

appellee, is obviously not confiscation of its property. Cf. *General American Tank Car Corp. v. Terminal Co.*, 308 U. S. 422, 428; *Louisiana & Pine Bluff Ry. Co. v. United States*, *supra*. The Commission's order is sustained and the judgment of the District Court setting it aside is reversed.

*Reversed.*

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COLORADO v. KANSAS ET AL.

BILL IN EQUITY.

No. 5, original. Argued October 11, 12, 1943.—Decided December 6, 1943.

In a suit involving use of the waters of the Arkansas River, brought by Colorado against Kansas and a Kansas user, *held*:

1. Colorado is entitled to an injunction against further prosecution of suits by the Kansas user against Colorado users. P. 391.

2. *Kansas v. Colorado*, 206 U. S. 46, made no allocation between the States of the waters of the river. P. 391.

3. Kansas is not entitled on the record to an apportionment in second-feet or acre-feet. P. 391.

4. In controversies involving the relative rights of States, the burden on the complaining State is much heavier than that generally required to be borne by private parties, and this Court will intervene only where a case is fully and clearly proved. P. 393.

5. Kansas' allegations that Colorado's use has materially increased since the decision in *Kansas v. Colorado*, and that the increase has worked a serious detriment to the substantial interests of Kansas, are not sustained by the evidence. P. 400.

6. Relief other than the restraint of further prosecution of suits by the Kansas user against Colorado users is denied to both States. P. 400.

ORIGINAL suit in equity by Colorado against Kansas and the Finney County (Kansas) Water Users' Association.

*Messrs. Gail L. Ireland*, Attorney General of Colorado, *Jean S. Breitenstein*, and *Henry C. Vidal*, with whom *Messrs. Arthur C. Gordon* and *A. W. McHendrie* were on the brief, for complainant.

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*Messrs. W. E. Stanley and Eldon Wallingford*, Assistant Attorney General of Kansas, with whom *Mr. A. B. Mitchell*, Attorney General, was on the brief, for defendants.

*Solicitor General Fahy*, on behalf of the United States, and *Messrs. Walter R. Johnson*, Attorney General of Nebraska, and *Paul F. Good*, on behalf of that State, filed briefs as *amici curiae*, suggesting the elimination, from the form of final decree proposed by the Special Master, of language relating to state ownership of waters of the Arkansas River.

MR. JUSTICE ROBERTS delivered the opinion of the Court.

This suit is the latest of a series of litigations between Kansas, or her citizens, and Colorado, or her citizens, concerning their respective rights to the beneficial use of the waters of the Arkansas River.

The river has its origin in central Colorado, and is a mountain torrent for 130 miles to a point near Canon City where it enters a foothill region ending near Pueblo. Thence it traverses the high plains of eastern Colorado and western Kansas. In the areas mentioned the stream is non-navigable.

In 1901 Kansas brought suit against Colorado in this court for an injunction restraining the latter from diverting, or permitting anyone under her authority to divert, waters of the river within Colorado, and for general relief. *Kansas v. Colorado*, 206 U. S. 46.<sup>1</sup> Kansas in her bill alleged that the waters of the river had been used for irrigation in her western counties and that, after establishment of these uses, Colorado began systematically to appropri-

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<sup>1</sup> The court overruled a demurrer to the bill and required Colorado to answer. *Kansas v. Colorado*, 185 U. S. 125.

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ate and divert them between Canon City and the Kansas state line for irrigating non-riparian arid lands; that, by 1891, all the natural flow, and much of the flood waters, had been appropriated in Colorado so that the average flow had been greatly reduced and the natural flow completely cut off.

Colorado replied that the stream was not continuous except at times of flood; that, in a state of nature, its bed east of Pueblo was frequently dry; that Colorado and her citizens had diverted and used only the perennial flow above Canon City and what had been done in effect conserved water for delivery into Kansas. She denied she had substantially diminished the flow of the river at the state line. She asserted she was entitled to consume the entire flow; but alleged that, in any view, her total appropriations did not amount to an infringement of Kansas' rights calling for judicial interference.

