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Wyoming Vs. Colorado

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SooperKanoon Citation : sooperkanoon.com/93631

Court : US Supreme Court

Decided On : Jun-05-1922

Appeal No. : 259 U.S. 419

Appellant : Wyoming

Respondent : Colorado

Judgement :

Wyoming v. Colorado - 259 U.S. 419 (1922)
U.S. Supreme Court Wyoming v. Colorado, 259 U.S. 419 (1922)

Wyoming v. Colorado

No. 3, Original

Argued December 6, 7, 8, 1916

Restored to docket for reargument March 6, 1917

Reargued January 9, 10, 11, 1918

Restored to docket for reargument June 6, 1921

Reargued January 9, 10, 1922

Decided June 5, 1922

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I N EQUITY

SYLLABUS

1. The waters of an innavigable stream rising in one state and flowing into a state adjoining may not be disposed of by the upper state as she may choose, regardless of the harm that may ensue to the lower state and her citizens. P. 259 U. S. 466 .

2. The relative rights of two adjoining states to the use of an innavigable interstate stream must be determined in accordance with right and equity and in harmony with the constitutional principle of state equality. Pp. 259 U. S. 465 , 259 U. S. 470 .

3. This does not imply an equal division of the water between the two states. P. 259 U. S. 465 . *Kansas v. Colorado,* 206 U. S. 46 .

4. The doctrine of appropriation, by which priority of appropriation gives superiority of right, affords the only equitable basis for determining this controversy, in which Wyoming seeks to prevent diversion of water from the headwaters of the Laramie River in Colorado for use in irrigating Colorado lands, to the detriment of prior irrigation appropriations made from the same stream in Wyoming. P. 259 U. S. 467 .

So *held* in view of the early adoption and continual practice of the doctrine in both jurisdictions alike, sanctioned by the United States as owner of the public lands, its perpetuation in the constitutions of both states at the times of their creation as a doctrine already existing and essential to their natural conditions, its.relation to the settlement and irrigational and agricultural enterprises in both, and the recognition in both of the right to appropriate water from interstate streams.

5. In applying the doctrine of appropriation in this case, private appropriations should be recognized in the order of their priority, as they would be if the stream

lay wholly in either state. Pp. 259 U. S. 468 , 259 U. S. 470 .

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6. Such recognition of private rights *held* not inappropriate in a suit between the two states in view of the relation of the appropriations to taxable values, and to the welfare, prosperity, and happiness of people in each state. P. 259 U. S. 468 .

7. Inasmuch as the doctrine of appropriation, as it exists within these two states, was adopted and practised from the beginning with the sanction of the United States as owner of the public lands, and inasmuch as the United States does not now seek to impose any policy of its own choosing on either state, the question whether, in virtue of such ownership, it might do so, is not here considered. P. 259 U. S. 465 .

8. The fact that the proposed diversion is to another watershed from which Wyoming can receive no benefit is not, in itself, a valid objection, since like diversions are made and recognized as lawful in both states. P. 259 U. S. 466 .

9. The doctrine of appropriation lays upon each state a duty to exercise her right reasonably and in a manner calculated to conserve the common supply. P. 259 U. S. 484 .

10. The evidence establishes:

(a) The average yearly flow of the Laramie River, in Wyoming, is not a proper measure of the supply practically available there from year to year. P. 259 U. S. 471 .

(b) Computation should be based on the unalterable need for a supply that is fairly constant and dependable, or susceptible of being made so by storage and conservation within practicable limits, substantial stability of supply being essential to successful reclamation and irrigation. P. 259 U. S. 480 .

(c) The reasonable measure of the supply available in Wyoming for practical use is not the lowest natural yearly flow, but something considerably greater, obtainable by storage. P. 259 U. S. 484 .

(d) So measured, the entire supply, from the Laramie and from certain tributaries in Wyoming, available for Wyoming appropriations here involved and for the proposed Colorado appropriation is 288,000 acre-feet per annum. P. 259 U. S. 488 .

(e) The Wyoming appropriations senior to the proposed Colorado appropriation require 272,500 acre-feet, and the overplus available for that appropriation is therefore restricted to 15,500 acre-feet, per annum. P. 259 U. S. 496 .

11. Permits issued by the state Engineer of Wyoming to appropriate water in specified quantity from the stream are mere licenses, and not adjudications that a surplus subject to appropriation exists. P. 259 U. S. 488 .

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12. The proposed Colorado appropriation is to be dated from the time when the project became a fixed plan with a definite purpose, and when work upon it was begun, not related back to an earlier date when the project was inceptive and uncertain, and, by the same rule, several of the Wyoming appropriations are treated as relating to date later than those claimed for them. Pp. 259 U. S. 490 - 495.

This was an original suit, brought in this Court by the State of Wyoming against the State of Colorado and two Colorado corporations, for the purpose of preventing a diversion of part of the water of the Laramie River, a stream flowing from Colorado into Wyoming. The facts are fully stated in the opinion, *post,* 259 U. S. 455 . The bill was filed on May 29, 1911. A motion to dismiss, equivalent to a demurrer, was argued and, on October 21, 1912, was overruled without prejudice. The case was argued, and twice reargued, on final hearing, the United States participating in the last two arguments, by leave of the court.

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MR. JUSTICE VAN DEVANTER delivered the opinion of the Court.

This is an original suit in this Court by the state of Wyoming against the state of Colorado and two Colorado corporations to prevent a proposed diversion in Colorado of part of the waters of the Laramie river, an interstate stream. The bill was brought in 1911, the evidence was

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taken in 1913 and 1914, and the parties put it in condensed and narrative form in 1916 preparatory to the usual printing. The case has been argued at the bar three times. The Court directed one reargument because of the novelty and importance of some of the questions involved, and the other because of an intervening succession in the office of Chief Justice. As the United States appeared to have a possible interest in some of the questions, the Court also directed that the suit be called to the attention of the Attorney General, and, by the Court's leave, a representative of the United States participated in the subsequent hearings.

The Laramie is an unnavigable river which has its source in the mountains of Northern Colorado, flows northerly 27 miles in that state, crosses into Wyoming, and there flows northerly and northeasterly 150 miles to the North Platte River, of which it is a tributary. Both Colorado and Wyoming are in the arid region, where flowing waters are, and long have been, commonly diverted from their natural channels and used in irrigating the soil and making it productive. For many years, some of the waters of the Laramie River have been subjected to such diversion and use, part in Colorado and part in Wyoming.

When this suit was brought, the two corporate defendants, acting under the authority and permission of Colorado, were proceeding to divert in that state a considerable portion of the waters of the river and to conduct the same into another watershed, lying wholly in Colorado, for use in irrigating lands more than 50 miles distant from the point of diversion. The topography and natural drainage

are such that none of the water can return to the stream or ever reach Wyoming.

By the bill, Wyoming seeks to prevent this diversion on two grounds: one, that, without her sanction, the waters of this interstate stream cannot rightfully be taken from

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its watershed and carried into another, where she never can receive any benefit from them, and the other that, through many appropriations made at great cost, which are prior in time and superior in right to the proposed Colorado diversion, Wyoming and her citizens have become and are entitled to use a large portion of the waters of the river in the irrigation of lands in that state, and that the proposed Colorado diversion will not leave in the stream sufficient water to satisfy these prior and superior appropriations, and so will work irreparable prejudice to Wyoming and her citizens.

By the answers, Colorado and her codefendants seeks to justify and sustain the proposed diversion on three distinct grounds: first, that it is the right of Colorado as a state to dispose, as she may choose, of any part or all of the waters flowing in the portion of the river within her borders, "regardless of the prejudice that it may work" to Wyoming and her citizens; secondly, that Colorado is entitled to an equitable division of the waters of the river, and that the proposed diversion, together with all subsisting appropriations in Colorado, does not exceed her share; and, thirdly, that, after the proposed diversion, there will be left in the river and its tributaries in Wyoming sufficient water to satisfy all appropriations in that state whose origin was prior in time to the effective inception of the right under which the proposed Colorado diversion is about to be made.

Before taking up the opposing contentions, a survey of several matters in the light of which they should be approached and considered is in order.

