The Topographical and Meteorological Features of the Idaho Region.

F. D. Waters.
Arid Region

Topography

- Mountains, hills, and valleys
- Rivers and their basins,
- Plains
- Particular valleys in accordance to the states
- The same with the river basins and forests
- Rain
- Temperature
- Wind and how distributed
- Rain in localized

Meteorology

- General
- Wind and how distributed
- Temperature
- Wind in

General

- Rivers and their basins
- Plains
- Particular valleys in accordance to the states
- The same with the river basins and forests
- Rain
- Temperature
- Wind and how distributed
- Rain in localized

Meteorology

- General
- Wind and how distributed
- Temperature
- Wind in
This subject will be considered under two principal heads.

1. The topography; and 2. The meteorology of the Great Region.

I. First let us consider its topography. It would probably be best to give its boundaries and dimensions first in order that its extent and size may be well in mind. It is included between the 100° and the 124° of west longitude, and north, and south, between the 40° and the 29° of latitude.

In other words, it includes the western half of Kansas, Nebraska, the Dakotas, and the whole of California, Wyoming, New Mexico, Idaho, Utah, Arizona, and one third of Washington, not including Alaska it amounts to about one third of the United States.

Its greatest width from east to west is about 1800 miles, and from north to south 1000 miles. Considering it as a whole, we find that topographically it divides itself naturally into three grand divisions, which though not arbitrary may be used in describing it generally.
Topographical features

(a) The first is the plain region. This is a region mostly made up of plains. It runs north and south from the British Line to the lower portion of the Rio Grande River in the state of Texas, and East and West from the 100th to the 110th degrees of longitude. Its altitude is greatest furthest north, and from there it sloped gradually downward toward the sea. It attains a maximum height of about 5000 feet above the level of the sea and 1500 feet as a minimum. There are but few streams, and they all cross the smallest in the mountains.

(b) The second division includes the whole of the inland mountain region, from the foot hills of the Sierra Nevada to the Sierra of California. This region lies between the 105th and 120th degree of longitude and North and South from the British Line to West Mexico. We find this region is thickly interspersed with barren desert tracts. It consists largely of plateaus, and this is especially true of California and Texas.

Arizona is made up largely of tablelands.

(c) The Pacific coast division embraces the
state of California between the 120th degree of longitude and the Pacific coast, and between the 40th and the 33rd degree of latitude. It embraces two great mountain regions: the Sierra Nevada, and the Coast Range running northwest and south respectively. The former varies from 6,000 to 8,000 feet in height, and the latter from 1,000 feet to 6,000 feet in height above the sea-level. The Sierra extend along the east border of the state for about 400 miles. The Coast Range extends along the entire length of the West border. The average width of the Coast Range is about 60 miles, while the Sierra average only about 80 miles in width.

The valleys of the mountains of the Coast Range are long, narrow, and shallow. On the South Eastern part lies the Salinas Valley, which is 170 miles long and 70 miles wide. This is essentially a lake region. There are many both small and large in various parts of the state, and some of them are very high. About the base of the Coast Range are gently sloping table lands from 200 feet to 1,500 feet above the valleys in between. The beds of the streams are actually higher than the surrounding country. Without reference to divisions of any kind the coast region has the following
characteristics, as a rule, the lowest lands lie further south. There is much land with but little vegetation all over this region. There are also canyons and lands carved by numerous streams which have cut deep, winding gorges like huge fissures in the earth's crust, and which vary from a few feet to hundreds of feet in depth. There is also a great extent of alluvial lands where every stream leads into a precipitous gully. There is further a great area of mesa land and plateau which have their surfaces dotted with numerous boulders or fragments left by storms. These are often lines of cliffs extending across the country on the margins of plateaus.

Rainfall.

The rain is very unequally distributed in the arid region. It is concentrated greatly in the mountains while the valleys and plains usually have but very little. Of the rainfall, more equally distributed it would be fairly large but varies from 10 inches on the plains to as high as 50 and 70 inches in the mountains. Generally the rain increases from north to south which is due to the configuration of the Coast and the ocean currents. It also increases from the low lands to the high lands as before stated. A south wind would probably be a fair
average for the whole. The evaporation is greatest in California, and strikes on the central part of the Plain region there is not more than 18 inches of rain annually, and farther west it falls from 10 to 12 inches.

Temperature

This varies in the whole from 40° below zero to 120° above in the shade. The temperature decreases from the level of the sea to the summits of the mountains.

Central Forestry

There are two kinds of forests. First, those which grow on the highest mountains. Second, those which grow in the plateaus. Some of the principal varieties are pine, spruce, redwood, and fir.

The area covered by these forests is about one-tenth of the whole but rarely are these forests dense. Large stretches of prairie often intervene so that one quarter of the area alone would hold them all.