The court denied Kansas' contention that she was entitled to have the stream flow as it flowed in a state of nature. It denied Colorado's claim that she could dispose of all the waters within her borders, and owed no obligation to pass any of them on to Kansas. It declared that as each State had an equality of right each stood before the court on the same level as the other; that inquiry was not confined to the question whether any portion of the river waters were withheld by Colorado but must include the effect of what had been done upon the conditions in the respective States; and that the court must adjust the dispute on the basis of equality of rights to secure, so far as possible, to Colorado, the benefits of irrigation, without depriving Kansas of the benefits of a flowing stream. The measure of the reciprocal rights and obligations of the States was declared to be an equitable apportionment of the benefits of the river. The court added that, before the developments in Colorado consequent upon irrigation

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were to be destroyed or materially affected, Kansas must show not merely some technical right but one which carried corresponding benefits.

On examination of the proofs, the court concluded that diversions authorized by Colorado embraced more water than the total flow at Canon City. It found, however, that no clear showing was made as to what surplus water, if any, was contributed by the tributaries below that point or as to the proportion of the diverted water returned to the river by seepage. The opinion described the diversions in each State, analyzed the use made of the water and the benefits derived from it in each, considered population tables and agricultural statistics bearing upon the growth of the communities adjacent to the river in each, and stated conclusions, now material, as follows: That the result of Colorado's appropriations had been beneficial reclamation of many acres; that, while the influence of Colorado's diversions had been of perceptible injury to portions of the Arkansas valley in Kansas, yet to the great body of the valley the diminution of flow had worked little, if any, detriment; that regarding the interests of both States, and the right of each to receive benefit through irrigation and otherwise from the waters of the stream, the court was not satisfied that Kansas had made out a case entitling it to a decree. The court added that if depletion by Colorado continued to increase there would come a time when Kansas might justly say that there was no longer an equitable distribution of benefits and might rightly call for relief against Colorado and her citizens. Accordingly the bill was dismissed without prejudice to future action by Kansas. The taking of evidence ended June 16, 1905, and the decision of the court was announced May 13, 1907.

October 30, 1909, the Finney County Water Users' Association, which maintained the so-called Farmers' Ditch in Kansas, applied to a Kansas court for adjudication

of priorities as between various Kansas users of the river water. One of the defendants, the United States Irrigating Company, removed the cause to the United States District Court. A consent decree was entered May 16, 1911, which provided for the allocation and rotation of use amongst certain, but not all, of the Kansas ditches, including the Farmers' Ditch. It was, however, provided that the settlement should remain binding upon the parties only until the adjudication of other litigation next to be noticed.

August 27, 1910, United States Irrigating Company sued Graham Ditch Co. and others holding Colorado priorities, in the United States District Court for Colorado, to obtain an adjudication of priorities as between Kansas users and Colorado users. The Finney County Association was denied leave to intervene. Evidence was taken, but the suit was settled by a contract of February 19, 1916. By this settlement, the Colorado defendants agreed to recognize priorities as of August 27, 1910, for all the Kansas ditches in Finney County except the Farmers' Ditch; not to apply for, or claim, priorities for storage purposes on the Purgatoire River, a tributary of the Arkansas, or below the mouth of the Purgatoire, of a date earlier than August 27, 1910; and to pay the costs of suit and an additional sum to the Kansas interests. The Kansas ditches agreed to accept the priority date of August 27, 1910, and the quantities of water specified in the contract, as a definition and determination of their rights. The defendants complied with the terms of the contract.

The Finney County Association declined to become a party to the contract and, on November 27, 1916, brought suit in the United States District Court for Colorado against the same defendants for relief like that sought in the United States Irrigating Company's suit. January 29, 1923, the Finney County Association brought a second suit in the same court against other Colorado defendants

for similar relief. January 24, 1928, Colorado filed the present bill against Kansas and the Finney County Association.

