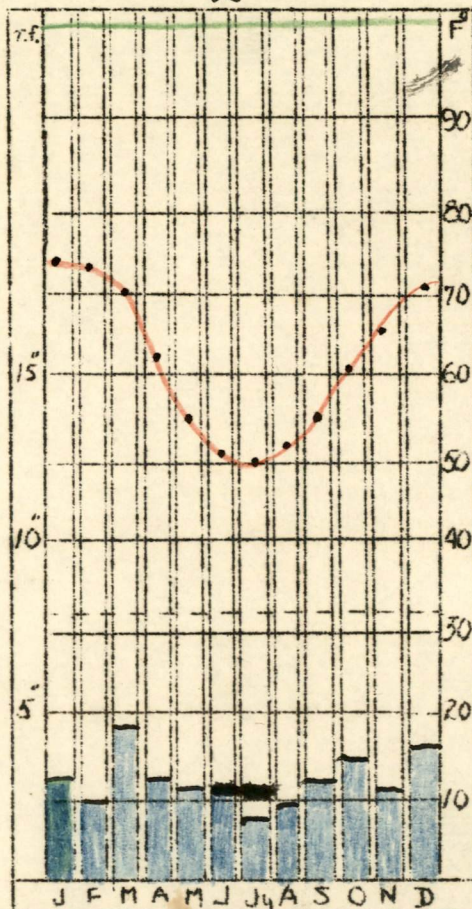
1



Station Aswan
 Lat. 24° 7' N Long. 32° 58' E
 Annual r.f. 0
 Elevation 0-500 ft.
 Type Low latitude desert

BWh

2

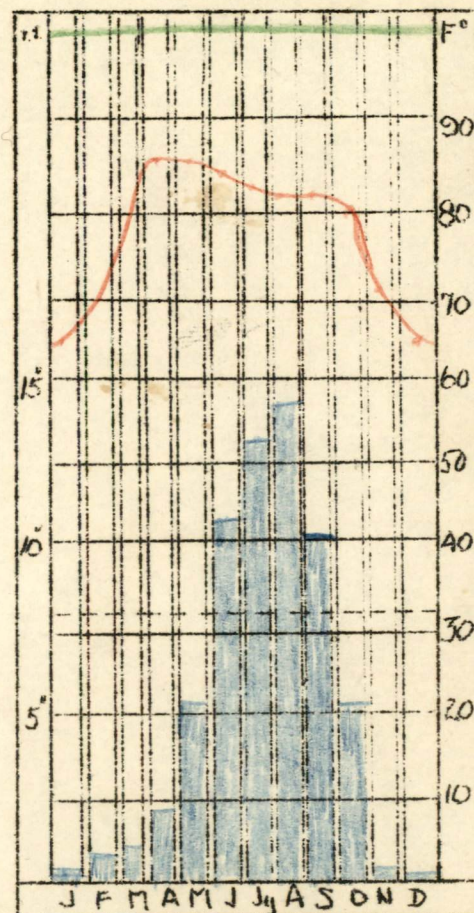


Station Buenos Aires
 Lat. 34° 35' S Long. 58° 22' W
 Annual r.f. 36.6
 Elevation 0-500 ft.
 Type E. Margin of continent,

lower middle latitudes

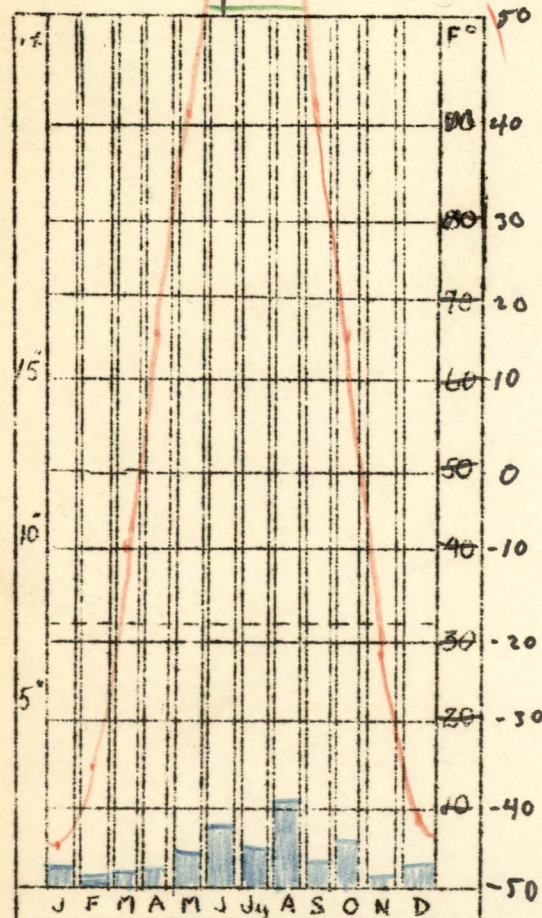
~~Cfa~~
 Cwa

3

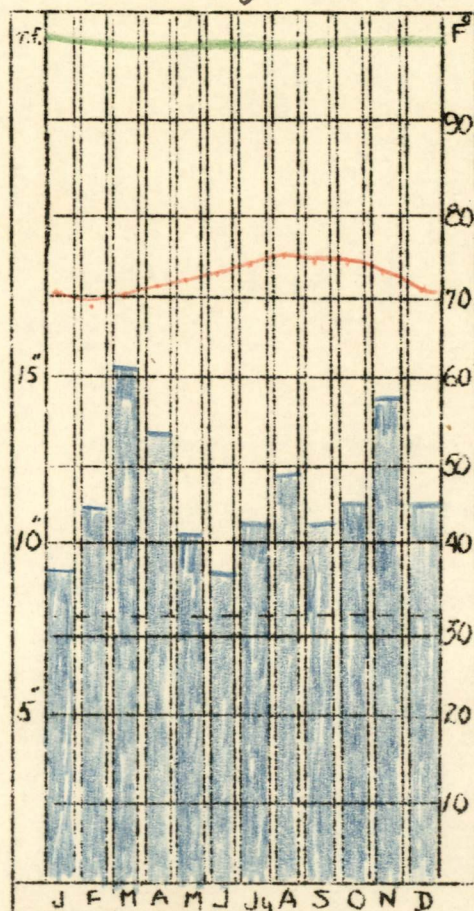


Station Calcutta
 Lat. 22° 30' N Long. 88° 30' E
 Annual r.f. 65.6
 Elevation 0-500
 Type Low lat. wet & dry

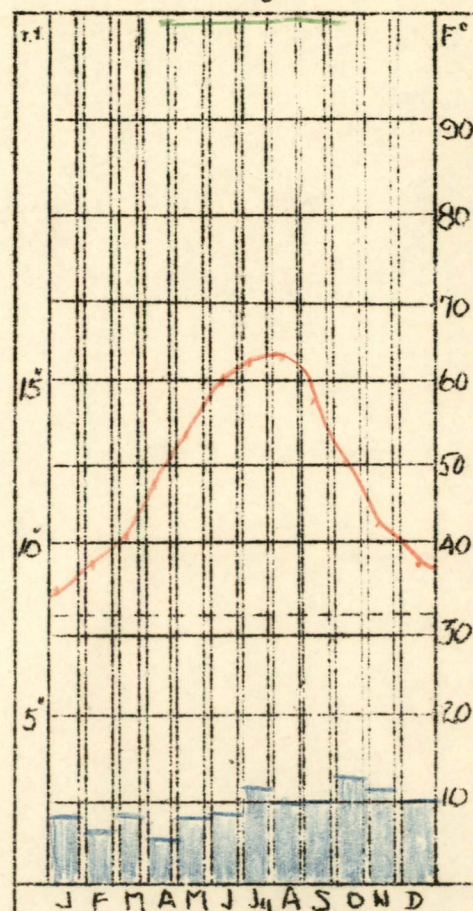
Bm
 or Aw



Station Yakutsk
 Lat. 62°0'N Long. 129°50'E
 Annual r.f. 13.7
 Elevation 0-500
 Type Lower high latitude



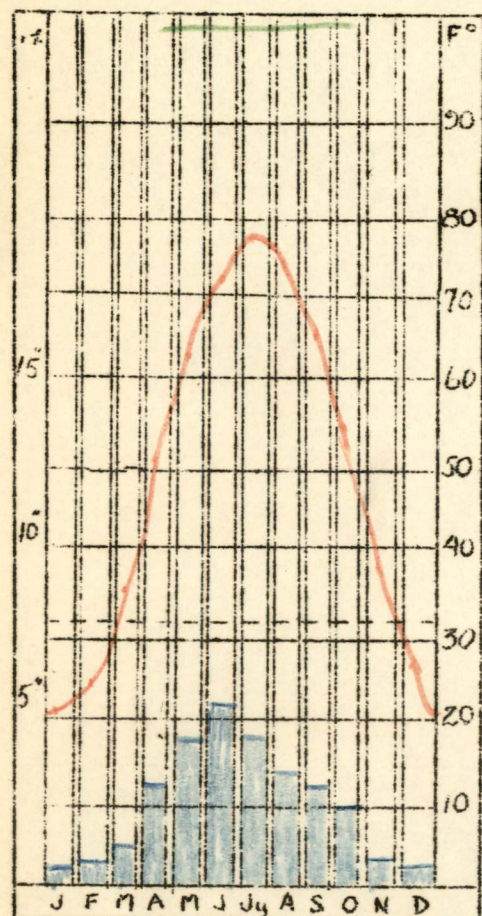
Station Hilo
 Lat. 19°42'N Long. 155°3'W
 Annual r.f. 139.4
 Elevation 0-500
 Type Rainy low lat.



