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SNAKE RIVER BASIN

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Larger than the Colorado and the Sacramento rivers combined, Snake River delivers an average of about 50,000 cubic feet of water into the Columbia every second. This provides a fifth of the Columbia's total flow. Draining vast stretches of mountains and plains, of forests and deserts, Snake River has cut spectacular gorges and canyons unequaled in North America. With a basin of 190,000 square miles covering parts of four states, Snake River collects water from an area substantially larger than all of Idaho. Two large drainages--the Salmon and the Clearwater--and ten or more smaller rivers contribute an abundance of water from melting snow or a modest share from desert ranges. With an annual rainfall as high as 98.6 inches in some parts of Idaho's rugged granite batholith and as low as six inches or so in desert environments, Snake River basin has a variety of climate and topography characteristic of interior areas of the Pacific Northwest.

Hundreds of miles of mountains extend westward from Montana and Wyoming's Northern Rockies across Idaho into eastern Oregon. Some of these form part of a long series of north-south ridges running north from a basin and range country of Utah and Nevada. A broad arc of Snake River plains and Owyhee uplands interrupts these ridges and mountain blocks, which gradually sank below a volcanic valley covered by recent lava flows, windblown soils, and lake beds formed while Snake River was cutting a mile-deep gorge through that mountain bloc which separated Snake and Columbia plains, which emerged farther north and west. Mountain ridges range in age from very ancient to old sea-bottoms thrust up to more than twelve thousand feet. Others, including Idaho's central batholith, were exposed more recently, while some (such as Grand Teton and many upper Salmon Sawtooth peaks), surprisingly new, still are gaining altitude. Forced to find outlets through a rugged terrain, various Snake Basin rivers cut a variety of deep canyons running in various directions in order to escape into Columbia basin.

Recent Snake River lava flows shaped river courses south of Idaho's central mountain barrier. Bear River, part of Snake River's even greater drainage basin until about thirty thousand years ago, was diverted by new lava eruptions west of Soda Springs into Lake Bonneville--a great inland sea which extended from Utah and Nevada into Idaho. That led Lake Bonneville to

overflow into Snake River through a new channel which carried a torrent several times as large as the Amazon for a few months at least. Even without that great Bonneville flood (which greatly increased Snake River's drainage area), the Snake carried a far greater volume of water than is received today. Local glaciation and a cold, rainy climate provided a large Snake River discharge in a country not far from a great continental ice sheet that descended farther east.

When the Snake finished cutting an indirect course from Yellowstone Park to a Columbia River junction about 1,038 miles below, it had adopted a serpentine course appropriate for (but unrelated to) its name. (The Snake is named for nomadic Shoshonean Indians known to their plains neighbors as Snakes.) Longer than the Columbia (which is 890 miles at that point), the Snake flows 1,362 miles to Astoria. More than 160 miles of this circuitous route went partly underground when lava buried old Snake channels and forced surface water to flow in a gradually shifting southern arc which avoided new obstructions. An enormous underground lava reservoir, through which upper Snake and Lost rivers' waters gradually penetrates at about a mile a year, provides a resource of exceptional value in an arid plain.

Surface and underground water resources of importance throughout the Snake's watershed include hot as well as cold water. Geothermal power, exploited in a modest way since 1890, is available on a considerable scale in a terrain affected by extensive recent volcanic activity. Ice caves also developed in other spots in the Snake's lava fields. All of these curiosities attest to a diverse and challenging environment with a variety of natural wonders.

Gradual changes in climate and in topography continue to affect the Snake and its basin. Snow and ice, heat and water, crustal movements which imperceptibly raise and lower mountains and plains, and shifting courses of streams and rivers continue to alter an already varied landscape. Dams and reservoirs provide sudden changes which speed up some of those long-term effects. No one can be sure when another ice sheet may advance toward Snake River's large basin, or whether a hotter and drier climate is emerging just now. But over a period of thousands of years, remarkable changes will continue to transform an area which has a spectacular recent natural history of dramatic and sometimes cataclysmic events.

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