Both Colorado and Wyoming are along the apex of the Continental Divide, and include high mountain ranges where heavy snows fall in winter and melt in late spring and early summer, this being the chief source of water supply. Small

streams in the mountains gather the water from the melting snow and conduct it to larger streams

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below, which ultimately pass into surrounding states. The flow in all streams varies greatly in the course of the year, being highest in May, June, and July, and relatively very low in other months. There is also a pronounced variation from year to year. To illustrate, the gaging of the Cache la Poudre, a typical stream, for 1912 shows that the total flow for May, June, and July was more than three times that for the nine other months, and the gaging for a period of thirty years shows that the yearly flow varied from 151,636 to 666,466 acre-feet, [Footnote 1] and was in excess of 400,000 acre-feet in each of four years and less than 175,000 acre-feet in each of five years. Both states have vast plains and many valleys of varying elevation, where there is not sufficient natural precipitation to moisten the soil and make it productive, but where, when additional water is applied artificially, the soil becomes fruitful -- the reward being generous in some areas and moderate in others, just as husbandry is variously rewarded in states where there is greater humidity, such as Massachusetts, Virginia, Ohio, and Tennessee. Both states were territories long before they were admitted into the Union as states, and, while the territorial condition continued, were under the full dominion of the United States. At first, the United States owned all the lands in both, and it still owns and is offering for disposal millions of acres in each.

Turning to the decisions of the courts of last resort in the two states, we learn that the same doctrine respecting the diversion and use of the waters of natural streams has prevailed in both from the beginning, and that each state attributes much of her development and prosperity to the practical operation of this doctrine. The relevant views of the origin and nature of the doctrine, as shown in these decisions, may be summarized as follows: the

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common law rule respecting riparian rights in flowing water never obtained in either state. It always was deemed inapplicable to their situation and climatic conditions. The earliest settlers gave effect to a different rule whereby the waters of the streams were regarded as open to appropriation for irrigation, mining, and other beneficial purposes. The diversion from the stream and the application of the water to a beneficial purpose constituted an appropriation, and the appropriator was treated as acquiring a continuing right to divert and use the water to the extent of his appropriation, but not beyond what was reasonably required and actually used. This was deemed a property right, and dealt with and respected accordingly. As between different appropriations from the same stream, the one first in time was deemed superior in right, and a completed appropriation was regarded as effective from the time the purpose to make it was definitely formed and actual work thereon was begun, provided the work was carried to completion with reasonable diligence. This doctrine of appropriation, prompted by necessity and formulated by custom, received early legislative recognition in both territories, and was enforced in their courts. When the states were admitted into the Union, it received further sanction in their Constitutions and statutes, and their courts have been uniformly enforcing it. *Yunker v. Nichols,* 1 Colo. 551; *Schilling v. Rominger,* 4 Colo. 100; *Coffin v. Left Hand Ditch Co.,* 6 Colo. 443; *Thomas v. Guiraud,* 6 Colo. 530; *Strickler v. Colorado Springs,* 16 Colo. 61; *Oppenlander v. Left Hand Ditch Co.,* 18 Colo. 142; *Wyatt v. Larimer & Weld Irrigation Co.,* 18 Colo. 298; *Crippen v. White,* 28 Colo. 298; *Moyer v. Preston,* 6 Wyo. 308; *Farm Investment Co. v. Carpenter,* 9 Wyo. 110; *Willey v. Decker,* 11 Wyo. 496; *Johnston v. Little Horse Creek Irrigating Co.,* 13 Wyo. 208.

As the United States possessed plenary authority over Colorado and Wyoming while they were territories and,

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has at all times owned the public lands therein, we turn next to its action.

The Act of July 26, 1866, c. 262, 9, 14 Stat. 251, contained a section providing:

"Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same."

The occasion for this provision and its purpose and effect were extensively considered by this Court in the cases of *Atchison v. Peterson,* 20 Wall. 507, and *Basey v. Gallagher,* 20 Wall. 670, the conclusions in both being shown in the following excerpt from the latter, pp. 87 U. S. 681 -682:

"In the late case of *Atchison v. Peterson,* we had occasion to consider the respective rights of miners to running waters on the mineral lands of the public domain, and we there held that, by the custom which had obtained among miners in the Pacific states and territories, the party who first subjected the water to use, or took the necessary steps for that purpose was regarded, except as against the government, as the source of title in all controversies respecting it; that the doctrines of the common law declaratory of the rights of riparian proprietors were inapplicable, or applicable only to a limited extent, to the necessities of miners, and were inadequate to their protection; that the equality of right recognized by that law among all the proprietors upon the same stream would have been incompatible with any extended diversion of the water by one proprietor and its conveyance for mining purposes to points from which it could not be restored to the stream; that the government, by its silent acquiescence, had assented to and encouraged the occupation of the public lands for mining, and that he who first connected his labor with property thus situated

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and open to general exploration, did in natural justice acquire a better right to its use and enjoyment than others who had not given such labor; that the miners on the public lands throughout the Pacific states and territories, by their customs, usages, and regulations, had recognized the inherent justice of this principle, and the principle itself was at an early period recognized by legislation and enforced by

the courts in those states and territories, and was finally approved by the legislation of Congress in 1866. The views there expressed and the rulings made are equally applicable to the use of water on the public lands for purposes of irrigation. No distinction is made in those states and territories by the custom of miners or settlers, or by the courts, in the rights of the first appropriator from the use made of the water, if the use be a beneficial one."

And, on the same subject, it was further said in *Broder v. Water Co.,* 101 U. S. 274 , 101 U. S. 276 :

"It is the established doctrine of this Court that rights of miners who had taken possession of mines and worked and developed them, and the rights of persons who had constructed canals and ditches to be used in mining operations and for purposes of agricultural irrigation, in the region where such artificial use of the water was an absolute necessity, are rights which the government had, by its conduct, recognized and encouraged, and was bound to protect, before the passage of the Act of 1866. We are of opinion that the section of the act which we have quoted was rather a voluntary recognition of a preexisting right of possession, constituting a valid claim to its continued use, than the establishment of a new one."

The Act of July 9, 1870, c. 235, 17, 16 Stat. 217, provided that "all patents granted, or preemption or homesteads allowed, shall be subject to any vested and accrued water rights" acquired under or recognized by the provision of 1866. These provisions are now 2339 and 2340 of the Revised Statutes.

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The Act of March 3, 1877, c. 107, 1, 19 Stat. 377, providing for the sale of desert lands in tracts of one section each to persons undertaking and effecting their reclamation, contained a proviso declaring that

"The right to the use of water by the person so conducting the same on or to any tract of desert land of six hundred and forty acres shall depend upon *bona fide*

prior appropriation, and such right shall not exceed the amount of water actually appropriated and necessarily used for the purpose of irrigation and reclamation, and all surplus water over and above such actual appropriation and use, together with the water of all lakes, rivers, and other sources of water supply upon the public lands and not navigable shall remain and be held free for the appropriation and use of the public for irrigation, mining, and manufacturing purposes subject to existing rights."

Colorado was not at first included in this act, but was brought in by an amendatory act. Next came the Act of March 3, 1891, c. 561, 18, 26 Stat. 1095, granting rights of way through the public lands and reservations for canals and ditches to be used for irrigation purposes, and containing a proviso saying:

"The privilege herein granted shall not be construed to interfere with the control of water for irrigation and other purposes under authority of the respective states or territories."

Of the legislation thus far recited, it was said in *United States v. Rio Grande Irrigation Co.,* 174 U. S. 690 , 174 U. S. 706 :

"Obviously by these acts, so far as they extended, Congress recognized and assented to the appropriation of water in contravention of the common law rule as to continuous flow,"

and again:

"the obvious purpose of Congress was to give its assent, so far as the public lands were concerned, to any system, although in contravention to the common law rule, which permitted the appropriation of those waters for legitimate industries. "

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June 17, 1902, 32 Stat. 388, c. 1093, the National Reclamation Act was passed, under which the United States entered upon the construction of extensive irrigation works to be used in the reclamation of large bodies of arid public lands in the Western states. Its eighth section declared:

"Nothing in this act shall be construed as affecting or intended to affect or to in any way interfere with the laws of any state or territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this act, shall proceed in conformity with such laws, *and nothing herein shall in any way affect any right of any state or of the federal government or of any landowner, appropriator, or user of water in, to, or from any interstate stream or the waters thereof: Provided,* that the right to the use of water acquired under the provisions of this act shall be appurtenant to the land irrigated, and beneficial use shall be the basis, the measure, and the limit of the right."