Station Lih
 Lat. 50°38'N Long. 3°0'E
 Annual r.f. 28.5
 Elevation 0-500
 Type W. Mongia of cont, higher middle latitudes.

Cfb or Cwb

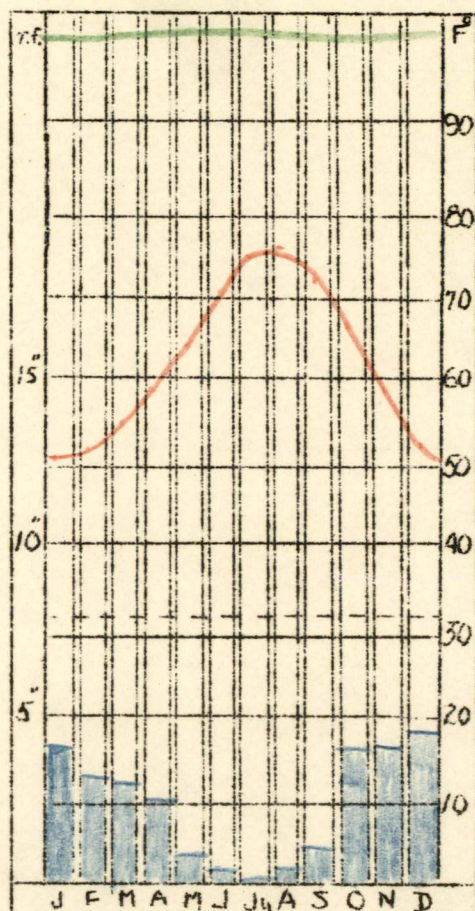
7

Station OmahaLat. 41°12'N Long. 95°51'WAnnual r.f. 30.5Elevation 1000-2000 ft.Type Humid continental with

long summers

~~Dfa~~
Dwa

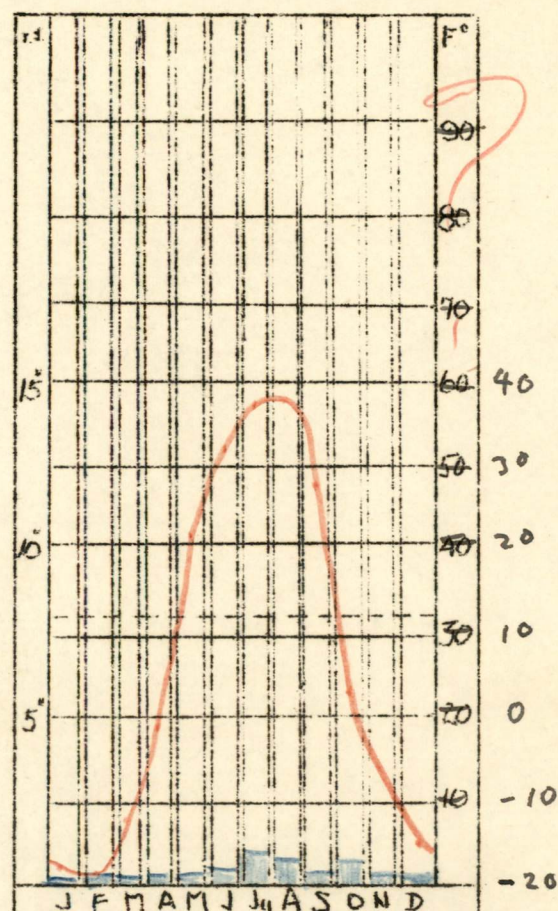
8

Station PalermoLat. 38°7'N Long. 17°23'EAnnual r.f. 29.5Elevation c. 1000 ft.Type W. Monsoon hot continent, n

inner middle lat.

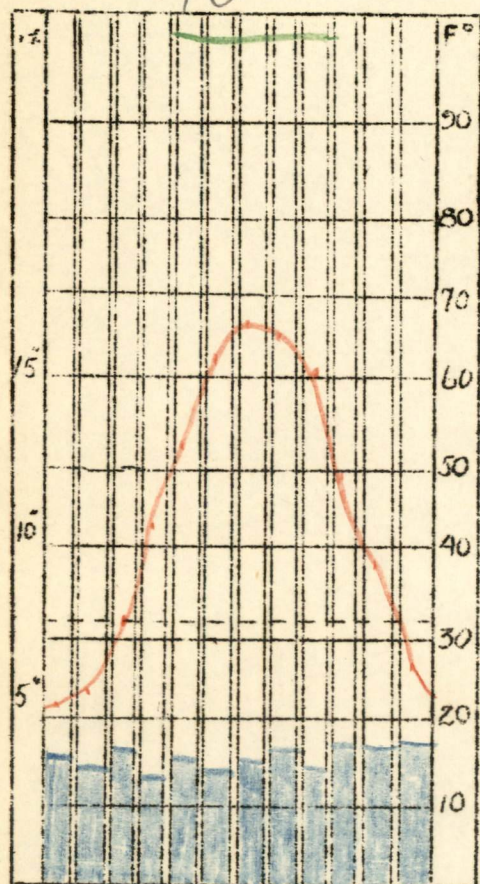
Cs

9

Station BarrowLat. 71°15'N Long. 156°12'WAnnual r.f. 5.5Elevation 0-500Type sub polar

ET

10



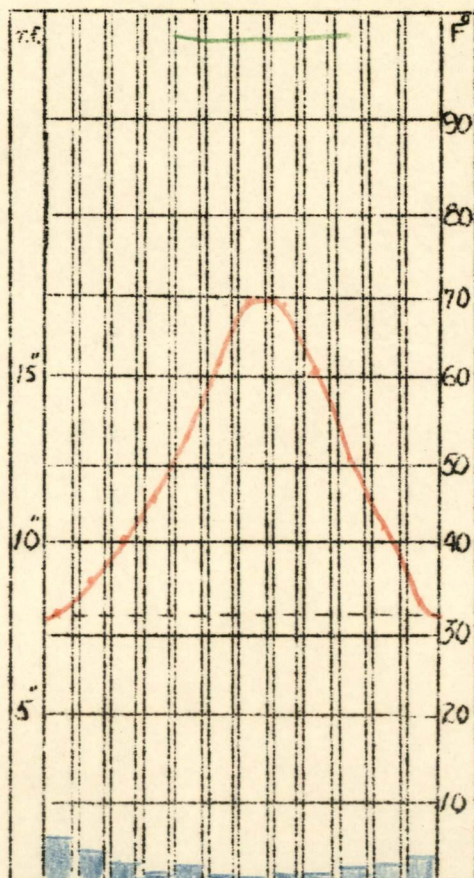
J F M A M J J A S O N D

Station Portland, Me.Lat. 43°40'N Long. 70°15'WAnnual r.f. 42.6Elevation 0-500Type E. marginifera

high-mid-latitude

Dfa

11

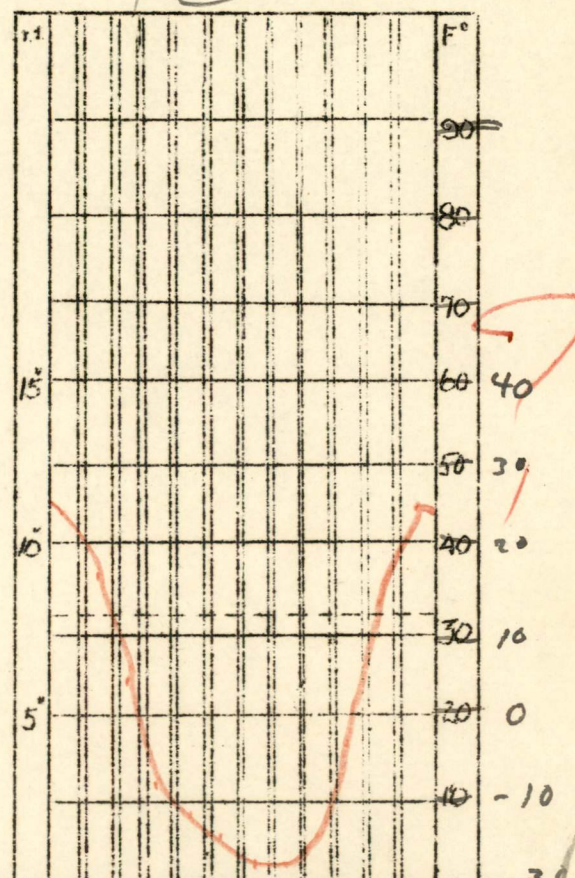


J F M A M J J A S O N D

Station RenoLat. 39°32'N Long. 119°49'WAnnual r.f. 8.7Elevation 2000-5000Type Mid-latitude desert