After formal recitals, the bill refers to our earlier decision, states that, in reliance upon it, money has been spent in the improvement of the irrigation systems in Colorado, recites the prior and the pending private litigation against Colorado appropriators, alleges that the establishment of an interstate priority schedule sought in the pending suits would disrupt and destroy Colorado's administration of the waters of the Arkansas basin and result in conflict of state authority, asserts that no proper settlement of the relative rights of the States can be obtained in suits by Kansas appropriators against Colorado appropriators, outlines other injury to Colorado threatened by prosecution of the pending cases to judgment, and prays that the Finney County Association be enjoined from further pressing those suits, that Kansas and her citizens be enjoined from litigating, or attempting to litigate, the relative rights of the two States and their citizens to the waters of the river on claims similar to those made by the Association in its pending suits, and that the rights of Colorado and her citizens as determined by the judgment in *Kansas v. Colorado* be protected.

Kansas' answer admits some allegations of the bill and denies others, sets forth her alleged rights in the waters of the river, recites appropriations by Kansas residents and citizens, diversions by Colorado citizens under appropriations junior in time and inferior in right to those made in Kansas, and asserts that, since the filing of the complaint in *Kansas v. Colorado*, Colorado users have largely increased their appropriations and diversions, and threaten further to increase them, to the injury of Kansas users. She prays that the court protect and quiet her rights and those of her citizens and residents, including the Finney

County Association, to their appropriations, that the rights of her citizens and residents to divert water from the river for irrigation be decreed in second feet and that Colorado, her officers, agents, and citizens be perpetually enjoined from diverting any waters from the river or its tributaries in Colorado until the rights of Kansas, her citizens and residents, are satisfied.

The Finney County Association filed an answer admitting and denying averments of the bill and affirmatively praying that Colorado and her citizens be enjoined from diverting water from the river until the Association's right to 250 second feet is satisfied. The issues were made up by Colorado's reply.

Pursuant to our order, evidence was taken by a Commissioner. Thereupon the cause was referred to a Master with leave to take additional evidence, and direction, in the light of all the evidence, to state findings of fact, conclusions of law, and to recommend a form of decree. The evidence consists of some seven thousand typewritten pages of testimony and 368 exhibits covering thousands of pages.

The Master states that the "evidence is voluminous and conflicting on many of the material issues of fact," but his report contains no discussion or analysis of the proofs. Apart from formal recitals, the report consists of fourteen findings of fact,—more properly conclusions of fact,—nine conclusions of law, and a recommended form of decree. Each party has filed exceptions.

Three questions emerge from the pleadings. (1) Is Colorado entitled to an injunction against the further prosecution of litigation by Kansas users against Colorado users? (2) Does the situation call for allocation of the waters of the basin as between Colorado and Kansas in second feet or acre feet? (3) Has Kansas proved that Colorado has substantially and injuriously aggravated

conditions which existed at the time of her earlier suit?

The Master concluded that the first question should be answered in the affirmative. Kansas has not excepted to the conclusion or to the corresponding provisions of the proposed decree.

Bearing upon the second question, the Master found that "the average annual natural flow of the river and its tributaries" is 1,240,000 acre feet, and the "average annual dependable and fairly continuous water supply and flow" 1,110,000 acre feet. He recommends that the dependable flow be allocated 925,000 acre feet to Colorado and 185,000 acre feet to Kansas, 150,000 thereof between April 1 and October 1, and 35,000 between October 1 and April 1 of each year—that is, five-sixths to Colorado and one-sixth to Kansas. He submits a form of decree embodying this allocation and adjusting required deliveries in the same proportions upward or downward in accordance with annual flows in excess of, or less than, the stated average annual dependable flow. He has not attempted to define flood waters or the extent to which they are unusable by either State, and suggests no provision whereby their occurrence may be taken into account in defining Colorado's obligation to deliver water to Kansas. The form of decree requires measurement of flow by gauges, one at Canon City and the other at the mouth of the Purgatoire, and deliveries to Kansas prorated to the total of the flows at those points.

Both States except to these features of the decree as ambiguous and impossible of administration. Kansas, while asserting that the award to her is inadequate, professes her willingness to accept the recommended allocation, but insists that the decree require Colorado to deliver the quantity of water awarded to Kansas when and as demanded by her. Colorado asserts that the recommended decree—much more Kansas' proposed amendment—

would entail serious and unjustified damage to her interests, if indeed compliance with its terms were possible.