Pine, cedar, and Douglas oak are also plentiful. It is estimated that there is nearly 150,000 square miles of these alone. Taken as a whole there is perhaps one fifth of the entire acid region covered with scattering forests.

The Plain region is practically without trees except
...and then a few clumps, and groves along the
streams. These clumps average from quarter to
half a mile in width. They are mostly cottonwood,
elm, hickory, and hackberry. The timberless
region embraces about 400,000 square miles. There
are however a few mountains, and hills within this
region, which are usually wooded. It is estimated that
not more than two percent of the plain region have
timber. The mountains on the other hand are nearly
always heavily timbered. For example of the 267,881
square miles embraced within the Rocky Mountains
twenty one percent is estimated to be timbered.

II. The description of the rivers of a country, and
their drainage systems, the general lay of the country
through which they flow, etc. is a great aid in deciding
its topographical features; so we will now observe
the most important rivers, and give a topographical de-
scription of their basins or drainage systems.

Arkansas river. The banks are generally low and the
bed is constantly changing. The river rises in the
Sangre de Cristo Mountains in the central part of Colorado
and flows in a southeasterly direction through the
state. To the north of the river in Colorado are a wide extent
of level plains. To the north there are a few short detached
mountain ranges, but it is generally as in the north a
great plain region. The Arkansas enters Kansas at
about the middle, and flows north-easterly cutting off a huge corner of the state. This portion of Kansas both north and south is a vast plain region.

6. Missouri River. This river is formed by the union of the Missouri, Galatian, and Jefferson rivers, which are all running west of our national parks. The catchment areas in the main are similar in character.

The drainage system is generally mountainous, the sides being steep but as a rule heavily timbered.

7. Yellowstone River. This river has its source in the northwestern mountains of Wyoming and flows southward through the national parks.

8. Malheur River. This river is mostly in eastern Oregon. It includes the drainage of the Steens Mountains, a range extending southward into Nevada. The river has two main tributaries, the Willows, and Milky creeks. The northern and middle parts of the main river have their source in the same range of mountains with a low divide between them. Timber is abundant at the heads of all the forks.

9. Snake River. This and its tributaries received all the drainage of Wyoming west of the continental divide, of Idaho below the 40th parallel of latitude, Southeastern Oregon, and Northeastern Nevada. The river has two forks. The northeastern fork is divided into three areas.
1. Henry Lake.
2. Fall River basin.
3. Selma River basin.

Henry Lake is the real head of the South Fork. This is a shallow lake about seven miles long and one to three miles wide. The elevation between its water shed and the Madison River in Montana is very low. The South Fork flows into Jackson Lake, and from there it flows southwest through Wyoming receiving all the drainage between the Teton Range and the continental divide on the east. After leaving its canons and entering Snake River valley it flows in several channels at time of floods.

4. The Madison and Baran River.

These rivers rise in the Sierra mountains, and flow easterly. Lake Tahoe is in the drainage system of the Madison. This is the highest lake of its size in the United States. It has a surface of 175 square miles. The drainage of the Madison lies between Colorado and Nevada.

5. Sevier River.

The river Sevier rises north of the Grand Caum in the highest plains of southern Utah, at an elevation of from 7000 to 1000 feet above the sea level and flows in a northerly direction through deep canons and narrow valleys for about 170 miles, when it turns due north.
9th of River.

This river has its source in three states. The Northeast fork rises in the northwestern corner of Idaho and flows northward until it meets with the main river near the junction of the North and Middle forks. The upper catchment of the main river is broken and rocky alternating with barren desert land.

Most of the time the river flows through rocky canyons, and it has formed deep channels in the open valleys. The country adjoining the canyons is wild and rugged with the mountains in the west and lava beds in the East. About nine miles before entering the Snake River it leaves its canyons and enters the broad Snake River Valley.

Weiser River.

The Weiser rises in Washington County. Its source is very close to the junction of the Payette and Little Salmon rivers. A high divide separates the Weiser from the Payette which forms the principal water shed of both rivers. The Weiser as a rule is very high and rapid. Its lower portion however is only 2100 feet above the sea level.

Wood River.

The Wood River rises about forty miles above its confluence with the Little Wood, there is very little surface drainage into the Wood River to the east of the surrounding country.
From its prong to its junction with the Little Wood on each side is a lake bed me to five miles in width. Between Wood and Prine cities there are eight small creeks, whose channels are nearly parallel to each other, and equally distributed throughout this area for a distance of eighty miles.