The words which we have italicized constitute the only instance, so far as we are advised, in which the legislation of Congress relating to the appropriation of water in the arid land region has contained any distinct mention of interstate streams. The explanation of this exceptional mention is to be found in the pendency in this Court at that time of the case of *Kansas v. Colorado,* wherein the relative rights of the two states, the United States, certain Kansas riparians, and certain Colorado appropriators and users in and to the waters of the Arkansas River, an interstate stream, were thought to be involved. Congress was solicitous that all questions respecting interstate streams thought to be involved in that litigation should be left to judicial determination unaffected by the act -- in other words, that the matter be left just as it was before. The words aptly reflect that purpose.

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The decision in *Kansas v. Colorado,* 206 U. S. 46 , was a pioneer in its field. On some of the questions presented, it was intended to be and is comprehensive, and on others, it was intended to be within narrower limits, the Court saying:

"The views expressed in this opinion are to be confined to a case in which the facts and the local law of the two states are as here disclosed."

On full consideration, it was broadly determined that a controversy between two states over the diversion and use of waters of a stream passing from one to the

other "makes a matter for investigation and determination by this Court" in the exercise of its original jurisdiction, and also that the upper state on such a stream does not have such ownership or control of the waters flowing therein as entitles her to divert and use them regardless of any injury or prejudice to the rights of the lower state in the stream. And, on consideration of the particular facts disclosed and the local law of the two states, it was determined that Colorado was not taking more than what, under the circumstances, would be her share under an equitable apportionment.

As respects the scope and interpretation of the ultimate conclusion in that case, it should be observed first, that the Court was there concerned, as it said, with a controversy between two states, "one recognizing generally the common law rule of riparian rights" and the other the doctrine of appropriation; secondly, that the diversion complained of was not to a watershed from which none of the water could find its way into the complaining state, but, quite to the contrary; and, thirdly, that what the complaining state was seeking was not to prevent a proposed inversion for the benefit of lands as yet unreclaimed, but to interfere with a diversion which had been practiced for, years and under which many thousands of acres of unoccupied and barren lands had been reclaimed and made productive. In these circumstances, and after observing that the diminution in the flow of

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the river had resulted in "perceptible injury" to portions of the valley in Kansas, but in "little, if any, detriment" to the great body of the valley, the Court said:

"It would seem equality of right and equity between the two states forbids any interference with the present withdrawal of water in Colorado for purposes of irrigation,"

and that, if the depletion of the waters by Colorado should be increased, the time would come when Kansas might

"rightfully call for relief against the action of Colorado, its corporations and citizens in appropriating the waters of the Arkansas for irrigation purposes."

What was there said about "equality of right" refers, as the opinion shows (p. 206 U. S. 97), not to an equal division of the water, but to the equal level or plane on which all the states stand, in point of power and right, under our constitutional system.

Like that case, the one now before us presents a controversy over the waters of an interstate stream. But here, the controversy is between states in both of which the doctrine of appropriation has prevailed from the time of the first settlements, always has been applied in the same way, and had been recognized and sanctioned by the United States, the owner of the public lands. Here, the complaining state is not seeking to impose a policy of her choosing on the other state, but to have the common policy which each enforces within her limits applied in determining their relative rights in the interstate stream. Nor is the United States seeking to impose a policy of its choosing on either state. All that it has done has been to recognize and give its sanction to the policy which each has adopted. Whether its public land holdings would enable it to go further we need not consider. And here, the complaining state is not seeking to interfere with a diversion which has long been practiced and under which much reclamation has been effected, but to prevent a proposed diversion for the benefit of lands as yet unreclaimed.

With this understanding of the case in hand, and of some of the matters in the light of which it should be considered,

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we take up the several contentions, before noticed, which are pressed on our attention.

The contention of Colorado that she, as a state, rightfully may divert and use, as she may choose, the waters flowing within her boundaries in this interstate stream, regardless of any prejudice that this may work to others having rights in the stream below her boundary, cannot be maintained. The river. throughout its course in both states. is but a single stream, wherein each state has an interest which should be

respected by the other. A like contention was set up by Colorado in her answer in *Kansas v. Colorado,* and was adjudged untenable. Further consideration satisfies us that the ruling was right. It has support in other cases, of which *Rickey Land & Cattle Co. v. Miller & Lux,* 218 U. S. 258 ; *Bean v. Morris,* 221 U. S. 485 ; *Missouri v. Illinois,* 180 U. S. 208 , and 200 U. S. 200 U.S. 496, and *Georgia v. Tennessee Copper Co.,* 206 U. S. 230 , are examples.

The objection of Wyoming to the proposed diversion on the ground that it is to another watershed, from which she can receive no benefit, is also untenable. The fact that the diversion is to such a watershed has a bearing in another connection, but does not, in itself, constitute a ground for condemning it. In neither state does the right of appropriation depend on the place of use being within the same watershed. Diversions from one watershed to another are commonly made in both states, and the practice is recognized by the decisions of their courts. *Coffin v. Left Hand Ditch Co.,* 6 Colo. 443, 449; *Thomas v. Guiraud,* 6 Colo. 530; *Hammond v. Rose,* 11 Colo. 524; *Oppenlander v. Left Hand Ditch Co.,* 18 Colo. 142, 144; *Moyer v. Preston,* 6 Wyo. 308, 321; *Willey v. Decker,* 11 Wyo. 496, 529-531. And the evidence shows that diversions are made and recognized in both states, which in principle are not distinguishable from this; that is, where water is taken in one state from a watershed leading into

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the other state and conducted into a different watershed leading away from that state, and from which she never can receive any benefit. The principle of such diversions being recognized in both states, its application to this interstate stream does not, in itself, afford a ground for complaint, unless the practice in both be rejected in determining what, as between them, is reasonable and admissible as to this stream, which we think should not be done.

We are thus brought to the question of the basis on which the relative rights of these states in the waters of this interstate stream should be determined. Should the doctrine of appropriation, which each recognizes and enforces within her borders, be applied? Or is there another basis which is more consonant with right

and equity?

The lands in both states are naturally arid, and the need for irrigation is the same in one as in the other. The lands were settled under the same public land laws, and their settlement was induced largely by the prevailing right to divert and use water for irrigation, without which the lands were of little value. Many of the lands were acquired under the Desert Land Act, which made reclamation by irrigation a condition to the acquisition. The first settlers located along the streams where water could be diverted and applied at small cost. Others with more means followed, and reclaimed lands farther away. Then companies with large capital constructed extensive canals and occasional tunnels, whereby water was carried to lands remote from the stream and supplied, for hire, to settlers who were not prepared to engage in such large undertakings. Ultimately, the demand for water being in excess of the dependable flow of the streams during the irrigation season, reservoirs were constructed wherein water was impounded when not needed and released when needed, thereby measurably equalizing the natural flow. Such was the course of irrigation development in both

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states. It began in territorial days, continued without change after statehood, and was the basis for the large respect always shown for water rights. These constituted the foundation of all rural home building and agricultural development, and, if they were rejected now, the lands would return to their naturally arid condition, the efforts of the settlers and the expenditures of others would go for naught, and values mounting into large figures would be lost.

In neither state was the right to appropriate water from this interstate stream denied. On the contrary, it was permitted and recognized in both. The rule was the same on both sides of the line. Some of the appropriations were made as much as 50 years ago, and many as much as 25. In the circumstances we have stated, why should not appropriations from this stream be respected, as between the two states, according to their several priorities, as would be done if the stream lay wholly within either state? By what principle of right or equity may either state

proceed in disregard of prior appropriations in the other?

Colorado answers that this is not a suit between private appropriators. This is true, but it does not follow that their situation and what has been accomplished by them for their respective states can be ignored. As respects Wyoming, the welfare, prosperity, and happiness of the people of the larger part of the Laramie valley, as also a large portion of the taxable resources of two counties, are dependent on the appropriations in that state. Thus, the interests of the state are indissolubly linked with the rights of the appropriators. To the extent of the appropriation and use of the water in Colorado, a like situation exists here.