BWk

12



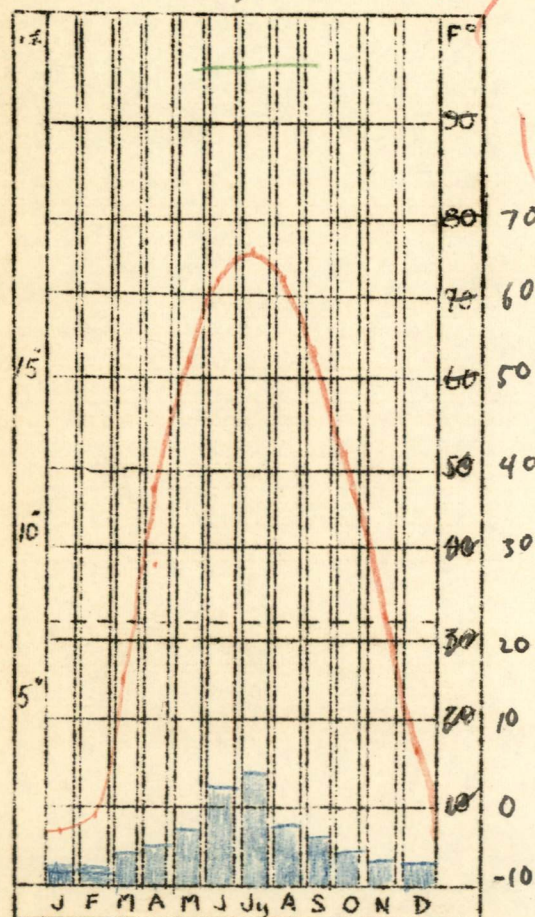
J F M A M J J A S O N D

Station South Victoria LandLat. 77°42'S Long. 165°35'WAnnual r.f. no dataElevation not givenType Polar

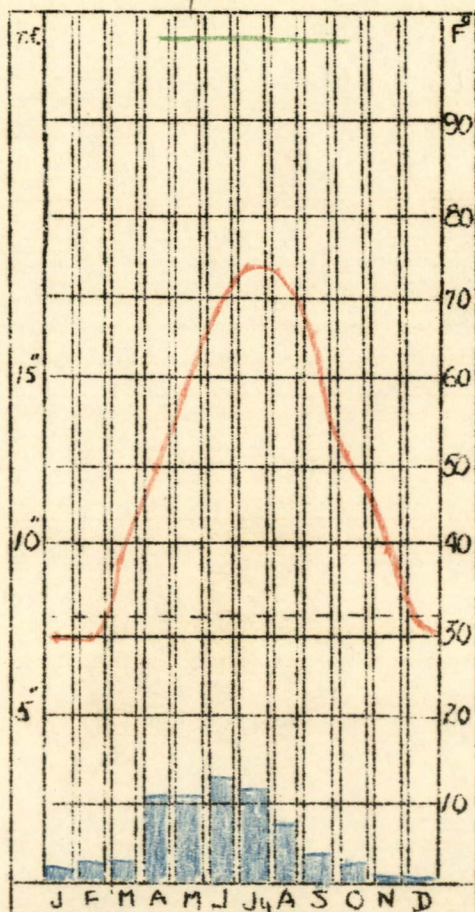
EF

1.3

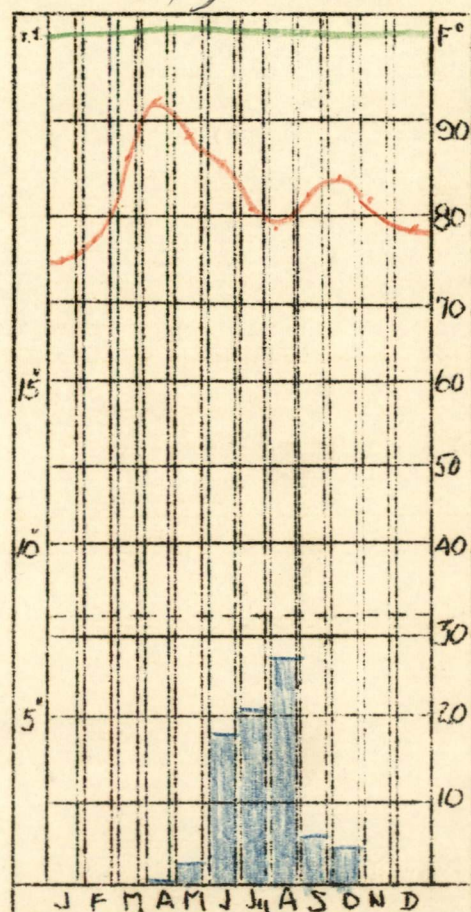
A

Station WinnipegLat. 49°47'N Long. 97°15'WAnnual r.f. 20.2Elevation 500-2000Type Humid continental withshort summersRh DWb
or Dfb

1.4

Station WrayLat. 40°51'N Long. 102°15'WAnnual r.f. 17.6Elevation 2000-5000 ft.Type Semi-aridmid-latitudeBSk

1.5

Station Ft. LoringLat. 12°12'N Long. 15°31'EAnnual r.f. 21.7Elevation 0-500 ft.Type Low lat semi-arid.Aw
or BSh

Gaffney

Laurentian upland

Hits U.S. only in Minn, Wisc., Keweenaw pen. of Mich., Adirondacks; Manitoba, N.W. Terr., Franklin, Quebec, Labrador, N.E. Saskatchewan, Ontario

Def: 1) Topog.
2) Rocks - very ancient metamorphic. Gneiss, slate.
Glaciation. - scouring.

Boundaries: North of Mackenzie, to Great Bear Lake, Great Slave Lake, Athabasca L., Churchill R., L. Winnipeg, Man-Ont-Minn junction (Lake of the Woods), St. Paul, N. shore of L. Mich., Mackinac St., N.L. Huron, Ga. Bay, Thos. Islands, around Ad. & back, Ottawa, out st. Lawrence

Bounded around Hudson Bay by the inaccessible Hudson Lowlands.

Land forms:

Laurentide "Mts." - dissected escarpment N.W. of St. L. R., 2000 ft.

Baribou Mts., Wisc. Hill lands from diff. erosion, held up by sandstone.

Mesabi &c., Minn. - diff. erosion (Penokee, Giants, too) Iron ore & granite protect them.

Torngak Mts, residual, 4000 ft., Labrador, relief of 2000-3000 ft.

Not a peneplane, but a glaciated plain. But it resembles a peneplane, topographically.

Many Lakes & swamps. Canoe transp.

Drainage:

Churchill - Sask. to H. Bay

Nelson, just s. of it, drains L. Winnipeg.

Albany R., draining Ontario

(Mack. valley is in Great Plains)

Great Bear L.

" Slave L.

→ Athabasca

L. Winnipeg. City becoming wheat center of whole region.

Preserves:

Lumber, in Taiga, pine, hemlock.

Furs. seals off Labrador

Iron ore - Duluth the center, greatest in world.

Nickel - Sudbury, Ont., greatest in world

Cobalt, - Cobalt, " , " " "

Copper - Benmore pen., greatest in world until recently.

Bingham, Utah, now heads.

Montreal at mouth of Ottawa, not in province. Near's Buffalo
near St. Paul - on the edges. Duluth the largest city in it.

Laurentian Climate

Bloomer May 8 p. 2

C. H. with short summers
sub-arctic

Temp range		Jan
N	68°	-22°
S	50	14

Growing season

120 days max, ice cap in north.

Frost Oct. 1 - June 1 in south.

Precip 5" - 20", more humid in south.

Winds Westerlies

Veg Coniferous forests - taiga. Tundra.

No mts, just hill lands.

Ozark, Miss, St. Francis, White R., Ark. R.
Ouachita R. in it party
Red R. part of S. boundary.

Washita, Canadian, N Fork Canadian, Cimarron,
Ark, Neosho

Climate

Humid sub tropical

Temp

Jan
32°

July
75°

43° range

Growing season

210 days, same St. Francis Mts, 180 days.

Frost

Nov. 1 - Apr. 1

Prec

40"-60", evenly distrib.

Winds

Monsoonal, south in summer, north in winter

veg Deciduous forests

Resources

Poor, save for tourist trade. Except Ark. Valley
ranches. "Starvation farming". Dophin head & zinc produce
the tri-state district. Aluminum in Ark, greatest in U.S.
in eastern Boston mts. Diamonds, industrial. Coal in Ark valley,
locally used. Marginal iron in St. Francis.

Bloomer

Goffney
May 8

Interior Highlands

32° - 38° lat

90° - 95° long

Mo, ~~Ark~~ Ark, E. Okl.

Arbuckle & Wichita

highlands between Red R.

& Washita R. in Okl., not part of it.

Boundaries ill defined, topographically, but pretty well geologically. Mo. & Miss. R. contribute

Osage R., & Lake of the Ozarks. Confluence of ~~Canadian~~ ^{Canadian} & Ark. Confl. of Washita & Red. Line leaves Miss at

Cairo. Points on boundary.

Ark R. divides Boston & ~~Washita~~ Ouachita Mts.

In St. Francis Mts., near St Louis, one E appears. A fault drops Ark R. beneath Boston.

Plateau divided in 2, the Springfield (with ^{west} cuestas) & The Salem (Karst top.) east

Boston mts. are dissected margin of plateau

Ark valley a large, flat trough. A strath, or baby peneplene, right around the stream.

Ouachita's highest near Ark R., merge into C.P. on south.

VI Veg Oak & pine forest lands (deciduous)

VII Winds Monsoonal, landward in summer, seaward in winter.