II. Colorado River.

This river rises in Wind River mountains, and winds in the main from north to south for 200 miles. It drains a large part of Wyoming, Utah, and Colorado. Four-fifths of the upper drainage basin of the river rises from 5,000 to 8,000 feet above the sea level. About the rim of this basin are the Wasatch, and Uintah Mountains on the west, and Wind River and Rocky mountains on the east. Some of the canyons formed by the Colorado are from 2,000 to 6,000 feet in depth.

II. Salt and Verde Rivers.

These rivers head in a range of cliffs which extend across Arizona from the Colorado River to the San Francisco Mountains. They cut off the low lands in the north, and west from the plains above, south of the Colorado plateau. There are many high mountains in this plateau.

II. Pecos and Pecos Rivers.

These rivers have basins similar in extent and elevation.
Their catchment areas are separated by a spur of the Peto Range. Fall River has a decided and continuous slope after leaving the foot hills while the slope of the Peto is very slight.

In Bear River.

The Bear rises in the lofty Uintah Range of North-Eastern Utah and flows on through the South-western corner of Wyoming a high rolling country mostly devoted to grazing. During most it crosses the line again into Utah, and then again into Wyoming. From Wyoming it turns west into a valley where it enters a large valley. In this valley is a lake which acts as a regulator for the Bear, which flows into it. The southern half of the lake lies in Utah.

III. In order to study the localities of this region more completely and definitely let us next take a survey of each of the states included in this region and to localize its topographical characters as well as its forestry and meteorological features.

The mountains in the Northeast country are made up largely of prairies and plains. There are two main mountain systems, however, the Black Hills and the Turtle Mountains, which are nothing more than hills. The Black Hills cover about four square miles while the Turtle mountains cover only about 300 square miles.
Klimat. The rainfall averages from 26 to 24 inches and occurs mostly in the spring. The rainfall varies much in different parts. The forests are very limited in extent.

Montana.

The eastern part of this state is mostly hilly lands, but it is usually heavily timbered. The river valleys are usually long and narrow. For example, the Yellow River is 400 miles long, and only three miles wide, on the average. Such streams both large and small usually present similar features.

From the valley the rise is somewhat precipitous to the mesa lands from 600-1000 feet above the bottom lands. These mesa lands are usually covered with wild grasses. These mesas are mostly in the eastern part of the state, while the western part is more rugged and mountainous. On the upper benches of the valleys are usually small hollow-like depressions.

Ninety-five percent of the mountains of Montana are covered with forests.

The rainfall is mostly in showers of short duration. From November to the first of March the average rainfall is from three to four inches.

The temperature varies with the altitude as elsewhere. At 4000 feet above the sea level it averaged about fifty-eight degrees.
NEW MEXICO.

The state is largely made up of mesa, much of which is high and barren. The valleys along the streams are usually narrow with high bluffs overlooking them. Above the bluffs are the prairies and tablelands. There are a large number of streams flowing east through the state which have their sources in numerous springs. The mountains cover a large portion of the northern part and they are scattered all over the state in detached ranges.

On the north and north side of the Río Grande, which runs through the middle of the state, there are ranges of mountains extending nearly through the state.

About one fifth is covered more or less with forests. Over two thirds of this is in the Mountains. Most of the rain occurs in the latter parts of July and August.

COLORADO

The upper portion of this state is largely pastoral, with many lofty mountains and high plateaus. The drainage basin of the Arkansas River in this state starts from rough rugged mountains through broken foot hills to level plains. In the mountain region west of the Arkansas Valley, it found three of the highest ranges in the state.
Some of their peaks reach 14,000 feet above the sea level, and there are very few below 10,000 feet. The Wet and Spanish Mountains all rise directly from the plains.

The eastern part of the state is mostly plains, while the central and western parts are thickly interspersed with short detached mountain ranges and meandering streams coming mostly from these mountains.

The timber is found almost entirely in the mountains. The best timber is quite high up in the mountains, or as it is called, timbered. It is scattered over a large area. Pine and spruce are the principal varieties.

To be more specific there is about 154,000 square miles of timber, and all of this is in the mountains, except about 100,000 square miles.

The rainfall is mostly in the form of showers, of short, short duration. On the mountains the precipitation is much heavier than in the plains.

Nevada.

This state on the average is about 4,000 feet above the sea level. As a whole it is somewhat like a bowl surrounded on all sides by mountains which are usually low.

About one third of the state is covered with timber, about one third is pasture, and a good part of the
rest is desert land or in some of the other states.
The timber is very stringing, and confined to the
mountains in the central, and northern parts.
The rainfall on the plains is very small, but in
the mountains it is plentiful.
California.

The upper lines of drainage of this state are through
easy slopes, and valleys) terminating in the deep and
rugged canons of the main rivers. Eastward of
this, the ground is more level, and sloping. It is
in fact a great flat table land extending from the
peaks of the Sierra's with an easy incline to the
west. This table land is cut and crossed by nu-
meros streams, which flow for beneath the sur-
fice of the ground in rugged canons, often several
thousand feet in depth.