Colorado further answers that she can accomplish more with the water than Wyoming does or can, that she proposes to use it on lands in the Cache la Poudre valley, and

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that they with less water will produce more than the lands in the portion of the Laramie valley known as the Laramie Plains. It is true that irrigation in the Poudre valley has been carried to a higher state of development than elsewhere in the Rocky Mountain region, and that the lands of that valley lie at a lower altitude than do those in the Laramie Plains, and generally are better adapted to agriculture. In some parts, they also require less water. It may be assumed that the lands intended to be reclaimed and irrigated in the Poudre valley conform to the general standard, although this is left uncertain. But, for combined farming and stockraising, those of the Laramie Plains offer opportunities and advantages which are well recognized. It is to this use that they chiefly are devoted. It is a recognized and profitable industry, has been carried on there for many years, and is of general economic value. Many of the original ranchmen still are engaged in it -- some on the tracts where they first settled. With the aid of irrigation, native hay of a high quality, alfalfa, oats, and other forage are grown for winter feeding, the livestock being grazed most of the year on unirrigated areas and in the neighboring hills and mountains. In this way, not only are the irrigated tracts made productive, but the utility and value of the grazing areas are greatly enhanced. The

same industry is carried on in the same way in sections of Colorado. In both states, this is a purpose for which the right to appropriate water may be exercised, and no discrimination is made between it and other farming. Even in this suit, Colorado is asserting appropriations of this class for 4,250 acres in the portion of the Laramie valley in that state, and is claiming under them an amount of water in excess of what she asserts will irrigate a like acreage in the Poudre valley.

Some of the appropriations from the stream in Wyoming are used for agriculture alone. One of the large projects, dating from territorial days and constructed at

great cost, carries water from the river through a tunnel one-half mile long and canals several miles in length to the Wheatland district, where it is used in irrigating 30,000 acres, all of which are very successfully and profitably farmed in small tracts. This project uses one very large and one comparatively small reservoir for storing water and equalizing the natural flow.

We conclude that Colorado's objections to the doctrine of appropriation as a basis of decision are not well taken, and that it furnishes the only basis which is consonant with the principles of right and equity applicable to such a controversy as this is. The cardinal rule of the doctrine is that priority of appropriation gives superiority of right. Each of these states applies and enforces this rule in her own territory, and it is the one to which intending appropriators naturally would turn for guidance. The principle on which it proceeds in not less applicable to interstate streams and controversies than to others. Both states pronounce the rule just and reasonable as applied to the natural conditions in that region, and, to prevent any departure from it, the people of both incorporated it into their Constitutions. It originated in the customs and usages of the people before either state came into existence, and the courts of both hold that their constitutional provisions are to be taken as recognizing the prior usage, rather than as creating a new rule. These considerations persuade us that its application to such a controversy as is here presented cannot be other than eminently just and equitable to all concerned.

In suits between appropriators from the same stream, but in different states recognizing the doctrine of appropriation, the question whether rights under such appropriations should be judged by the rule of priority has been considered by several courts, state and federal, and has been uniformly answered in the affirmative. *Conant v. Deep Creek Irrigation Co.,* 23 Utah 627, 631; *Willey v.*

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Decker, 11 Wyo. 496, 534-535; *Taylor v. Hulett,* 15 Idaho 265, 271; *Howell v. Johnson,* 89 F. 556; *Hoge v. Eaton,* 135 F. 411; *Morris v. Bean,* 146 F. 423; *Bean v. Morris,* 159 F. 651. One of the cases came to this Court, and the judgment below was affirmed. *Bean v. Morris,* 221 U. S. 485 . These decisions, although given in suits between individuals, tend strongly to support our conclusion, for they show that, by common usage, as also by judicial pronouncement, the rule of priority is regarded in such states as having the same application to a stream flowing from one of them to another that it has to streams wholly within one of them.

The remaining questions are largely matters of fact. The evidence is voluminous, some of it highly technical, and some quite conflicting. It has all been considered. The reasonable limits of an opinion do not admit of its extended discussion. We must be content to give our conclusions on the main questions, and make such references to and comment on what is evidential as will point to the grounds on which the conclusions on those questions rest. As to minor questions, we can only state the ultimate facts as we find them from the evidence.

The question first in order, and the one most difficult of solution, relates to the flow of the Laramie River, the common source of supply. The difficulty arises chiefly out of the fact that the flow varies greatly in the course of the year, and also from year to year.

Colorado's evidence, which for convenience we take up first, is directed to showing the average yearly flow of all years in a considerable period, as if that constituted a proper measure of the available supply. We think it is not a proper

measure, and this because of the great variation in the flow. To be available in a practical sense, the supply must be fairly continuous and dependable. No doubt, the natural flow can be materially conserved and equalized by means of storage reservoirs, but this has

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its limitations, both financial and physical. The construction of reservoirs of real capacity is attended with great expense, and, unless an adequate return reasonably can be foreseen, the expenditure is not justified, and will not be made. The years of high water and those of low do not alternate. Often several of the same kind follow in succession. The evaporation of stored water in Colorado and Wyoming is from 5 to 6 feet per year. So, while it generally is practicable to store water in one part of the year for use in another, or in one year for use in the next, it often, if not generally, is impracticable to store it for longer periods. All this is recognized elsewhere in Colorado's evidence. One of her principal witnesses said:

"With regard to financial practicability of construction of reservoirs on Poudre River capable of conserving extraordinary floods, will state that they call for an expenditure that could be utilized only occasionally. It would be similar to financial proposition of people in Florida preparing to heat their houses in the same manner as those in the northern part of the United States. For years of unusually high flow in the Poudre River, conservation works, to utilize the excess waters in that stream, would have to count on carrying water over more than one year. The utilization of this water means the presence of population on the land; that population must have a living from year to year, and they are not justified in going out on the land and settling to raise a crop only once in three or four years. They must have sufficient to make a living from one year to another, and consequently the investment must be such that there can be sufficient water every year to keep these people on the land, and when water can only be conserved once in every three to five years, there must be provision for carrying over water, or the people cannot live. It is a question of population, as well as investment. The population has to exist and stay on the ground. From standpoint of investment, conservation

of flow such as extreme flow of 1884 would be impractical to the extent that it exceeded the ordinary high year. Of such character would be [also] the floods of 1885, 1900, and 1909, three [four] years in thirty."

The same witness further said:

"Aside from reasons which I have given why reservoirs designed to catch only these rare high water flows of Poudre River are not feasible, it is a fact that no farmer would be able to anticipate the high flow, and therefore could not depend at all upon water for irrigation until it reached him. If he undertook to so divert water, it would become a gamble, rather than a safe guide for living."

Another of her witnesses said:

"The present storage capacity in the Poudre valley is such that, in some years, the reservoirs are not all filled, while in some years they are filled and water runs to waste. . . . It would not be possible to inaugurate a scheme in the Poudre valley to construct reservoirs to store water from one year of high flow to another where such water is the only source of supply, for the reservoirs would have to be constructed to hold the maximum amount, and if the water has to be carried over for three years, the average diversion from the reservoir would be only one-third of its capacity, making the cost per acre prohibitive."

And still another of her witnesses, referring to the unused waters of the Poudre in years of high flow and also to what is contemplated by the defendants in respect of the Laramie, said:

"The really dependable water supply of the district [Footnote 2] will come from the Laramie River, the amount secured from the Poudre River fluctuating greatly and being used to augment the supply from the Laramie. There will

be years when the supply from the Poudre River and its tributaries will be practically nothing. Our plans contemplate taking all the water that it is possible for us to take from the Laramie River each year. It is possible to get only a certain amount from that river, and I do not believe that we can absolutely depend on more than half the required amount from the Laramie River. The very great floods on that watershed we cannot consider, because we cannot construct works to take care of them."

In accord with these statements bearing on what is susceptible of use in actual practice is further evidence coming from Colorado's witnesses and exhibits to the effect that, notwithstanding the great need for water in the Poudre valley and the returns obtained from its use, large amounts of water pass down the stream without use or impounding in the years when the flow exceeds what is termed the average. With the high state of irrigation development in that valley, the full capacity of the reservoir system there provided when the proof was taken was 146,655 acre-feet -- an evidence of the limitation inhering in the practical storage of water from such streams.