App Highlands climate

- I Type
- a) Humid sub trop. in low ^{alt.} south
 - b) Humid cont. long summers, in s. high. & n. low.
 - c) " " short " new Eng. region

II Temp. range

14° - 75°, annual

Jan. 14° - 50°

July 65° - 75°

III Frost

~~Nov. 5~~

Nov. 1

~~Sept. 5~~

Sept. 1

Apr. 1

June

Growing season
120 - 180 days

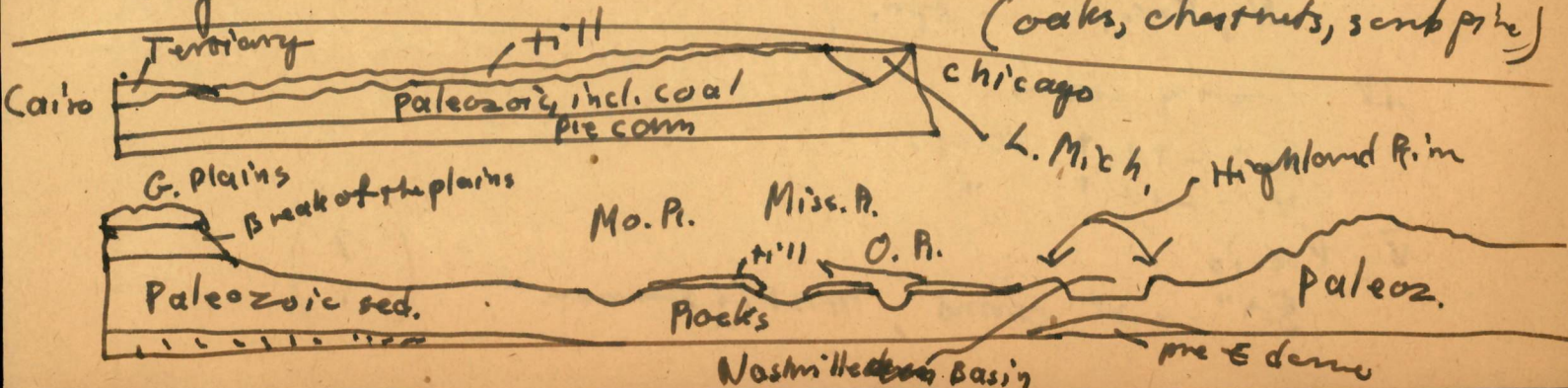
Precipit.

40" - 50", evenly distr.

S.W. winds.

Veg. - coniferous forest in north, deciduous in s.

(oaks, chestnuts, scrub pine)



Bloomer, May 6

Central lowlands touch or contain

Manitoba, Sask., Quebec, N.D., Minn., S.D., Wis., Mich., N.Y., O.,
I.W., Ind. Pa., Neb., Mo., Ky., Tenn., Okl., Ark., Tex.

Scioto R., where it hits Ohio, is boundary with App. & Laurentian

Conspicuous escarpment, the "Niagara", n. of L. Erie & on,
becoming vague in O.

20" rainfall, 100 or more mts., & no boundary c.f. eastward, in general.

N.W. section - Old Lake Agassiz

Driftless " , S. Wisc.

More on this tomorrow, but new climate of coastal
places

I Types

- a) Humid sub-tropical
- b) Cont. humid long summers

Also low lat steppes, BWh

II Temp. range

- a) Jan.
68° in S., 30° in N.
- b) July 80°, 68°

III Frost

- S., Dec. 1 - March 1
- N., Nov. 1 - Apr. 1

IV Growing season

- S. - 240 + days
- N. - 210 + "

V Precip.

50" - 60" annu., most in summer.

(?)

Bloomer May 6

p. 2

O; / (Lima, Ind.; Ks.; Okl.) Coal, (Ill.), ~~not~~
as imp. as App. Salt (Mich, Ks.) Limestone &
bldg stone (Oh.)

Iron & lime inspired Rochester, Toronto, Buffalo,
Cleveland, Toledo, Detroit, Chicago, Milwaukee,
Minneapolis - St. Paul, Ks. Croy, St. Louis (shoes)

Central Lowlands (cont).

Bloemer May 6

Great Lakes district

Lacustrine plains bordering them. Drumlins, etc.

Central Glaciated district

Mo & O. Rivers are app. s. limited glaciation. Mostly
outwash plains here.

Loess in Iowa along Mo. (or Miss?)

Southeastern Unglaciated

South of Ohio, containing Cinc. & Nashville basins.
Limestone soil, bluegrass region. Anticline underneath
concerned with oil.

S. W. region

Mo, R. to Col. R. of Texas, W. to plains Unglac-
iated, and. Wichita & Arbuckle mts, near Ozarks
etc, but not ~~the~~ part of them. S & SW Okl.

Drainage

Miss.

Climate

SE & SW, humid sub trop.

Cal. to ~~Chicago~~ M. Milwaukee, Humid cont. long summers
Milwaukee N, " " " short "

Temp. range

July $\frac{N}{68} \frac{C}{80} \frac{S}{80}$
Jan. 0 $\frac{14-19}{32-15}$ 50-30

Frost

Fall $\frac{S}{Nov. 1} \frac{N}{Oct. 1}$
Spring $\frac{Apr. 1}{May. 1}$

Growing season

$\frac{S}{210 \text{ days}} \frac{C}{180} \frac{N}{150}$

Prec.

$\frac{S}{40-50"} \frac{N}{30-40} \frac{Far N \& W}{20-30}$
extreme

Winds

July $S \& SW$, Monsoonal from Gulf.
Jan $W \& NW$

Veg Deciduous forest & grasslands

Mesances

Cotton, Corn, Wheat, Fruit (Mich), Dairying

A GEOLOGICAL CALENDAR

This chronological arrangement of geological events is an abridged form for use of students of geography and physiography. The major division of geological time is the era, which is divided into smaller time units, periods; these in turn for the Cenozoic era are sub-divided into epochs. While this chart will be used mainly for North America, the principal mountains of the other continents are indicated. The youngest era is shown first and time becomes more remote in reading down in the chart; the oldest rocks, likewise, are on the bottom in the Archeozoic era.

V. CENOZOIC ERA (Approximately 20 million years). Flowering plants and mammals dominated this era with many other important races.

12. Quaternary Period:

b. Recent Epoch or Post-Glacial Epoch (Holocene):

Retreat of the glaciers and ice sheets, vulcanism in western American cordillera and mountain growth, Mississippi and Yukon bottom lands and deltas were being developed, and modern floras and faunas were living at the beginning of this time for most part.

a. Pleistocene Epoch or Ice Age:

Glacial erosion and deposition of four advances reached far down in the United States. Much igneous activity in western Americas along with mountain building, also in Europe and Asia. North American Ice Line marks the southernmost advance of the ice.

11. Tertiary Period:

d. Pliocene Epoch:

Cascade Mountains formed and continued to grow in the Pleistocene. Late Tertiary peneplains formed. Further growth of the Rocky Mountains from Mexico to Alaska with much vulcanism and peneplanation.

c. Miocene Epoch:

Lavas extruded over much of the Columbia Plateau and Craters of the Moon with extensive vulcanism in the Rocky Mountains, erosion at a rapid rate in the higher mountains, and marine water present over much of the Atlantic Coastal Plain. The Alpine-Himalayan Mountains were formed in Eurasia.

b. Oligocene Epoch:

Several large fresh water lakes existed in Great Plains region, erosion in the Sierra Nevada and the Rocky Mountains, and marine conditions in Florida, California, and other parts of the Americas.

a. Eocene Epoch:

Atlantic Coastal Plain under water and Gulf region as far north as Cairo, Illinois. This was the beginning of modern floras and faunas. Extensive vulcanism in western U.S.A. There was further growth of the Laramide or Rocky-Andean Mountains. The early part of this epoch is sometimes known as Paleocene, and treated as another and older epoch.

IV. MESOZOIC ERA: (Approximately 110 million years) Large reptiles, ammonites, and cycads dominated this era with many other subordinate races of plants and animals.

10. Cretaceous Period:

Formation of the Rocky Mountains or the Laramide Revolution, uplift of the western intermontane plateaus, further uplift of Appalachians, Dakota sandstone formed, which is a hogback-forming rock, sea over much of the Gulf Coastal Plain as far north as Cairo, Illinois, sea advanced southward from the Arctic Ocean in Mackenzie River region, and lakes were common in Wyo-Mont.-B.C.

9. Jurassic Period:

Sierra Nevada Mountains elevated, also mountains from Central America to Alaska, intense volcanic activity in western U.S.A., intrusion of batholiths along the Pacific border, and the Jura Mountains formed in Europe.

8. Triassic Period:

Palisades on the Hudson were formed with igneous activity from Prince Edward Island to North Carolina, thick beds of red shales and sandstones formed on the Great Plains, the "Painted Desert" formations of this age. This time followed that in which many races became extinct.

III. PALEOZOIC ERA: (Approximately 330 million years) Invertebrates, early vertebrates, the great coal-forming floras, and extinction of many primitive races characterize this time.

7. Permian Period:

The Appalachian Mountains were formed, and were the first Appalachians. Thick beds of red shales and sandstones were formed and often grade up into those of Triassic age, and called Permian-Triassic, salt and gypsum abundant, evidence of glaciation in the Boston Basin and elsewhere, and many invertebrate races passed into extinction.

6. Pennsylvanian Period:

This was the great coal-forming period over much of the world, best commercial coals of Appalachian and eastern section of mid-west of U.S.A. formed, much mountain formation, old non-flowering plants dominated the lands & most of the Appalachian region was swampy.

5. Mississippian Period:

Crustal movements over much of the Appalachian region, some coal formed in the Valley of Virginia. This period with the Pennsylvanian is known as Carboniferous Period.

4. Devonian Period:

The Acadian Mountains were formed with much vulcanism in northeastern U.S.A., and southeastern Canada, first important land plants, and five of the six kinds of fishes lived, many red beds on other continents.

3. Silurian Period:

First land plants, Caledonian Mountains of Europe formed, marine waters over most of the Appalachian region, and invertebrate animals dominated this time.

III. PALEOZOIC ERA Cont.....

2. Ordovician Period:

Taconic Mountains were formed from New Jersey to the Gaspé Peninsula, the Appalachian region was covered for the most part by water as was part of the upper and middle Mississippi Valley, the first vertebrates appeared, but the dominant life was invertebrate.