In respect of the third question, the Master finds:

"There has been since the taking of testimony in the case of Kansas against Colorado cited in 206 U. S. 46, in 1907, a material increase in the river depletion by Colorado of the water supply of the Arkansas River, which has been consumed and used by Colorado users for irrigation purposes and which has diminished the flow of the water into the State of Kansas and that by reason thereof there have been injuries to the substantial interests in Kansas."

No exception is taken to the Master's recommendation that an injunction issue against further prosecution of the Finney County Association suits against Colorado users. In our view such an injunction is appropriate, and should be granted.

Colorado urges that our decision in *Kansas v. Colorado*, *supra*, amounted to an allocation of the flow of the Arkansas River between the two States. We cannot accept this view. In that case Kansas labored under a burden of proof applicable in litigation between quasi-sovereign states, of which more hereafter. The dismissal of her bill resulted from the conclusion that she had failed to sustain the burden. But from the decision then rendered it follows that unless Kansas can show a present situation materially different from that disclosed in the earlier case she cannot now obtain relief.

The prayer of Kansas for an apportionment in second feet or acre feet cannot be granted. In our former decision we ruled that Kansas was not entitled to a specific share of the waters as they flowed in a state of nature, that it did not then appear that Colorado had appropriated more than her equitable share of the flow, and that if Kansas were later to be accorded relief, she must show additional takings working serious injuries to her sub-

stantial interests. This was in accord with other decisions in similar controversies.<sup>2</sup>

The reason for judicial caution in adjudicating the relative rights of States in such cases is that, while we have jurisdiction of such disputes,<sup>3</sup> they involve the interests of quasi-sovereigns, present complicated and delicate questions, and, due to the possibility of future change of conditions, necessitate expert administration rather than judicial imposition of a hard and fast rule. Such controversies may appropriately be composed by negotiation and agreement, pursuant to the compact clause of the federal Constitution. We say of this case, as the court has said of interstate differences of like nature, that such mutual accommodation and agreement should, if possible, be the medium of settlement, instead of invocation of our adjudicatory power.<sup>4</sup>

It follows that the Master erred in attempting to divide what he designated as the "average annual dependable" water supply of the Arkansas River in Colorado into frac-

<sup>2</sup> See the cases in notes 3, 4 and 6 *infra*. In *New Jersey v. New York*, 283 U. S. 336, 347, the prayer of Pennsylvania for such an allocation was denied. *Wyoming v. Colorado*, 259 U. S. 419, is not an exception. As it happened, the doctrine of appropriation had always prevailed in each of the States there concerned and furnished the most appropriate and accurate measure of their respective rights of appropriation of the flow of the Laramie River. It was, therefore, possible in enforcing equitable apportionment, to limit the amount of water which Colorado might, without injury to Wyoming's interests, divert to another water shed, to an amount not exceeding the unappropriated flow.

<sup>3</sup> *Missouri v. Illinois*, 180 U. S. 208; *Kansas v. Colorado*, 206 U. S. 46, 95, 96.

<sup>4</sup> See *Washington v. Oregon*, 214 U. S. 205, 218; *Minnesota v. Wisconsin*, 252 U. S. 273, 283; *New York v. New Jersey*, 256 U. S. 296, 313. Compare the Colorado River Compact of Nov. 24, 1922, authorized by Act of August 19, 1921, 42 Stat. 171, and dismissed in *Arizona v. California*, 292 U. S. 341, 345; and compare *Hinderlider v. La Plata River Co.*, 304 U. S. 92.

tions and awarding those fractions to the States respectively. Such a controversy as is here presented is not to be determined as if it were one between two private riparian proprietors or appropriators.<sup>5</sup>

The lower State is not entitled to have the stream flow as it would in nature regardless of need or use.<sup>6</sup> If, then, the upper State is devoting the water to a beneficial use, the question to be decided, in the light of existing conditions in both States, is whether, and to what extent, her action injures the lower State and her citizens by depriving them of a like, or an equally valuable, beneficial use.<sup>7</sup>

We come now to the vital question whether Kansas has made good her claim to relief founded on the charge that Colorado has, since our prior decision, increased depletion of the water supply to the material damage of Kansas' substantial interests. The question must be answered in the light of rules of decision appropriate to the quality of the parties and the nature of the suit.