The Cache la Poudre River heads in the same mountain range as does the Laramie, and the conditions which make for a pronounced variation in the natural flow are largely the same with both. The following table compiled from data relating to the Cache la Poudre, furnished by Colorado, will be helpful in illustrating the view of the witnesses, and also ours (we add the third and fourth columns):

VARIATION IN ANNUAL NET DISCHARGE

OF

CACHE LA POUDRE RIVER

April to October, both Inclusive, for 30 years

Taken from Colorado's Exhibit 124

Variance from

Run-off in Variance from Average of All

Year Acre feet Average of All but Four

1884 . . . . . 666,466 + 369,144 + 403,883

1885 . . . . . 465,475 + 168,153 + 202,892

1886 . . . . . 290,392 - 6,930 + 27,809

1887 . . . . . 286,840 - 10,482 + 24,257

1888 . . . . . 155,970 - 141,352 - 106,613

1889 . . . . . 185,060 - 112,262 - 77,523

1890 . . . . . 221,023 - 76,299 - 41,560

1891 . . . . . 257,236 - 40,086 - 5,347

1892 . . . . . 193,790 - 103,532 - 68,793

1893 . . . . . 216,730 - 80,592 - 45,853

1894 . . . . . 309,444 + 12,122 + 46,861

1895 . . . . . 344,500 + 47,178 + 81,917

1896 . . . . . 162,340 - 134,982 - 100,243

1897 . . . . . 332,070 + 34,748 + 69,487

1898 . . . . . 172,290 - 125,032 - 90,293

1899 . . . . . 388,591 + 91,269 + 126,008

1900 . . . . . 474,573 + 177,251 + 211,990

1901 . . . . . 339,155 + 41,833 + 76,572

1902 . . . . . 151,636 - 145,686 - 110,947

1903 . . . . . 345,150 + 47,828 + 82,567

1904 . . . . . 315,437 + 18,115 + 52,854

1905 . . . . . 361,652 + 64,330 + 99,069

1906 . . . . . 279,974 - 17,348 + 17,391

1907 . . . . . 386,224 + 88,902 + 123,641

1908 . . . . . 252,843 - 44,479 - 9,740

1909 . . . . . 486,002 + 188,680 + 223,419

1910 . . . . . 157,514 - 139,808 - 105,069

1911 . . . . . 205,611 - 91,711 - 56,972

1912 . . . . . 297,722 + 400 + 35,139

1913 . . . . . 217,959 - 79,363 - 44,624

Average, 297,322, including all years.

Average, 262,583, omitting 1884, 1885, 1900, and 1909.

This table shows that, during thirty years -- 1884 to 1913 -- the yearly flow of the Cache la Poudre ranged from 151,636 to 666,466 acre-feet, that, in sixteen of the thirty, it fell below the average, and that eight of the sixteen

were in immediate succession. Obviously it is not financially practicable, even by means of reservoirs, to equalize the flow of a stream subject to such variation so that it will have a fairly constant and dependable flow at the average of all years. For further illustration, we have taken the average of the 26 years remaining after excluding the four described by the witness as extraordinary (these being left to take the average of the others), and on that basis have made a computation of the excess and deficiency, which is shown in the fourth column of the table. Even on this basis there were thirteen years in which the flow was below the average, and, of these, six came in immediate succession. In four, the deficiency exceeded 100,000 acre-feet, and of the four, only one followed a year in which there was an excess sufficient, if carried over in storage, to cover the deficiency. This suffices to show that the average of all years is far from being a proper or safe measure of the available supply. An intending irrigator, acquiring a water right based on such a measure, would be almost certainly confronted with drought when his need for water was greatest. Crops cannot be grown on expectations of average flows which do not come, nor on recollections of unusual flows which have passed down the stream in prior years. Only when the water is actually applied does the soil respond.

We have dealt with the matter of the average flow at this length because, throughout Colorado's evidence and in her briefs, it is treated as if it were a proper measure of the supply available for practical use. It is there applied to the Laramie not only directly, but indirectly, by increasing the gaged flow for a particular year or period by percentages derived by comparing the flow of the Poudre for that year or period with the average for the 30 years, including those in which the flow was so extraordinary that concededly much of it neither was nor could be used. Thus, water which is not part of the available supply is counted in measuring that supply.

When the evidence was taken, in 1913 and 1914, the Laramie had not been gaged so thoroughly nor for so long a period as had the Cache la Poudre. Such gaging as had occurred had been done at different places in different periods, partly by the United States Geological Survey, partly by Colorado, and partly by Wyoming. Some of the gaging stations were in Colorado, but most were in Wyoming. The latter included Woods, nine miles north of the state boundary, and the Pioneer Dam, four miles north of Woods. The evidence centered largely around the flow and gaging at these places. Colorado's chief witness prepared and presented a table, based on data, drawn from various sources and bearing on the flow at Woods from April to October, both inclusive, for several years, and made this table the principal basis of his testimony concerning the flow of the stream in that vicinity. We here reproduce the material part of the table, the third and fourth columns being ours:

DISCHARGE OF LARAMIE RIVER, WOODS, WYO.

April to October, Both Inclusive, for 9 Years

Taken from Colorado's Exhibit 127

Variance from

Run-off in Variance from Average of All

Year Acre feet Average of All but 1899

1895 . . . . . 220,239 + 21,694 + 45,730

1896 . . . . . 108,022 - 90,523 - 66,487

1897 . . . . . 251,074 + 52,529 + 76,565

1898 . . . . . 117,765 - 80,780 - 56,744

1899 . . . . . 390,730 + 192,185 + 216,221

1900 . . . . . 248,105 + 49,560 + 73,596

1911 . . . . . 138,240 - 60,305 - 36,269

1912 . . . . . 213,407 + 14,862 + 38,898

1913 . . . . . 99,221 - 99,324 - 75,288

Average, 198,533, including all years.

Average, 174,509, excluding 1899.

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The data covered two widely separated periods, one of six years and the other of three. The witness took the average of the nine years, which he gave as 198,545 acre-feet, and made this the basis of further calculations. He estimated that the usual flow for the other months was one-tenth of that, for the full year, or, putting it in another way, one-ninth of that from April to October, both inclusive, and, on this basis, he added to his average 21,945 acre-feet, making 220,490. Consulting the Cache la Poudre table, set forth above, he concluded that the nine years, in combination, fell below the full average for the thirty years covered by that table, and to bring the nine years up to a thirty-year average he added 9,510 acre-feet, making 230,000. Some water from Wyoming enters the river between the state boundary and Woods, and for this he deducted 13,000 acre-feet, leaving 217,000. Then, making a reservation as to Sand creek, to be considered presently, he concluded that 217,000 acre-feet was the average yearly flow in that section of the river. He called it the "normal" flow, an evident misnomer. This did not include water diverted in Colorado, under recognized Colorado appropriations, which does not reach Wyoming.

Even if the computation was to be made along the lines of something approaching a general average, we think the witness' computation and conclusion are subject to objection in particulars which we proceed to state.

The table shows that the flow for 1899 was extraordinary, so much so that it should have been excluded in computing the average and left to take the general level of the others. Its flow was 216,221 acre-feet in excess of their average. The excess added nothing to the available supply that which in practice could be used. The flow for the next year was such that it required no augmentation from 1899. So the inclusion of 1899 in the computation was, in effect, taking what was not available as a

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measure of what was. The error raised the average of the other years 24,036 acre-feet, and was carried into the ultimate conclusion.

We do not doubt that it was admissible to compare the data relating to the Laramie with that relating to the Cache la Poudre, and to give effect to such conclusions as reasonably were to be drawn from the comparison, but we think there was no justification for the addition which was made to bring the 9 years up to the standard of an average year among the 30 covered by the Cache la Poudre table. The addition tended to distort, rather than to reflect, the available supply. Looking at the Cache la Poudre table, it is evident that the nine years, in combination, would not have appeared short in flow, had the four extraordinary years in the 30 been excluded, as they should have been. Besides, a comparison of the two tables shows that the variation in yearly flow in the two streams is not the same, and that the difference is such as to preclude a nice calculation such as was here made on the basis of an assumed uniformity. To illustrate: according to one table, the flow of the Poudre from April to October, both inclusive, in 1900 was 85,982 acre-feet in excess of that for the same months in 1899, while, according to the other, the flow of the Laramie for those months in 1899 was 142,625 acre-feet in excess of that for the corresponding period in 1900, and, according to one table, the flow of the Poudre for those months in 1913 was 73.2 percent of that for the

same part of 1912, while, according to the other, the flow of the Laramie for those months in 1913 was 46.5 percent of that for the same part of 1912.

Assuming that 13,000 acre-feet enter the river from Wyoming between the state boundary and Woods, and are part of the river at the latter point, we think this water should not have been deducted. It is part of the supply available to satisfy appropriations from the stream in Wyoming.