1. Cambrian Period:

Much of the Appalachian region was under water, plants were all marine, and animals were invertebrate. The Green and White Mountains of New England, and the old Ozarks were formed. Here occur the first well preserved fossils.

II. PROTEROZOIC ERA: (Approximately 500 million years).

Several mountain systems formed and peneplaned before the beginning of the Cambrian period. Glaciation occurred in several localities on the globe. Rocks are highly metamorphic, but there is evidence of marine plants and animals. Rocks have been studied in the Lake Superior Region, and probably better understood in this section.

I. ARCHEOZOIC ERA: (Approximately 500 million years).

The rocks are crushed, folded, faulted, and eroded, and are mostly metamorphic - schists and gneisses. There was much surface and deep-seated igneous activity in this era and in the Proterozoic. These two oldest eras are sometimes known as pre-Cambrian time. Archeozoic rocks are often called the "Fundamental Complex". Rocks of both eras are found in the canyon of the Colorado River, and lying upon these are the Cambrian rocks; the pre-Cambrian in this canyon are tilted, and on their worn surface the Cambrian rocks are about horizontal. These rocks are extensively exposed in the Laurentian Upland, Older Appalachians, the Guiana and Brazilian Highlands, in Scandinavia, and many other places.

	Columbia Plateau	Intermontane, lava plateau, glaciated in part	Idaho, Ore., Wash.
	Colorado Plateau	Stripped, locally lava capped, piedmont plateau deeply canyoned in horizontal, faulted strata.	N. M., Nev., Utah, Ariz., Col.
Intermontane Plateaus	Basin and Range	Block faulted mts. and intermontane bolson-like basins in rocks of all ages and types. Basins covered with Tertiary and younger sediments.	Ore., Nev., Utah, Ariz., Calif., N.M. Texas.
✓	Interior Plateau of British Columbia	High, intermontane lava capped plateau locally mantled with alluvium.	B. C.
✓	Yukon Plateau	Intermontane plateau of alluvial sediments and peneplained older rocks much folded and faulted.	Yukon Terr., Alaska.
<hr/>			
	Sierra-Cascade	Complex folded, block faulted and volcanic mts.	Calif., Wash., Ore., B. C.
Pacific Border-lands	Pacific Border	Complex folded, block faulted and volcanic mts. with intermontane valleys of alluvium locally submerged. Glaciation widespread.	Calif., Wash., Ore. B. C., Yukon Terr., Alaska.
<hr/>			

Outline of the Major Physiographic Divisions and Provinces of North America

Major Divisions	Provinces	Character	Location
Atlantic Plain	Continental Shelf	Submerged marine plain.	Atlantic and Gulf margin.
	Coastal Plain	Young to old plain of marine aggradation and alluvial degradation	N. Y., N. J., Del., Md., Va., N.C., S.C., Ga., Ala., Fla., Miss., La., Texas, Ill., Ky., Tenn., Mo., Ark.
	Piedmont Plateau	Mildly dissected peneplain chiefly in pre-Cambrian crystalline rocks.	N. J., Pa., Md., Va., N.C., S.C., Ga., Ala.
	Blue Ridge	Mature residual mts. and hill lands in pre-Cambrian crystalline rocks and old Paleozoics. Deeply dissected plateau in south.	Pa., Md., Va., N.C., S.C., Ga.
Appalachian Highlands	Valley and Ridge	Mature hill land and mts. with parallel ridges and valleys in folded and faulted Paleozoic strata.	N.Y., N.J., Pa., Md., Va., Tenn., Ga., Ala.
	Appalachian Plateaus	Young to mature plateaus in flat or gently warped Paleozoic strata. Glaciated in north.	N.Y., Pa., Ohio, W. Va., Va., Tenn., Ala., Ga.
	New England	Glaciated dissected peneplain with highlands in west and north in crystalline strata except in lowland along Conn. Valley	Me., Ver., N.H., Mass., Conn., R.I., N.Y.
Laurentian Uplands	Superior Upland	Glaciated dissected peneplain in pre-Cambrian rocks	Minn., Wisc., Mich., N.Y., N.W. Ter., Man., Sask., Ont., Que., Lab.
	Adirondack	Maturely eroded and glaciated domal mts. in pre-Cambrian crystalline rocks.	N.Y.
	Hudson Bay Lowland	Glaciated marine plain in northward sloping, nearly flat Paleozoic strata.	Ont.

Interior Low Plateaus (S.E. section of Central Lowlands as studied)	Young to old plateau in domed Paleozoic strata.	Tenn., Ky.
Central Lowland	Peneplain in very gently dipping Paleozoic strata. Glaciated north of Ohio and Missouri rivers.	Ohio, Ind., Ill., Mich., Wisc., Iowa, Mo., Kan., Okla., Texas, Neb., N.D., S.D., Minn., Sask., Man., Ont.
Interior Plains		
Great Plains	Young to mature plains of glacial and alluvial aggradation. Stripped plain in south. In flat Tertiary, Cretaceous and Paleozoic strata. Black Hills are domed mts. in pre-Cambrian crystallines	Texas, N.M., Okla., Kan., Col., Neb., S.D., Wyo., N.D., Mont., Alberta, Sask., B.C., N.W. Ter.
Interior Highlands	Ozark Plateaus	Dissected plateau with local karst region and domed mts. in broadly arched Paleozoic strata and pre-Cambrian in mt. Mo., Ark., Okla.
	Ouachita	Mature hill land and mts. with parallel valleys and ridges in folded and faulted Paleozoic strata. Ark., Okla.
Rocky Mountain	Southern Rocky Mountains	Complex sierra mts. in pre-Cambrian, Paleozoic and younger strata and crystalline rocks. N.M., Col., Wyo.
	Wyoming Basin	Elevated alluvial and lake (?) plain with low fault mts. in Mesozoic and Tertiary strata and pre-Cambrian crystallines in mts. Wyo., Col.
	Middle Rocky Mountains	Faulted anticlinal mts. in pre-Cambrian and younger rocks. Col., Utah, Idaho, Mont.
	Northern Rocky Mountains	Complex mts. with vulcanism in pre-Cambrian and younger rocks of all types. Mont., Idaho, Wash., Alberta, B.C., Yukon Ter., Alaska.

Edms plateau south of Col. R., slightly lower than Llano. Strip plain

Drainage:

Mackenzie R., fed by Lakes & Laird R. Lionel

Peace R. - to H. Athabaska, east
Athabaska R. - to L. " , north

N. Saskatchewan R. } 2. Winnipeg
S. " R. }

Mo. R., fed by Milk R., Yellowstone R., Cheyenne R. (S. Dak.)
Platte R.s., Republican R., Smoky Hill R., Ks. R., Ark. R.,
Canadian R., Red R., ~~Pecos R., etc~~
Pecos R., Rio Grande

Climate:

Mid-latitude steppe south of ind boundary

Sub-arctic

Humid cont. with short summers } n. of boundary

Temp	<u>S</u>	<u>N</u>
Jan.	50°	-22°
July	86°	50°

Frost

Oct. 1 - May 1 in U.S.
gets shorter to 0 in N.

210 day growing season in south, to 90 days to 0.

Precip: 5" - 20", mostly in summer.

Winds: N.W. in winter, south in summer

Bloomer, May 13

Great Plains:

Topographically a plain, altho 2000-5000 ft., because no escarpment between it & sea, except locally. Alluvial, center; stripped, scrub; glacial deposition in north.

Regions:

1) N. of Mo. R.

Glaciated, Pleistocene. Moraines, drumlins, kames, kettleholes, outwash plains, etc. Low local relief, c. 100 ft.

2) Mo. plateau

Flanks Mo. R. Mo. "coteau" an occasional name. Alluvium & loess. The Badlands.

3) Black Hills & other special features.

Sweet Grass Hills, Bear Paw mts., Little Rockies, Black Hills, Big ~~smoky~~

plains. Bear & Black 2000 ft. above surrounding plains. Homestake Gold mines, Black hills.

4) High Plain sect.

Mo. R. to Canadian R. Alluvial, from Rockies.

5) Llano Estacado & Edwards Plateau
"staked" plain"

Canadian to Colorado

Monotonous, flat regions. Only shallow sinks, Buffalo wallows, break the monotony. Locally called tanks. Thought to be formed by sinking underneath. Drinking water scarce.

May 11

Bloomer

Great Plains

MacKenzie Delta to ^{North} Mexico.

c. 400 miles e. to w., 5000 miles n. & s.

No single state or territory lies entirely within great plains.

around Gallup, N. Mex., it is disputed whether it is part of Basin & Range or Col. Plateau.

Sacramento, Guadalupe, Delaware, Apache, & Glass Mts. in Trans-Pecos region of west Texas. Rockies taper off to south, by these mts.

Boundaries: climatic. But in north, with same amount of rainfall, there are forests because of low ~~evaporation~~ evaporation.

Topographic... locally an escarpment, ^{on east} a fault, the Balcones Escarpment in Texas near Okl. boundary. As you go north, this esc. becomes more & more vague, finally obscure in Canada. Region blanketed with glacial till.

? — Geologic: east — vague (how so, with a fault) Late Cretaceous Cent. Land, early Cret. plains. Difference more distinct as you go north. Tertiary plains, Paleocene Land, west — climatically no boundary, as Rockies, too, are in rain shadow. Meridian no good either topographic — 5000 — 10,000 ft

escarpment. Hogback foothills a few miles before you get there, (in Dakota Sandstone?)

Geologic - Rockies pre-E metamorphic plains young, unconsolidated.