In such disputes as this, the court is conscious of the great and serious caution with which it is necessary to approach the inquiry whether a case is proved. Not every matter which would warrant resort to equity by one citizen against another would justify our interference with the action of a State, for the burden on the complaining State is much greater than that generally required to be borne by private parties. Before the court will intervene the case must be of serious magnitude and fully and clearly proved.<sup>8</sup> And in determining whether one State

<sup>5</sup> *Kansas v. Colorado*, *supra*, 100.

<sup>6</sup> *Kansas v. Colorado*, *supra*, 85, 101-102; *Connecticut v. Massachusetts*, 282 U. S. 660, 669-670; *Washington v. Oregon*, 297 U. S. 517, 523, 526.

<sup>7</sup> Cases cited in Note 8.

<sup>8</sup> *Missouri v. Illinois*, 200 U. S. 496, 520-521; *New York v. New Jersey*, 256 U. S. 296, 309; *North Dakota v. Minnesota*, 263 U. S. 365, 374; *Connecticut v. Massachusetts*, 282 U. S. 660, 669; *Alabama v. Arizona*, 291 U. S. 286, 292; *Washington v. Oregon*, 297 U. S. 517, 522.

is using, or threatening to use, more than its equitable share of the benefits of a stream, all the factors which create equities in favor of one State or the other must be weighed as of the date when the controversy is mooted.

On this record there can be no doubt that a decree such as the Master recommends, or an amendment or enlargement of that decree in the form Kansas asks, would inflict serious damage on existing agricultural interests in Colorado. How great the injury would be it is difficult to determine, but certainly the proposed decree would operate to deprive some citizens of Colorado, to some extent, of their means of support. It might indeed result in the abandonment of valuable improvements and actual migration from farms. Through practice of irrigation, Colorado's agriculture in the basin has grown steadily for fifty years. With this development has gone a large investment in canals, reservoirs, and farms. The progress has been open. The facts were of common knowledge.

The controversy was litigated in 1901. Kansas was denied relief in 1907. The dispute between appropriators in the two States was brought into court in 1910 and settled in 1916. The Finney County Association sued Colorado appropriators in 1916 and 1923. Even if Kansas' claims of increased depletion and ensuing damage are taken at face value, it is nevertheless evident that while improvements based upon irrigation went forward in Colorado for twenty-one years, Kansas took no action until Colorado filed the instant complaint in 1928.

These facts might well preclude the award of the relief Kansas asks. But, in any event, they gravely add to the burden she would otherwise bear, and must be weighed in estimating the equities of the case.<sup>9</sup>

The Master concludes that there has been a material increase in depletion by Colorado, a consequent diminution

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<sup>9</sup> *Washington v. Oregon*, 297 U. S. 517, 526.

of flow across the state line, and injury to the substantial interests of Kansas. His report does not state what he considers material; or the extent of the diminution of flow; or the interests of Kansas which have been injured and the extent of the injury. We must, therefore, turn to the evidence to resolve the issues.

Kansas asserts that since the decision of *Kansas v. Colorado*, *supra*, Colorado has increased her consumptive use of the water of the Arkansas River by an annual average of between 300,000 and 400,000 acre feet. Witnesses so testified and, to support their conclusions, submitted elaborate calculations and analyses exhibiting the alleged total water supply of the river basin in Colorado and the alleged amount of water passing in the bed of the stream across the state line. A witness submitted tables covering the period 1895-1930 from which he deduced an average yearly water supply of 1,240,000 acre feet and an average annual dependable supply of 1,110,000 acre feet. He presented figures to show that Colorado's consumptive use had increased to the extent of an annual average of 300,000 acre feet. He reached this result by using estimated flow across the state line between 1895 and 1908 and measured flow between 1908 and 1930, during which period a gauging station was maintained at Holly near the line. Measurements indicate that, during the latter period, the average annual state line flow was 260,700 acre feet.<sup>10</sup> If, as claimed, this flow remained after an additional average annual depletion of 300,000 acre feet by Colorado, the average annual flow in the earlier period, 1895 to 1908, would necessarily have been greater by 300,000, or would have averaged 560,700 acre feet. The witness' own exhibit shows that he assumed an average annual state line flow for the period

<sup>10</sup> In computing average annual flows, flood waters are included in the reckoning. As later shown, such annual averages do not represent the quantities of water usable by diversion ditches for irrigation.