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The witness treated the flow from April to October, both inclusive, in 1912 as being 213,407 acre-feet, and the flow in the same months in 1913 as being 99,221 acre-feet. In this we think he erred. The evidence establishes that the flow in the first period was not more than 191,820 acre-feet, and in the second was not more than 94,369. Even with the year 1899 excluded, this error increased the average 3,305 acre-feet.

If we exclude the extraordinary flow of 1899, make the needed correction in the flow of 1912 and 1913, and assume the accuracy of the other data, the average becomes 171,204 acre-feet, instead of 198,545, as given by the witness. This requires that the 21,945 acre-feet which were added to cover the flow for the five other months be reduced to 19,023.

When these corrections are made in the witness' data and computation, the result is changed from 217,000 acre-feet to 190,227.

But we are of opinion that the computation and conclusion of the witness, even when revised in the way we have indicated, are based too much on the average flow, and not enough on the unalterable need for a supply which is fairly constant and dependable, or is susceptible of being made so by storage and conservation within practicable limits. By this it is not meant that known conditions must be such as give assurance that there will be no deficiency even during long periods, but rather that a supply which is likely to be intermittent, or to be materially deficient at relatively short intervals, does not meet the test of practical availability. As we

understand it, substantial stability in the supply is essential to successful reclamation and irrigation. The evidence shows that this is so, and it is fully recognized in the literature on the subject.

The same witness prepared and submitted another table embodying all the data he was able to secure from records

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of past gaging and measurements at Woods. This included three years not shown in the nine-year table. They and their recorded flow from April to October, both inclusive, were:1889, 132,349 acre-feet; 1890, 168,406 acre-feet, and 1891, 207, 146 acre-feet. The witness pronounced the data for these years less accurate than that for the others, and, while his reason for doing so does not clearly appear, we shall assume he was right. Had the three years been included in the nine-year table, that would have reduced the average from 198,545 to 189,371 acre-feet, counting all years, and from 174,509 to 171,066 acre-feet, counting all but 1899. It, however, would not have shown another year with a flow as low as that of 1913, nor as low as that of 1896.

Colorado presented other evidence in the way of general estimates, results of very fragmentary gaging, and opinions based on rough measurements of snowdrifts in the mountainous area about the head of the stream, but we put all of this aside as being of doubtful probative value, at best, and far less persuasive than the evidence we have been discussing.

Wyoming's evidence was based on the same recorded data that were used by Colorado, and also on actual gaging and measurements by an experienced hydrographer covering the period beginning April 1, 1912, and ending April 30, 1914. Shortly stated, her evidence was to the effect that the actual measured flow at the Pioneer Dam, four miles below Woods, was 198,867 acre-feet from April to December, both inclusive, in 1912, was 109,593 acre-feet for all of 1913, and was 19,181 acre-feet for the first four months of 1914; that the flow for 1912 was somewhat above the average, counting all years; that the flow for 1913 was

somewhat more than fifty percent of the average, and that the average at Woods and in that vicinity, counting all years, was approximately 200,000 acre-feet. Wyoming's chief witness, the hydrographer, submitted

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the following table giving the results of his gaging and measurements at the Pioneer Dam:

Discharge of Laramie River at Pioneer Dam, near

Woods, Wyo. (Including Diversion Just Above

Dam by Pioneer Canal)

IN ACRE FEET

1912 1913 1914

January 2,650 3,283

February. . . . . - 2,355 3,088

March . . . . . - 3,296 4,003

April 5,534 12,674 8,807

May . . . . . 40,643 38,307 -

June. . . . . 91,874 26,598 -

July. . . . . 34,863 6,825 -

August. . . . . 7,809 3,130 -

September . . . . 4,641 3,023 -

October . . . . . 6,456 3,812 -

November. . . . . 4,403 3,677 -

December. . . . . 2,644 3,246 -

Total. 198,867 109,593 19,181

The evidence does not permit us to doubt the accuracy of these data. They were obtained by work which is shown to have been painstakingly and conscientiously done by one fully competent to do it. The place at which it was done was well adapted to obtaining accurate results, and the observations were continuous, not merely occasional or intermittent.

As the gaging did not cover the first three months of 1912, it is necessary to arrive at the flow for those months. The proof shows that the flow for the same months in 1914 fairly may be taken for the purpose. That was 10,374 acre-feet, the addition making 209,241 acre-feet for 1912. The flow for 1913 was 109,593 acre-feet. Both should be increased 4,000 acre-feet to cover water diverted between Woods and the Pioneer Dam and not returning

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to the stream above the gaging station. This gives a total of 213,241 acre-feet for 1912 and 113,593 acre-feet for 1913. Tested by the flow of these years, the available supply would be 163,417 acre-feet; that is to say, on that basis, the excess in 1912 would match the deficiency in 1913. But a survey of more than two years is essential in arriving at a fair conclusion respecting the available supply. A year of low flow is not always preceded by one of high or moderate flow, as was the case with 1912 and 1913.

In diverting and applying water in irrigation, there is a material loss through evaporation, seepage, and otherwise which is unavoidable. The amount varies according to the conditions -- chiefly according to the distance the water is carried through canals and ditches and the length of time it is held in storage. Where the places of use are in the same watershed and relatively near the stream, as is true of the lands on the Laramie Plains served by the greater part of the Wyoming appropriations, a substantial amount of water percolates back into the stream from irrigated areas and becomes available for further use lower down the stream. This is called return water. The amount varies considerably, and there is no definite data on the subject. As respects irrigation on the Laramie Plains above the Wheatland diversion, the evidence satisfies us that the return water will certainly more than counterbalance the loss through evaporation and otherwise when the period of storage is not more than from one year to the next.

What has now been said covers the substance of the evidence, as we regard it, bearing on the available supply at Woods and in that vicinity -- that is to say, the supply remaining after the recognized Colorado appropriations are satisfied.

We already have indicated that, as to such a stream as this, the average flow of all years, high and low, cannot

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be taken as a proper or reasonable measure of what is available for practical use. What, then, is the amount which is available here? According to the general consensus of opinion among practical irrigators and experienced irrigation engineers, the lowest natural flow of the years is not the test. In practice, they proceed on the view that, within limits financially and physically feasible, a fairly constant and dependable flow materially in excess of the lowest may generally be obtained by means of reservoirs adapted to conserving and equalizing the natural flow, and we regard this view as reasonable.

But Wyoming takes the position that she should not be required to provide storage facilities in order that Colorado may obtain a larger amount of water from the

common supply than otherwise would be possible. In a sense, this is true, but not to the extent of requiring that the lowest natural flow be taken as the test of the available supply. The question here is not what one state should do for the other, but what one state exercise her relative rights in the waters of this interstate stream. Both are interested in the stream, and both have great need for the water. Both subscribe to the doctrine of appropriation, and, by that doctrine, rights to water are measured by what is reasonably required and applied. Both states recognize that conservation within practicable limits is essential in order that needless waste may be prevented and the largest feasible use may be secured. This comports with the all-pervading spirit of the doctrine of appropriation, and takes appropriate heed of the natural necessities out of which it arose. We think that doctrine lays on each of these states a duty to exercise her right reasonably and in a manner calculated to conserve the common supply. Notwithstanding her present contention, Wyoming has in fact proceeded on this line, for, as the proof shows, her appropriators, with her sanction, have provided and have in service reservoir facilities which are adapted for the

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purpose and reasonably sufficient to meet its requirements.

There is one respect requiring mention in which Colorado's situation differs materially from that of Wyoming. The water to satisfy the Colorado appropriations is, and in the nature of things must be, diverted in Colorado at the head of the stream, and, because of this, those appropriations will not be affected by any variation in the yearly flow, but will receive their full measure of water in all years. On the other hand, the Wyoming appropriations will receive the water only after it passes down into that state, and must bear whatever of risk is incident to the variation in the natural flow. Of course, this affords no reason for underestimating the available supply, but it does show that to overestimate it will work particular injury to Wyoming.

The lowest established flow was that of 1913. There is no claim or proof that in any other year the flow fell so low. Had there been others, some proof of it

doubtless would have been presented. This is also true of the very low flow of 1896. Therefore we think it reasonably may be assumed that the flow of those years was so exceptional that it is not likely to recur, save at long intervals.