Wyoming Basin: boundary between it & plains indistinct. Laramide Range to S., Big Horns to N.

Geology:

Bottom: Paleozoic sandstone, outcropping at west flank in hogbacks.

Mesozoic - only Cretaceous represented, by Dakota Sandstone, which goes out all the way to the "break of the plains", or e. boundary. Artesian water, now being depleted by our use.

Plains are covered with material from mountain, Tertiary, a huge alluvial fan.
Bloomer May 13, cont. (Gr. plains ~~#1~~ #2)

Vegetation: Grasslands in S., conif. forests in N.

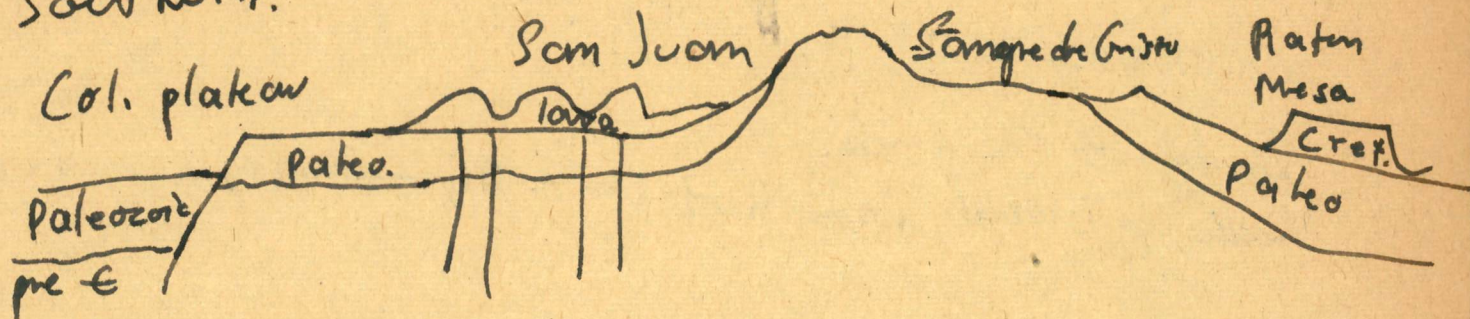
Resources: Cattle, sheep, wheat (esp. north), lignite, oil & gas, irrigated farming. The dust bowl. helium. Potential lumber.

Look at atlas.

Rockies (II)

Bloomer, May 27

Southern:



S. de C. a huge anticline. It pushed up younger plinius strata on end, they have been eroded into hogbacks.

Pike's, Long's, & Mt. Elbert, ^{both} c. 14,000 A., in Sawatch Range just west of Front Range, at end of which is pikes, 14,000'. Results of differential erosion.

A trough betwixt Sawatch & Front ranges. South Park, Middle Park, & North Park the names given to this syncline, or basin. The 3 are separated by volcanic plains.

Resources: Details:

Oil in Sweet Grass hills, Wyo. B.,

Lead, Silver, Gold, Zn, Cu. Butte, Mont.

Mn, Phos, Fe, Mb, Agn limited to cattle,

Jackson Hole & Wyo. B.

Streams Rio Grande, San Juan south, w. of S. de C., to Gulf.

Arkansas, S. Park & Front range s. of P's P., how beautiful V-shaped Royal Gorge.

San Juan A. } Colo. A.
Gunnison A. } headw. in N. Park. Black Canyon.

? S. Platte R., from ~~the~~ ^{S.} Park

Colo., from S. Park
R.M. Nat. Park, in Front Range on Cont. divide (W.M.M.)
which passes thru Park (??!)

Garden of the Gods.

Lake Cristóbal, in fork of Gunn. R., formed by a mud slide.

Wyo. Basin

Gap between Laramie Range & Big Horns, where it
grades right into plains. "endsurf", on intermontane basin
filled with debris from surrounding mts. (another word ??)

Wasatch is in Middle Rockies, w. boundary of Wyo. basin
Sawatch is " S " ,

Northern Rockies:

Vulcanism

Overthrust Faults - Lewis, e.g.

Chief mt., in n.w. Mont., & Crown Nest Mt., S. Canada, iso-
lated monoliths pushed out over plains.

To west no hogbacks, as in south, but a sea of lava.

Yellowstone Park: Geysers. Yellowstone R., with its Grand

Canyons thru lava.

4 ~~great~~ ranges with 3 intervening troughs. Lewis, Selkirk,

Purcell, & ?

Remember the Brooks range, Alaska.

Climate:

Highland climate everywhere.

Frost: Sept 1 - June 1 in S.
all year in N.

Growing season: 90 days in S

Prec.: 5"-20"

Temp. Range Jan July
S. 32° 68°

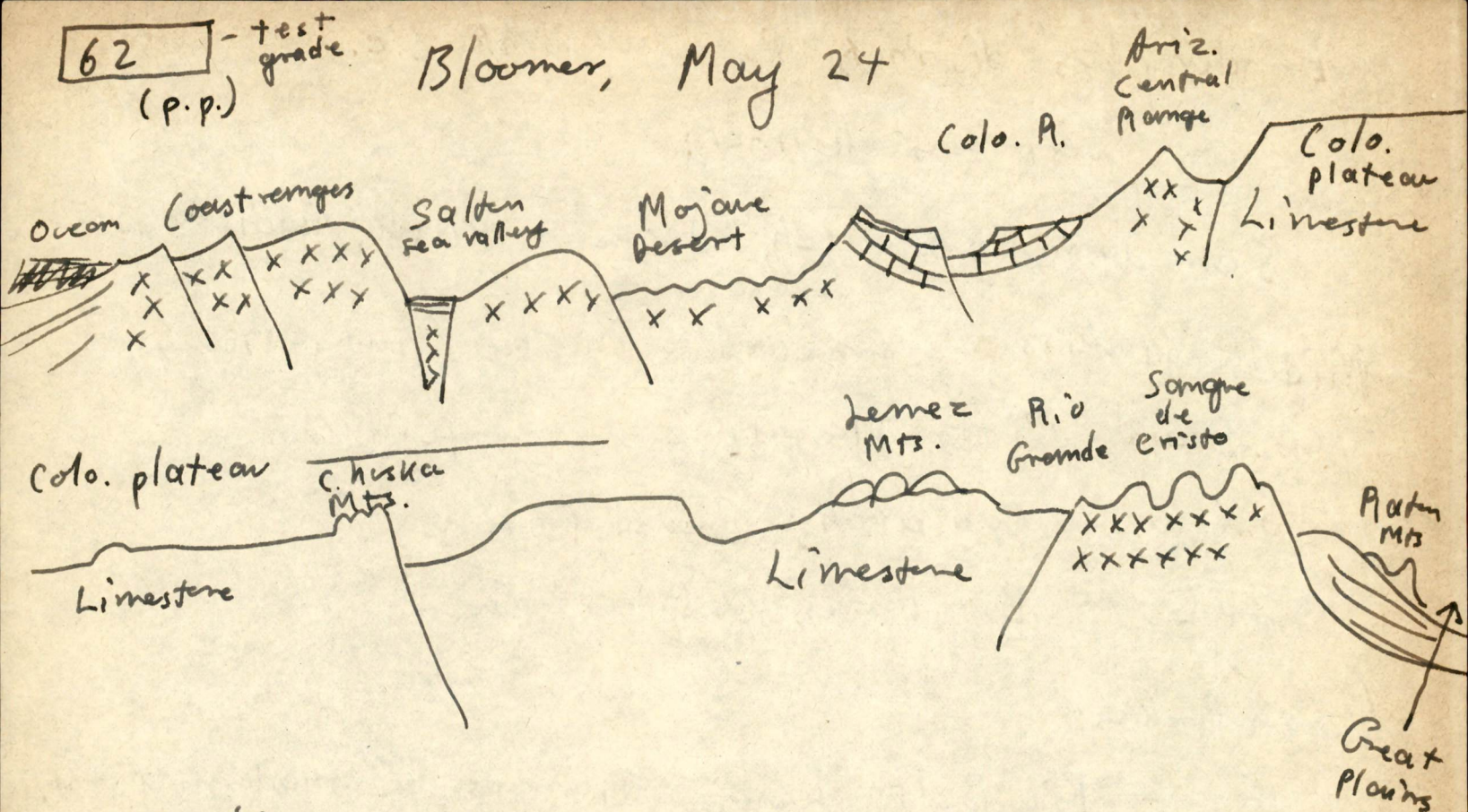
Brooks - N. -22° 50°

Winds mostly west, but variable.
chinooks.

Veg.: Coniferous in S. to tundra in N.

62 - test grade
(P.P.)

Bloomer, May 24



Rockies:

S. Mex. to Bering Sea, 4,500 miles

'Sierra del Sur, near Tehuantepec

3 major units: S. Rockies, N. to Wyo.

M. " , Basin, Big Horns, Wind River, etc.

N. " ; N. of Yellowstone

(Brooks Range in Alaska separate, but considered part)

Boundaries:

E. by Great plains. In Mex., by Mex. C.P., extension of Gulf plain.

W. by Col. plateaus.

E. escarp.: Sangre de Cristo in N. Mex.; Front Range in 8000 ft.

Col.; Laramie Range, Wyo.; South of S. de Cristo,

boundary less distinct, in Sac. mts, etc.

On west less distinct:

San Juan, Sawatch, Jemez, Park, Medicine Bow

Middle Rockies: connected to n. by Uinta Range & Wyo. Basin. Uinta is longest e-w range in U.S.

on W. - Wasatch; Grand Tetons

on E. - Big Horns, W. Pirr, etc.

