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PRINCIPLES OF WATER-POWER DEVELOPMENT[1]

1. The development of water-power involves artificial regulation of streams. Proper regulation of running water for the several uses of water supply, irrigation, power and navigation can be effected only in the light of the physical relations, the relations in equity, and the more salient legal relations of water in streams.

PHYSICAL RELATIONS

2. The fresh water of the land is derived directly from rainfall (including snow) and indirectly through evaporation from the sea. The mean annual rainfall on mainland United States ranges from less than 5 to over 100 inches, averaging 30 inches; the quantity aggregates about 5,000,000,000 acre-feet.[2] The distribution is unequal; over the eastward two fifths of the country the mean is about 48 inches, over the median fifth some 30 inches, and over the westward two fifths about 12 inches.[3]

3. In humid lands the water of rains and melting snows tends to gather into streams, generally taking the shortest and easiest paths to the sea, while in arid lands

[1] Presented at a hearing of the National Waterways Commission, November 21, 1911.

[2] The acre-foot is a convenient unit not only because in common use throughout arid America, but because large enough to measure water in its national aspect without use of incomprehensibly large figures. It equals 43,560 cubic feet, 326,047 gallons, or 1,359.6 tons; it is something over a kilostere (equaling 1.2335 ks.), or cube of 10 meters.

[3] "Soil Erosion," Bureau of Soils Bulletin 71, 1911, p. 17.