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1895-1899 of 300,000 acre feet, for 1900-1904, of 470,000 acre feet, and, for 1905-1909, of 454,000 acre feet, or an annual average over the total period, 1895-1909, of 408,000 acre feet. On his own estimates the claimed average annual depletion of 300,000 acre feet could not have taken place. Moreover, the force of this evidence is weakened by Kansas' allegations in *Kansas v. Colorado, supra*. In her bill in that case she alleged Colorado had totally destroyed the normal flow of the river exclusive of floods whereas she now asserts that the flow at the time of the earlier suit was such that Colorado has been able to deplete it on an annual average of 300,000 acre feet.

The records of Colorado's consumption and ditch diversions, and the Colorado and Kansas exhibits showing the divertible and usable state line flow, rebut such an increase as Kansas asserts. Kansas' expert witness himself testified that the diversion records show no material change in Colorado diversions since 1905 and that if acreage in Colorado has expanded under the ditches on the main stem of the river it has done so because of an improved duty of water; that, during the period, the river gains due to return flow have increased, the consumptive use of water has declined, and relatively the stream flows have improved.

The Kansas ditches are capable of diverting water only up to 2,000 c. f. s. When the flow is greater the excess cannot be diverted and used. It is admitted that the character of the flow of the river in Colorado is variable from year to year, from season to season, and from day to day, and the main river below Canon City may be almost without water one day, run a flood the next day, and, on the following day, be in practically its original condition. Thus it appears that both in Colorado and in Kansas there may at one time be flood water unavailable for direct diversion and, at another, not enough water to supply the capacity of diversion ditches. The critical matter is

the amount of divertible flow at times when water is most needed for irrigation. Calculations of average annual flow, which include flood flows, are, therefore, not helpful in ascertaining the dependable supply of water usable for irrigation. That supply has, in Colorado, been supplemented by the extensive use of reservoirs for storage of flood waters and winter flows not usable or needed for irrigation. Though western Kansas affords sites for similar storage reservoirs, but one small basin has been constructed in that State. On the other hand, the storage in Colorado, and the release of stored water to supplement the natural flow of the stream in times of need, operates by seepage and return to the channel to stabilize and improve the flow at the state line and, to that extent, benefits irrigation in Kansas.

Kansas relies heavily upon the increase of irrigated acreage in Colorado since our decision in 1907. The testimony in the earlier case was closed in 1905. The then latest available census—for 1902—reported 300,115 acres under irrigation in the Arkansas basin in Colorado. In its opinion the court referred to this figure. The next census—for 1909—gives the Colorado acreage as 464,236. The later reports disclose an addition of less than 5,000 acres between 1909 and 1939. Thus a total of about 170,000 additional acres has been put under irrigation since 1902. On its face this record would seem to indicate a large increase of consumptive use by Colorado, but the acreage under irrigation does not afford a reliable measure of actual consumption. When first turned in, the water is rapidly absorbed by the sub-soil with consequent high consumption. By continued irrigation the sub-soil becomes saturated, the water table rises, and water, in increasing quantities, flows back to the stream. Ultimately consumption falls well below diversion. The returned water again may be diverted and again supply return flows. Since the decision in the earlier case, studies

of return flows have been made which indicate a steady reduction in the quantity of water consumed per acre of irrigated land.

Practically all of the affected Kansas ditches are in three western counties. Tables taken from the United States census show that, in 1899, acreage irrigated in these counties was 6% of that irrigated in the Colorado basin. In 1909 it was 7%, in 1929, 9.7%, and, in 1939, 10.7%. It seems that Colorado cannot have depleted the usable supply passing into Kansas if acreage under irrigation is any measure of depletion.