North Rockies:

E. - Big Belt, Lewis Ranges, Canadian Front, Mackenzie, Brooks Range.

W. - San Toeth, Salmon, Bitter root, Selkirk, Caribou, Stikine, ~~Pelly~~ Pelly

E. boundary is where crystallines replace sediments.

On plateau, lava land, not in Rockies.

E. New Mex., thru Col. to SE Wyo extend S. Rockies. W. Wyo, Mont, N. Idaho, ~~Montana~~ ^{Alberta}, B.C., Yukon Terr. (Mack. mts. mark boundary next Yuk. & N.W. Terr.)

Bloomer, May 29

Intermontane plateaus.

E. by Rockies, W. by Sierra Nev, Cascades,
& Coast R. (Pac. borderlands), 4500 - 5000
miles long Alaska to Mex.

Several provinces: Int plateau of Mex, Basin & Range,
Colo. plateau, Columbia pl., Int. pl. of B. C.,
Yukon plateau.

Boundaries everywhere distinct, some in N.B.C., where
Rockies hit cascades.

Colo. plateau:

N.W. N. Mex., N.E. Ariz., W. Colo, E. Utah.

Bands - E. by Sawatch, San Juan, & Jemez.

N. by Uinta, Wasatch.

W. by cliffs down to basin & range.

Sto N! Coconino lava pl., with San Fr. mts., then
grand Cañon, Kaibab pl., Vermilion cliffs, up to Utah
plateau, Henry Mts, Uinta Range.

White cliffs, Bryce & Zion.

Henry Mts. are laccolithic, with top strata eroded
away.

Colo. plateau is a stripped plain, because the strata are flat.

S. of G. Cañon, Coon Butte, a meteoric crater.

Gigantic meteoric fell, formed splash rim.

Painted desert, along li the Col. Pl., N.E. Ariz., underlain by Triassic rocks, which are everywhere bizarre. Red, brown, white, yellow sandstones

Basin & Range

S. Oregon & Idaho to Col. Pl. 2 major sections.

a) Great Basin of Utah, Nevada, Ariz.

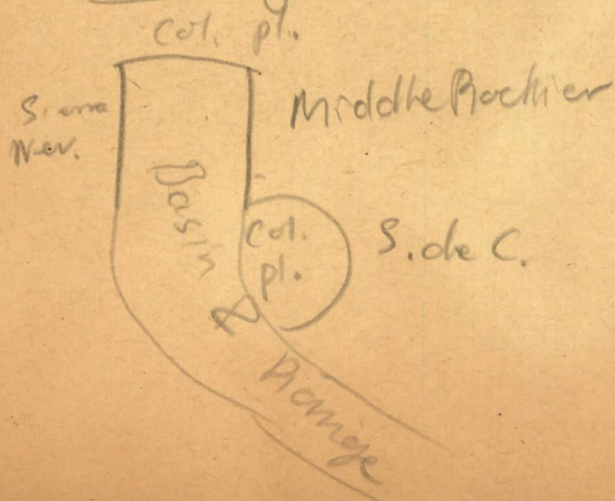
b) Sonora desert in Mex. & S. N. Mex.

E. by Col. plat.

S. by ~~Sonora~~ Sonora de Cristo, etc.

N. by Columbia

W. by Sierra Nev. & Cascades.



May 29 Bloomer 2

Block fault mt. region. Tertiary faults, comp. young. Rocks from pre-E to Quat.

Bolsens, playas. (Insart is a huge bolsen, too big to be completely covered by sediments)

Death valley:

278' below sea.

Mojave desert:

Extinct lakes: Bonneville & Lahontan (N.W. Nev.) shore lines still around, & other evidences of recentness, (destroyed by change in climate?)

Pediments: alluvial fans covered with pavement.

Columbia plateau

Sep. from BBR by rock character only. Where lava steps.
W by Cascades
E by Bitter roots

Typical lava plateau. Flat, very thick (5000')

special features:

Grand Callee, an abandoned stream channel of Col. R., which it took in ice age.

Bloomer, June 3

Pacific Borderlands.

Los Angeles to Aleutians. 5,000 miles

2 parallel cordilleras.

[Coast R. of Cal., Nez Perce Mts, Alaska R., Alaska penins., Aleutians. Sierra Nev., Cascades] all in one line.

[Coast ranges of Cal., of Oregon, Olympic Mts. of Wash., Vancouver range of V. Isl., strait of Juan de Fuca, Alexander Archipelago, Fairweather range, Kenai R., on Kenai peninsula, Cook Inlet, ends on Kodiak Isl.] all in another line.

Klamath mts, cal-Ore boundary connects 2 ranges. Coast ranges go under sea n. of V. Isl. & E of Kodiak Isl.

Sierra Nev. - Sac. a Mojave desert.

A block faulted mt., steep slopes to east. Summit level 8-10,000 ft. 2 crests with trough between. (John Muir Crest &) glacial cirques. On a batholith. Mt. Whitney, 14,496', highest in U.S. Just N., King's river canyon, 8000' deep, deepest in N. Am.

Yosemite valley, glacial features. Merced River. Hanging valleys, lots of falls, Bridal Veil the best.

Cascades: Not block faulted, but anticlinal. Presumably a long narrow plateau, with lava at top. Lassen.

peak, N. Calif., erupted 1915, 10,453 ft. high.
Mt. Shasta, 14,000' +. Mt. Mazama, S. Oreg., rims
crater lake. caldera, not a crater, because
made by big blow-up. Lake Tahoe, 6,000 +
ft, fresh water. Mt. Hood, ~~for~~ just s. of Dalles,
on Columbia R. gorge, which is full of cascades.
Mt. Adams, Mt. Rainier. Mt. Baker, 2nd active
volcano, 1870 erupted.

Calif. great valley. Huge syncline.
Tulare basin (whence tularemia)
Marysville buttes, near Sac. Entire valley alluvial,
pediments, deltas, floodplains. Bed rock below
sea level. 400 by 50 miles.

Willamette Valley trough. Crossed by Col.
R., navig. to Cascades, where Portland is.
350 miles long, 50-15 miles broad. Will. valley
is alluvial, N. is glacial. Col. R. is s. border
of ice sheet.

Other troughs are drowned, not yet filled
in like Calif. Fjarded coast.

June 3 Bloomer, p. 2

Angeles section, s. of coast R.

Series of block faults like B & R. San Gabriel, San Bernardino, Chocolate Mts, Salton Sea. Basins west of these mts. filled with alluvium. Santa Anna Mts, San Laguna. San Pedro hills are small mts nearly buried by alluv. from surroundings.

Coast mts.

Complex — batholiths, folded & faulted, still building up. San Andreas fault, San Fran. quake of 1906.

Bloomer June 1

Columbia plateau:

Snake R. valley, w. Ore. & Wash.

Apples & spring wheat, esp. near junction of Snake & Columbia.

Scablands, s. of Snake, in Ore.

Craters of the moon, ^{north} of Snake's Id.

Bitterroot, Cascades, Okanogan band, it.

In B. C.,

Interior plateau, more complex than Col., Iowa & pre-E. No big cities. Fraser R., Thompson's trib.

Then Yukon plateau

peneplane, c. Fairbanks, which becomes more alluvial as it grades down to delta of Yukon R.

Climate: (for all intermontane plateaus)

Mid-lat. desert (c. Mojave), mid-lat. steppe (most of Col. & b. & r., with deserts locally), highland, esp. ^{etc.} of Columbia pl.

S. Colorado plateau, & low-lat desert (Yuma, Gila R. area, south of these)

Temp:	Jan	July
Broad	S. 50°	80°
generalizations.	N. 14°	68°

Frost: ^N
Sept. 1 - Dec 1
or earlier or later

90 or less days

^S
Dec 1 - March 1
or later or earlier

240 or more days

Precip: < 10"

B.C. & Yukon plateau one not arid, because of low evap., so lumber.

Veg: sagebrush, mesquite, greasewood, cacti in ~~the~~ other most of region.

In n., conifers, to tundra.

Winds: S.W., much varied by chinooks, etc.

Transp. - r.r.s.

S. Pac thru El Paso, Houston, Imp. valley, great valley.
Central Pac., (or A.T., & S. Fe) bull. thru Moffat Tunnel,
Denver, S.-L. City,

Union Pac., thru Wyo basin, Wasatch,

N. Pac., 8 mile tunnel thru Cascade.

Can. Pac., near Banff }
Can. National (gov. owned) } Calgary, Winnipeg, other towns
not improved by them.

Imp. valley: Very imp. for truck. - lettuce, etc. Borax from
Death valley. Bingham Canyon Utah, just e. of S.-L. City,
leading Cu production world.

Bisbee, Ariz., cu.

Matanuska valley, Alaska, where poor people were shipped
for self-reclamation.

out from under lava. ~~8/8/88~~ some name as w.

Bloomer p. 2

8-10,000' ~~max~~ ave. summit here!

Metals & climate make people go up to highlands

Temp rises 3.3° as you go up.

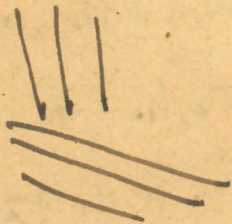
Central America

Bloomer
July 20

"Middle America" includes W. Indies, a geographical term
"Central " " does not, nor n. Mex.

Only in N.W. is boundary indistinct.

Geologists put boundary at 20° N., near Mex. city, due
to trend of rocks changing.



Geographers choose isthmus of Tehuantepec (of which above is north) where s. & n. highlands are broken. This is southern termination of n. America, a physiographic boundary 1500 mi. from Teh. to n. Columbia.