The Yosemite Valley at the western edge of this
region is a typical example. The valley of this region are
few, and very narrow. In the upper portion, and
east part of the Sierra's, there are many natural
lakes, swamps, and open meadows.
The peaks of this region often reach 10,000 feet above
the sea level at its lower altitude there are many
narrow valleys, through which small streams flow.
In large portion of the state west of the Sierra's, at a
range, is forest clad. Trees are found on the
Higher altitudes, and passes mostly in the E. and N. These areas of timber are frequently interspersed with rugged bare granite mountains.

When you leave the mountains for the first 100 miles perhaps there is not more than ten to fifteen inches of rain.

On the southern part the rainfall varies from twenty-five inches on the sea coast, and mountain to three and four inches in the deserts. The rain in the deserts together mostly in summer.

Texas.
The northern part of the Sub-Tropical region of this state is usually of undulating plains broken by stretches of hilly land. In general the surface is a rolling prairie covered in places by timber. Some mountains range up all through the state, and many small streams have their origin in them.
The plains, rock and altitude of from 2,000 to 3,000 feet above the sea.

The rainfall varies much in different parts of the state. Between the Pecos, and Rio Grande rivers, it is from 10 to 12 inches. On other places it averages from 17 to 30 inches annually.
The country is subject to many hot dry winds.

Arizona.
An extensive range of cliffs runs through...
This state, there are also a number of detached ranges of hills and mountains, especially in the southern and northwestern parts.

The eastern part is one of a plain region, and especially the east central part.

In southern Arizona, the streams are few and small. In this state there are many uninhabitable deserts. There are some districts just below the sea level, and others just above it. These are many areas covered with sand, and stony fragments with but little vegetation.

The rainfall is very slight except in the highest mountains.

The rainfall varies from three and a half inches on the plains, to twenty-four inches in the mountains.

Washington.

About one third of this state is subhumid, and the rest is arid. The Cascades range runs north and north through the western third. So the east of this region is mostly a plain region broken now, and then by a detached group of hills. The western part is more mountainous, and rugged.

The rainfall west of the Cascades Range is fairly heavy.

East of the Cascades Mountains the winters are short, but often severe. There is seldom any snow.
before Christmas, and it usually melts in a few days, due to the Chinook winds.

Idaho.
The entire eastern boundary is bordered by the Bitter Root Mountains. There are also a number of detached mountain ranges and groups of hills especially in the southern part. The whole of the state is practically a desert region, which is mostly desert, and barren.

The timber area embraces about 9,000 square miles, and lies mostly north of the Snake River in the mountains. South of the Snake River it is almost destitute. West of the Wasatch Mountains, it is almost timberless, with the exception of a few mountain ridges which are timbered.

The rainfall in the low lands is about the same as in eastern Washington. On the mountains there is much more.

Utah.
This Territory is very mountainous. The Uinta Mountain range runs through the Territory from southwest to northeast. Besides this principal range there are a large number of smaller ranges, and detached groups, all over the Territory. In the southern part, is the Great Salt Lake the largest of its kind in the United States.
To the west of this lake and extending over a vast area, is a barren desert land. Here is a large number of small streams, especially in the southern part, which mostly have their sources in the mountains.

The rainfall of Utah does not average more than eight inches per annum, but it is sometimes much less than this.

What of Wasatch mountains it is almost timberless, with the exception of a few mountain ridges. It is estimated that all told there is about 600 square miles of timber which is mostly in canons, and inferior in quality.

Oregon

The western third of this territory is very similar to the western third of Washington, both as to climate, and topography. The same may be said of the eastern parts of these two territories.

The Southern part has a number of detached mountain ranges, and also a number of small lakes.

South of the Snake River the rainfall is not more than 15 inches. The average rainfall of the whole however is about 20 inches.

The average temperature is about 80°.

The timber area includes about 30,000 square miles and is mostly in the western mountain ranges and the Blue Mountains of the northeast.
Wyoming
This is a very mountainous Territory. This is most marked in the southern and western parts, while the plains lie in the central, and eastern parts. It is in some of the other Territories there are a large number of detached mountain ranges. Between these mountain ranges, the country spreads out in rolling plains, cut in many places by streams both large and small, which usually have their sources in the mountains.

The rainfall is similar to that of Oregon.

The forests embrace about one ninth of the Territory, and are nearly all in the mountains, covering a total of 11,860 square miles out of a total of 12,060 square miles in the Territory.

Having as yet taken up only the very general character of this great Region it would be both interesting and instructive to go further into details, but within the scope of the present work it is impossible to do this, so I must bring this most interesting of subjects to a close, leaving its continuation.