We conclude in view of all the evidence, and of the several considerations we have stated, that the natural and varying flow of this stream at Woods, which is after the recognized Colorado appropriations are satisfied, is susceptible by means of practicable storage and conservation of being converted into a fairly constant and dependable flow of 170,000 acre-feet per year, but not more. This we hold to be the available supply at that point after the recognized Colorado diversions are made. The amount may seem large, but, considering what may be accomplished with practicable storage facilities, such as are already provided, and the use which may be made of

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the return water, we are persuaded that the amount, while closely pressing the outside limit, is not too large.

The problem to be worked out in obtaining a fairly dependable supply in that amount is measurably illustrated by the following table covering all the years for which the evidence supplies the requisite data, the flow during the missing months being fairly estimated:

Variance from

Year Acre-feet Variance from Average of all Variance from

average of all but 1809 170,000

1889 151,349 - 56,893 - 38,576 - 18,651

1890 187,406 - 20,836 - 2,519 + 17,406

1891 226,146 + 17,904 + 36,221 + 56146

1895 239,239 + 30,997 + 49,314 + 69,239

1896 127,022 - 81,220 - 62,903 - 42,978

1897 270,074 + 61,831 + 80,149 + 100,074

1898 136,765 - 71,477 - 53,160 - 33,235

1899 409,730 + 201,488 + 219,805 + 239,730

1900 267,105 + 58,863 + 77,180 + 97,105

1911 157,240 - 51,002 - 32,685 - 12,760

1912 213,241 + 4,999 + 23,316 + 43,241

1913 113,593 - 94,649 - 76,332 - 56,047

Average, 208,242, including all years.

Average 189,925, including all years but 1899.

It, of course, is true that the variation in the flow will not always be just what it was in the years covered by the table, and yet the data obtained by the gaging and measurements in those years show better than anything else what reasonably may be expected in the future. We recognize that the problem which the table is intended to illustrate is not a simple one, and that to work it out will involve the exercise of both skill and care. But in this it is not unlike other problems of similar moment. Our belief gathered from all the evidence is that, with the attention which rightly should be bestowed on a problem of such moment, it can be successfully solved within the limits of what is financially and physically practicable.

As to Sand creek, Colorado's witness regarded it as a tributary of the river, and estimated its yearly flow at 17,000 acre-feet. The creek rises in Colorado, extends into the Laramie Plains in Wyoming, and discharges into Hutton Lake a few miles from the river. In exceptional years -- about one in five -- the waters of the creek overflow the lake for a short period and find their way over the prairie into the river. Otherwise, the river receives no water from the creek. The proof of this is direct and undisputed. The creek is nominally a tributary of the river, but only that. Besides, its flow does not appear to have been measured. The witness merely estimated it at what he thought would be the natural run-off of the adjacent territory. Other evidence suggests that the estimate is too high, but this we need not consider. A substantial part of the flow is diverted, through what is known as the Divide Ditch, for use in irrigating lands in Colorado, and the evidence suggests, if it does not establish, that existing appropriations in the two states take the entire flow. For these reasons, the waters of this creek cannot be regarded as a factor in this controversy.

After passing Woods, and while traversing the territory wherein are the Wyoming appropriations with which we are concerned, the Laramie receives one large and some very small additions to its waters.

The large addition comes from the Little Laramie, a stream whose source and entire length are in Wyoming. Its natural flow is a little more than one-half of that of the main stream at Woods, and is subject to much the same variations. Part of its flow is used under appropriations along its course, and the remainder passes into the main stream. Including what is appropriated along its course, and excluding minor contributions by small creeks after it gets well away from its headwaters, we think the amount available for practical use is 93,000 acre-feet per year.

None of the small tributaries, whether of the Laramie or the Little Laramie, adds much to the available supply.

Their natural flow is small. As to some it is all used under old appropriations, as to some it is partly used under such appropriations, and as to some it is only seasonal; the channels being dry much of the year. Some creeks spoken of in Colorado's evidence as tributaries are otherwise shown not to be such, but to deliver their waters into lakes or ponds not connected with either of the principal streams. Colorado's evidence also takes into account some tributaries which discharge into the Laramie below the points of diversion of all the Wyoming appropriations with which we are concerned. One, of which much is said in the evidence, is the Sybille. It reaches the Laramie below the diversion for the Wheatland district (the lowest diversion we are to consider), but in its course passes through that district. A small part of its flow is used in that district, and it is not practicable to use more. What is used should, for present purposes, be treated as if it reached the Laramie above the Wheatland diversion. Wyoming contends that none of these small tributaries other than the Sybille contributes any dependable amount to the available supply. We think there is in the aggregate a fairly dependable contribution of 25,000 acre-feet, but not more.

It results that, in our opinion, the entire supply available for the proposed Colorado appropriation and the Wyoming appropriations, down to and including the diversion for the Wheatland district, is 288,000 acre-feet.

In contending for a larger finding, Colorado points to the issue by Wyoming's state engineer of permits, so called, for appropriations in excess of that amount, and insists that these permits constitute solemn adjudications by that officer that the supply is adequate to cover them. But in this, the nature of the permits is misapprehended. In fact and in law, they are not adjudications, but mere licenses to appropriate if the requisite amount of water be there. As to many, nothing ever is done under them by

the intending appropriators. In such cases, there is no appropriation, and even in others, the amount of the appropriation turns on what is actually done under the permit. In late years, the permits relating to these streams have contained a

provision saying:

"The records of the state engineer's office show the waters of [the particular stream] to be largely appropriated. The appropriator under the permit is hereby notified of this fact, and the issuance of this permit grants only the right to divert and use the surplus or waste water of the stream, and confers no rights which will interfere with or impair the use of water by prior appropriators."

It therefore is plain that these permits have no such probative force as Colorado seeks to have attributed to them.

Colorado also comments on the amount of water stored in Wyoming reservoirs in 1912, and seeks to draw from this an inference that the available supply was greater than we have indicated. But the inference is not justified, and for these reasons: first, a part of what was stored was dead water -- that is, was below the level from which water could be drawn off and conducted to the places of use. This is a matter commonly experienced in the selection and use of reservoir sites. Secondly, the flow of 1912 was above what could be depended on, and prudence required that a substantial part be carried over to meet a possible shortage in the succeeding year. And thirdly, the evidence shows that, in 1912, the storing process was improvidently carried to a point which infringed the rights of small appropriators who were without storage facilities.

The available supply -- the 288,000 acre-feet -- is not sufficient to satisfy the Wyoming appropriations dependent thereon and also the proposed Colorado appropriation, so it becomes necessary to consider their relative priorities.

There are some existing Colorado appropriations having priorities entitling them to precedence over many of the

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Wyoming appropriations. These recognized Colorado appropriations are 18,000 acre-feet for what is known as the Skyline Ditch, and 4,250 acre-feet for the irrigation of that number of acres of native hay meadows in the Laramie valley in

Colorado; the 4,250 acre-feet being what Colorado's chief witness testifies is reasonably required for the purpose, although a larger amount is claimed in the state's answer. These recognized Colorado appropriations, aggregating 22,250 acre-feet, are not to be deducted from the 288,000 acre-feet, that being the available supply after they are satisfied. Nor is Colorado's appropriation from Sand creek to be deducted, that creek, as we have shown, not being a tributary of the Laramie.

The proposed Colorado appropriation which is in controversy here is spoken of in the evidence as the Laramie-Poudre tunnel diversion, and is part of an irrigation project known as the Laramie-Poudre project. Colorado insists that this proposed appropriation takes priority, by relation, as of August 25, 1902, and Wyoming that the priority can relate only to the latter part of 1909. The true date is a matter of importance, because some large irrigation works were started in Wyoming between the dates mentioned, were diligently carried to completion, and are entitled to priorities as of the dates when they were started.

The Laramie-Poudre project is composed of several units, originally distinct, which underwent many changes before they were brought together in a single project. In its final form, the project is intended to divert water by means of a tunnel from the Laramie River into the Poudre watershed, there to unite that water with water taken from the Cache la Poudre River, and then to convey the water many miles to the lower part of the Poudre valley, where it is to be used in reclaiming and irrigating a body of land containing 125,000 acres. It is a large and ambitious project, whose several parts, as finally brought

together, are adjusted to the attainment of that purpose. The parts were separately conceived, each having a purpose of its own. The project now is intended to draw on two independent sources of supply, each in a separate watershed. [Footnote 3] The appropriations are necessarily distinct. Neither adds anything to, nor subtracts anything from, the status of the other. We are concerned with only one of them.