500 mi. " Cape Campeche across

42 mi. across Pan. Canal. (Gulf of San Blas)

7 sovereigntys & 2 possessions in C. Am. Only S. Mex. is partly in it. Guatemala, ^{Br. Honduras} Honduras, Salvador (only Haiti is smaller) Nicaragua, Costa Rica, Panama, & Zone

Physical divisions:

- 1) Caribbean coastal lowlands
- 2) Yucatan plain
- 3) Pacific Coastal lowlands
- 4) Isthmus Highlands
- 5) Nicaragua lowlands

1) Caribbean Coastalland

Broken. Partly alluvial, partly coastal. Along Honduras, a series of alluvial embayments. Rio Sarstoon, Rio Polochi, & Lake ^{Izabal} ~~Esabul~~, a flood plain lake with bay bar across mouth. Rio Chameleón & Ulua, then mts come down to sea. E. Honduras to Nicaragua, lowland is broad, the "Mesquite coast", thinly settled, bananas. S., Nic. lowland, then mts again hit sea.

To west, from n. to s. Teh. or Fonseca Gulf, continuous, wide, best after Yuc. & Mesquitol. 3 lagoons, Laguna Superior, Laguna inferior, & ~~Marmureo~~ Marmureo. Offshore bars etc, on emergent coast. S. of Fonseca, submerged. Salinas bay, Gulf of Culabra, Nicoya peninsula & Gulf, Coronado bay, Osa penins., G. of Dulce, Chiriquí, Montijo, & Panama.

2) Yucatan Plain

Limestone, karst topography. Like Fla. No surface streams. Drinking water from sink holes. Maya civilization, decadent in 600 A.D. T.A.F. has taken over old buildings. Lowest standard of living in Americas Porto Rico, which we own.

3) Isthmus highlands.

2 divisions, sep. by Nic. lowland.

N.E. of it, bipartite

on w., Sierra Macha Chiapas, Volcanic mts., lava flows
on n.e., folded faulted e.-w trending rocks, ~~are~~ coming



B/corner p. 2
July 27

Coldest mo.

Hottest mo.

60

65 (May)

(due to overhanging clouds ~~all~~ in July)

63

81 (July)

(Greatest range of any S. Am. station.

Gen. distr. of temp.

I am

n.

32°

5.

680

July

680 all over

Frost

S. to Tampico every year. Mex. city occasionally.

Rain

Bairn
 <10" in n., 10"-20" n. central plateau, 20-40" in
 highlands & s.-centr. plateau, 60-80" in T.R.F.

Veg.

N - desert veg.

Gross/cmd's

Grasslands
scrub & thorn along coast. Selba

Tremper

Tremup
at Laredo, El Paso, & Nogales, freights cross border.

Mar. city to Vera Cruz, Tampico, Tehuacan, & Culiacan
Honduras (Paro Certe), & Pan-Am. Highway.

Summary Area = ~~7,500,000~~ 750,000 $\square$ mi.

pop = 20,000,000.

cap. = M. Gray, 1,250,000.

Peso = 21¢. Products — oil, gold (Montana, basin & range), Ag, Pb, Zn, Cu, (basin & range, part of Ariz. series) Hemeguin (binchen wire) coffee, bananas

No large cities. Mining. Imp valley most imp. part
→ of valley. Not so rich in Mex. part, due to our tariffs.
→ ∴ they raise staples, subsistence.

Low lat desert, Yuma, highest temp. in U.S. (extreme)

Southern highlands

E. of Tehuantepec, Sierra M. Chiapas, part of
C. Am. system, E-W trending, volcanism on
Pac. side.

Climate

- Types
- 1) Low lat desert, n. & n.w.
 - 2) " " steppe, c. pac. coast & n. Gulf coast, margin
of desert
 - 3) Trop. Savannah, Gulf coast
 - 4) Littoral trop rain forest, Tampico to Cent. Am,
including Mosquito
Coast, excepting tip of Yucatan
 - 5) Highland

Temp. (along mt. Orizaba)

Tierra Caliente, 0 - 2100'

" Templada, 2100 - 6000'

" Fría, 6000 & up. No Paramos, no fern
nearby

Tree line is snow line, c. 12600 ft., Mex. as whole.

Bloomer, July 27

Mexico:

Central Mexico

N. 3000' lower than S. Low-lat. desert, grading south thru steppe to savannah by Mex. city, where 40" rain.

Highlands

3 major ranges

a) Occidental

b) Oriental

c) del Sur, just n. of Tehuantepec

Folded & faulted + igneous & volcanic rocks. Relieved due to erosion. Margins of plateau. Die cut by ~~W. W.~~ U.S. Structurally, our Rockies are more or less a continuation. Andes more like Sierran. than Sierran like Rockies. Sierra M. Occidental the most formidable barrier to transportation in hemisphere. Rugged & gap-less, the only 12000 ft. Rio Balsas gap in south, difficult. Oriental gap at Monterrey.

Sonora or Pac. basin & range province

W. W. part country, incl. Baja Cal. Yaqui R. G. of Calif. in structural trough, huge block fault, connected with San Francisco San Andreas fault zone (perhaps) Imp. valley below sea level, blocked off by Col. R. delta.

Inselbergs, "island mts." projecting above sea of sediment, in counterparts of Cal. Gulf island.

~~p hg = pressure~~

c) Amazon lowland

Most voluminous river in world. Drains more than $\frac{1}{2}$ the cont. Navigable to Iquitos by light boats. Ocean going steamers can get 800 mi. upstream. No delta, an estuary. Orinoco & Magdalena have biggest ones on cont. First town with opera house, where once rubber was grown.

Columbia:

Bardo

Occidental

Central

Oriental

Merida

Ecuador

Colomche

Occidental

Poyas

Pasb

Rio Manamora

Rio Huallaga

Ucayali

Pern

Bolivia

Real
Altiplano
Western

Jungles, or Cordillera Cochamba

Bloomer, July 24

Mexico

1800 mi, n-n.w. 15° - 32° n. lat.

1250 mi. wide in n, 125 in Tehuantepec

Cape Catoche on tip of Yucatan pen.

750,000 $\square$ mi. 87° - 117° w. long. 30

states, 1 Fed. district (like D.C.), Distrito Federal, c. Mex. city. 5 political divisions

1) N. Pacific group - 5 states

2) N. group

3) Gulf coast & Yucatan group, 5 states

4) S. Pacific group

5) Central region, 10 states & Fed. dist.

All Mex. in Middle America, part in central Am.

Bays on Pac. Sebastian Bay, Gulf of Calif., Banderas bay, Gulf of Tehuantepec, on E., Gulf of Campeche

Phys. divisions

1) Gulf coast plain

2) Central plateau

3) Mex. highlands

4) Pacific basin & remnant (Sonora desert)
separate from ours.

5) Southern highlands.

1) Gulf coastal plain.

From Texas, Laredo the w. border. To
Tampico, s. of which Sierra M. Oriental is
coast, volcanoes, to Vera Cruz.

SE of V. C., plain reappears, until Hardrock
Gulf.

Plain broadens at Rio Grande, Panuca, &c.
to 100 mi. 25 mi. otherwise.

Seaward sloping strata, but no salt domes.
No ll cuestas as in Ala.

Pan-Am. highway, as far as Mex. City.

Tampico, Vera Cruz, Mex. city, & Monterrey.
the 4 imp. city.

Tampico oil. Trouble when they looked at Am.
geologists.

Vera Cruz a leading port. ^{Atlix} ^(binder + mng) Corn, the
leading subsistence crop.

Tex. to Cancun, steppe. Then gets wet.
Savannah, then littoral T.B.F. N. tip
Yucatan, also, steppe & savannah, in corresp lat.

Veget.

Blaumen p. 2
July 22

I.R.F. along coasts, semidecid. in mts.

N. Am. pine has southern limit in n. Nicaragua.

Trains

Few r.r.s, these on Pac., privately owned by U.S. Fruit
Pan. Canal, 42 mi. long. Built 1904-14.

Greater tides on Pac. side than Atl., due to
local land forms.

Guatemala

Cap. Gu. city.

Coffee, bananas, chicks, gold, lumber,
honey, sugar

El Salvador

Cap. San Salvador; Coffee, bullion, opium,
sugar, henequen (binden
thin fiber) balsam, rice, indigo.

Honduras

Cap. Tegucigalpa;

Bananas, gold, citrus, coffee, coconuts,
livestock, tobacco, hides

Nicar.

Managua cap.

Coffee Bananas, gold, cotton, lumber,
hides, sugar, maize, dye-wood

2) Plateau

$\frac{1}{2}$ country, surrounded on n, e, & s, by mts. Grades n. into basin & range.

Block fault ranges & basins. N. $\frac{1}{2}$ arid, with bolsons. 3,000' - 10,000'. S., lakes, more humid. Drained to seas. Volc. belt, Cape Corrientes to Vera Cruz, active today.

3 bolsons; El Paso, (by city), Mapimi, Mayran. Skirted by pediments.

Mt. Orizaba, 18,700'; near V. Cruz.

Popocatepetl, 17,800'. } near Mex. city

Ixtaccihuatl, 17,340' }

Lakes. Chapala, Texcoco (now drained).

Basins, Mex. city (7500') Toluca, (8600')

Guadalajara, 3,000'.

Cities Mex. city (~~Ag~~) growing industries.

Monterrey, industrial (steel, tile, glass)

Products - Ag (Cachuca), Fe, Au, Cu, As, mercury, Zn, Coal, cotton, corn, tobacco, cattle