Whatever may be said of the practices of Colorado since 1905, Kansas is not entitled to relief unless she shows they clearly have entailed serious damage to her substantial interests and those of her citizens. It is not necessary to quote the findings of this court made in the earlier case. We need only say they disclose that some ditches in western Kansas had been abandoned for lack of available water and all ditches were suffering from shortages of flow. The court pointed out that Colorado had authorized diversions in excess of the flow at Canon City. And the record in the present case indicates that, except for seepage and return flow, the appropriations Colorado has authorized from the basin, as a whole, exceed the available dependable flow of the stream and its tributaries, and this appears to have been true also in 1901. It appears, nevertheless, that, since 1904, an increased quantity of usable water has passed the state line, for it is testified by Kansas' expert witness that, between 1895 and 1902, no divertible water passed the line and none between 1903 and 1907, except in 1903 and 1905, whereas in each year since 1908 divertible water has crossed the state line in varying quantities and, in most years, in substantial amounts.

Kansas, however, insists that 414,000 acres in western Kansas are susceptible of successful irrigation, and much of this land would have been irrigated had Colorado not

deprived Kansas of her equitable share of the flow. The evidence is that the acreage now irrigated in Kansas lies close to the river and along the river bottom. The land claimed to be susceptible of irrigation extends many miles from the bed of the river. We are asked to speculate as to how much of this land would have been put under irrigation under more favorable circumstances.

As has been pointed out, despite Colorado's alleged increased depletion, the acreage under irrigation in western Kansas through existing ditches has steadily increased, over the period 1895-1939, from approximately 15,000 acres to approximately 56,000 acres. Moreover, the arid lands in western Kansas are underlaid at shallow depths with great quantities of ground water available for irrigation by pumping at low initial and maintenance cost. There is persuasive testimony that farmers who could be served from existing ditches have elected not to take water therefrom but to install pumping systems because of lower cost.

Again, there is serious question whether lands which are not riparian may divert the water from the stream for irrigation. In the earlier suit Kansas asserted,<sup>11</sup> and the court held,<sup>12</sup> that the common law prevailed in Kansas and governed the rights of riparian owners. It is true that the rule as to riparian rights has been expanded by the common law of Kansas to permit a riparian proprietor reasonable use of the waters of a stream for irrigation.<sup>13</sup> But such use is subject to the rights of other riparian owners to a like reasonable use. What is reasonable must, in each instance, be determined in the light of total supply and total need of all riparian owners.<sup>14</sup> It is also true that, beginning in 1886, Kansas, by statute, recognized appro-

<sup>11</sup> 206 U. S. 51, 52, 58, 59, 60, 61.

<sup>12</sup> *Ibid.*, 95, 99, 102, 104.

<sup>13</sup> *Campbell v. Grimes*, 62 Kan. 503, 64 P. 62.

<sup>14</sup> *Clark v. Allaman*, 71 Kan. 206, 80 P. 571.

priation for irrigation. But there is doubt whether the privilege is not restricted to riparian owners in some portions of the State. The Supreme Court of Kansas has held that, where a title originates in a grant antedating the Act of 1886, the right of appropriation is limited by the common law as to riparian rights, which are rights of property derived from the original patent or deed in the line of title.<sup>15</sup> It seems that title to much of the land along the Arkansas Valley in western Kansas was originally granted or patented prior to 1886. The brief and argument of Kansas, while referring to the statutes of the State authorizing appropriation, make no reference to the Kansas decisions and no showing with respect to the right of non-riparian owners to appropriate waters against objection by other such owners.

The official census figures submitted bearing upon population of the western counties of Kansas, and the agricultural production in them, give no support to a claim that the inhabitants have suffered for lack of arable and productive land. Generally speaking, the population has steadily increased and the agricultural production has also risen throughout the period in question.

All these considerations persuade us that Kansas has not sustained her allegations that Colorado's use has materially increased, and that the increase has worked a serious detriment to the substantial interests of Kansas.

A decree should be entered enjoining the further prosecution of the Finney County Association's suits, and dismissing the prayers of both States for other relief. The parties may submit such a decree.

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<sup>15</sup> *Frizell v. Bindley*, 144 Kan. 84, 58 P. 2d 95. Cf. *Smith v. Miller*, 147 Kan. 40, 75 P. 2d 273.