The proposed tunnel diversion from the Laramie was conceived as a possibility by Wallace A. Link in 1897, and was explained by him to Abraham I. Akin in the spring of 1902. Later in the year, they visited the headwaters of the two streams, looked over the ground, and agreed that Link's idea was a good one, that the undertaking was large, and that they were without the means to carry it through. They concluded to promote the project together, and, thinking their chances of success would be improved by it, they also concluded to construct a ditch, known as the Upper Rawah, from the Laramie valley to a connection with an existing ditch, called the Skyline, and to take water through these ditches into the Cache la Poudre valley and there sell it. By this, they hoped to demonstrate that water was obtainable from that source and to obtain money to be used in promoting their project. The Skyline was a fair-sized ditch leading over a low part of the divide to a branch of the Poudre, and they

arranged with is owner for the carriage, on a percentage basis, of water from their ditch when constructed. They also conceived that the ditch could be used advantageously in collecting and carrying water to be sent through the tunnel, if and when the tunnel diversion was effected. In 1902, beginning August 25, they surveyed the line of the Rawah, and in October of that year filed a statement of claim under it in the state engineer's office. In the statement they said nothing about a tunnel diversion, and made claim only to the amount of water expected to be carried through the Rawah, and to the use of certain lakes or natural reservoirs for storage purposes. No work was done on the ditch that year. In 1903, they cleared some of the land over which it was to run, but did no excavating. In 1904, they constructed 6,000 feet of the ditch, and did more clearing. No work was done on it in 1905 or 1906. Further work was done in 1907, and some washouts were repaired in 1908. That was the last work on the Rawah. Much more than one-half of the ditch was left unconstructed. No water was delivered through it to the Skyline, nor was any sold or used. Nothing appears to have been done with the lakes or natural reservoirs.

In 1903, Link and Akin gave to each of three others a one-fifth share in their project, in return for which the new partners were to carry on solicitations to get capitalists interested and to raise money. The results of the solicitations were disappointing, but some investors were brought in and became concerned about the preliminary plans. Differences of opinion arose and had to be dealt with. The plans were examined and reexamined, alternative modes and places of diversion were considered and investigated, particular features were eliminated and others added, and in 1909, but not before, the project was definitely brought into its present form. A short reference to some of the details will serve to make this plain.

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In the Upper Rawah filing of October, 1902, nothing was said about the proposed tunnel diversion, but a claim was made to the use of certain lakes or natural reservoirs described as having an aggregate capacity of 325,000,000 cubic feet. The tunnel diversion was merely a mental conception until 1904. In March of that year, a survey was made of a tunnel site, a ditch from the West fork of the Laramie to the East fork, and a channel reservoir on the East fork above the tunnel site, and in May following, a statement of claim under them was filed, in which the estimated cost of the tunnel and ditch was given as $189,200, and that of the reservoir as $20,000. Later in 1904, a survey was made of a tunnel site, three collecting ditches, and two pipelines, and in October of that year, a statement of claim under them was filed in which the estimated cost of the tunnel, ditches, and pipelines was given as $375,000. The location and dimensions of the tunnel in the second survey differed from those in the first. The difference was not pronounced, and yet was a real change. In September, 1906, another statement of claim was filed covering the Upper Rawah Ditch, the lakes connected therewith and the tunnel. This statement declared that the lakes were to be so enlarged that they would have an aggregate capacity of 1,250,000,000 cubic feet, instead of 325,000,000, as stated in the filing of 1902, and it again changed the location and dimensions of the tunnel, this time more than before.

In 1905 and 1906, surveys were made to find a route for an open canal from the Laramie around the mountains, through a portion of Wyoming, and back to Colorado, which would avoid the construction of a tunnel and the maintenance of ditches in the higher mountain levels, and in 1908 a statement of claim covering such a canal was filed, as was also a claim covering a large channel reservoir nine miles down the stream from the tunnel site. The estimated cost of the canal was given as $1,000,000,

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and that of the reservoir as $200,000. The plan evidenced by these filings was that of impounding the water in the reservoir and liberating it in an equalized flow into the canal, which was to carry it into the Poudre watershed without the aid of a tunnel. Late in 1908 and in the fore part of 1909, another survey along the same general line and with the same purpose was made at a cost of $15,000. Early in 1909, a statement of claim was filed covering a proposed reservoir near the tunnel site, the cost being estimated at $200,000.

In 1907, the Laramie-Poudre Reservoirs & Irrigation Company succeeded to whatever rights the promoters had acquired up to that time, and all subsequent surveys, investigations, and filings were made by it. In April, 1909, the Greeley-Poudre Irrigation District, within which the water is intended to be used, was organized. At that time, sufficient capital had not been obtained to carry the project through in any form. In September following, the irrigation company and the irrigation district entered into a tentative contract under which the company was to consummate the project in its present form, and, after doing the construction work, was to transfer the property to the district. Payment therefor was to be made in interest-bearing bonds of the district. By a vote taken the next month, the district ratified the contract and authorized the issue of the bonds. About the last of that month, the work of boring the tunnel and making the diversion was begun.

It is manifest from this historical outline that the question of whether, and also how, this proposed appropriation should be made remained an open one until the contract with the irrigation district was made and ratified in 1909. Up to that time,

the whole subject was at large. There was no fixed or definite plan. It was all in an inceptive and formative stage -- investigations being almost constantly in progress to determine its feasibility and

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whether changes and alternatives should be adopted, rather than the primary conception. It had not reached a point where there was a fixed and definite purpose to take it up and carry it through. An appropriation does not take priority by relation as of a time anterior to the existence of such a purpose.

It no doubt is true that the original promoters intended all along to make a large appropriation from the Laramie by some means, provided the requisite capital could be obtained, but this is an altogether inadequate basis for applying the doctrine of relation.

No separate appropriation was effected by what was done on the Upper Rawah Ditch. The purpose to use it in connection with the Skyline was not carried out, but abandoned. This, as Link testified, was its "principal" purpose. The purpose to make it an accessory of the large project was secondary and contingent. Therefore the work on it cannot be taken as affecting or tolling back the priority of that project.

Actual work in making the tunnel diversion was begun, as before shown, about the last of October, 1909. Thereafter it was prosecuted with much diligence, and in 1911, when this suit was brought, it had been carried so nearly to a state of completion that the assumption reasonably may be indulged that, but for the suit, the appropriation soon would have been perfected. We conclude that the appropriation should be accorded a priority by relation as of the latter part of October, 1909, when the work was begun.

Applying a like rule to the Wyoming appropriations, several of them must be treated as relating to later dates, and therefore as being junior to that appropriation. Some of the projects in that state are founded on a plurality of appropriations, a part of which are senior and a part junior to that one.

The evidence shows that the Wyoming appropriations having priorities senior to the one in Colorado, and which

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are dependent on the available supply before named, cover 181,500 acres of land, and that the amount of water appropriated and reasonably required for the irrigation of these lands is 272,500 acre-feet. A much larger amount is claimed, but our finding restricts the amount to what the evidence shows is reasonably required, which is one acre-foot per acre for the larger part of the lands, two acre-feet per acre for a part, and two and one-half acre-feet per acre for the remainder.

As the available supply is 288,000 acre-feet, and the amount covered by senior appropriations in Wyoming is 272,500 acre-feet, there remain 15,500 acre-feet which are subject to this junior appropriation in Colorado. The amount sought to be diverted and taken under it is much larger.

A decree will accordingly be entered enjoining the defendants from diverting or taking more than 15,500 acre-feet per year from the Laramie River by means of or through the so-called Laramie-Poudre project.

It is so ordered.

[Footnote 1]

An acre-foot is the quantity of water required to cover an acre to a depth of one foot -- 43,560 cubic feet

[Footnote 2]

The reference is to the Greeley-Poudre Irrigation District, one of the defendants.

[Footnote 3]

An engineer who had been connected with the work, and was a witness for the defendants, said:

"This system has two distinct and independent sources of supply, that from the Laramie River and that from the Poudre River basin and the tributaries of the South Platte, and it was so designed that the Poudre Valley Canal could divert water from the Poudre River and also from the northern tributaries of the Poudre intercepted by the canal, and from the tributaries of the South Platte as far east as Crow Creek and intercepted by the canal wherever there was surplus water. We estimated that the amount of water available outside of the Laramie River source would be between 80,000 and 100,000 acre-feet per annum as an average."

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