

untenable, save in the instance of the Cheney Brothers Company. The tax on that company, as before indicated, was a tax on interstate business and therefore void under the commerce clause.

Judgment reversed as to Cheney Brothers Company and affirmed as to the other plaintiffs in error.

STATE OF ARKANSAS *v.* STATE OF TENNESSEE.

IN EQUITY.

No. 4, Original. Argued October 9, 1917.—Decided March 4, 1918.

When two States of the Union are separated by a navigable stream, their boundary being described as "a line drawn along the middle of the river," or as "the middle of the main channel of the river," the boundary must be fixed (by the rule of the "thalweg") at the middle of the main navigable channel, so that each State may enjoy an equal right of navigation. *Iowa v. Illinois*, 147 U. S. 1.

Following this principle, the court holds that the true boundary line between the States of Arkansas and Tennessee is the middle of the main channel of navigation of the Mississippi, as it existed at the Treaty of Peace concluded between the United States and Great Britain in 1783, subject to such changes as have occurred since that time through natural and gradual processes.

Certain decisions of the Arkansas and Tennessee courts and acts of the Tennessee legislature, referred to in the opinion, fall short of showing that the States, by practical location and long acquiescence, established the boundary, at the place in dispute, as a line equidistant from the well-defined permanent banks of the river. It is therefore unnecessary to decide whether the supposed agreement between them would be valid without consent of Congress, in view of the third clause of Art. I, § 10, of the Constitution.

Where running streams are the boundaries between States, the same rule applies as between private proprietors, namely, that when the bed and channel are changed by the natural and gradual processes

158.

Syllabus.

known as erosion and accretion, the boundary follows the varying course of the stream; while if the stream from any cause, natural or artificial, suddenly leaves its old bed and forms a new one, by the process known as an avulsion, the resulting change of channel works no change of boundary, which remains in the middle of the old channel, although no water may be flowing in it, and irrespective of subsequent changes in the new channel.

This rule applies to a navigable stream between States; the boundary is not changed by an avulsion but remains as it was before, the center line of the old main channel of navigation.

The common-law doctrine permitting the private owner of land which has been submerged in the sea to regain it, upon identification after a subsequent reliction, is but an exception to the general rule giving to the sovereign land uncovered by sudden recession of the sea; it has no proper bearing upon the rule stated with reference to boundary streams; and affords no basis for restoring such a boundary, after an avulsion, to its pristine location and thus eliminating the shifting effects of erosions and accretions which occurred before the avulsion took place.

After an avulsion, so long as the old channel remains a running stream, the boundary marked by it is still subject to be changed by erosion and accretion; but when the water becomes stagnant the effect of these processes is at an end; the boundary then becomes fixed at the middle of the channel, as above defined, and the gradual filling up of the bed that ensues is not to be treated as an accretion to the shores but as an ultimate effect of the avulsion.

How the land that emerges on either side of a navigable interstate boundary stream shall be disposed of as between public and private ownership is a matter to be determined according to the law of each State, under the familiar doctrine that it is for the States to establish for themselves such rules of property as they deem expedient with respect to the navigable waters within their borders and the riparian lands adjacent to them. But these dispositions are in each case limited by the interstate boundary, and cannot be permitted to press back the boundary line from where otherwise it should be located.

Arkansas is not affected by judicial determinations involving the boundary in cases to which she was not a party.

The court will appoint a commission to run, locate and designate the boundary line between the two States at the place in question, in accordance with the principles herein stated.

The nature and extent of the erosions and accretions that occurred in the old channel prior to the avulsion here involved, and the ques-

tion whether it is practicable now to locate accurately the line of the river as it then ran, will be referred to said commission, subject to a review of its decision by this court if need be.

THIS is an original suit in equity brought by the State of Arkansas against the State of Tennessee for the purpose of determining the location of the boundary line between those States along that portion of the bed of the Mississippi River that was left dry as the result of an avulsion which occurred March 7, 1876, when a new channel was formed known as the "Centennial Cut-off."

The cause, having been put at issue by the filing of answer and replication, was brought on to hearing upon stipulated facts, pursuant to an intimation made by this court in *Cissna v. Tennessee*, 242 U. S. 195, 198.

The facts are as follows: By the Treaty of 1763 between England, France, and Spain, Art. VII (3 Jenkinson's Treaties, 177, 182), the boundary line between the British and French possessions at this place was established as "a line drawn along the middle of the River Mississippi," with consequent recognition of the dominion of France over the territory now comprising the State of Arkansas, and the dominion of Great Britain over that now comprising the State of Tennessee. By the Treaty of Peace concluded between the United States and Great Britain, September 3, 1783, 8 Stat. 80, the territory comprising Tennessee passed to the United States, its westerly boundary being described (Art. II) as "a line to be drawn along the middle of the said River Mississippi." It formed a part of the State of North Carolina. In the year 1790 North Carolina ceded it to the United States (Act of April 2, 1790, c. 6, 1 Stat. 106). In a report made in the following year by Thomas Jefferson, then Secretary of State, and submitted to Congress by President Washington, the bounds of the ceded territory were described, the western boundary being "the middle of the

158.

Statement of the Case.

river Mississippi." 1 American State Papers, Public Lands, p. 17. And by Act of June 1, 1796, c. 47, 1 Stat. 491, the whole of the territory thus ceded was made a State. By the Louisiana Purchase, under the Treaty of April 30, 1803, 8 Stat. 200, the territory comprising Arkansas was acquired by the United States from France. It was admitted into the Union as a State by Act of June 15, 1836, c. 100, 5 Stat. 50, its easterly boundary being described as "the middle of the main channel of the said river."

According to the stipulated facts, the earliest evidence concerning the location of the river at the place in question relates to the year 1823, and is set forth upon a map made recently by Major Humphreys, purporting to show the conditions as they existed at that time. The river flowed southward past Dean's Island on the Arkansas side, made a bend to the westward at or about the southernmost part of this island, and then swept northerly and westerly around Island No. 37 (Tennessee), a lesser channel known as McKenzie Chute passing between that island and the main Tennessee shore; the main and lesser channels met at the southwestern extremity of Island No. 37, and the river flowed thence southwesterly past Point Able, Tennessee, opposite which it turned again easterly and then northerly, forming what is known as the Devil's Elbow, and flowed thence easterly or northeasterly around Brandywine Point or Island (Arkansas), until it came within a distance of about two miles from the place where it started its northerly turn opposite Dean's Island; and at this point it turned again to the southward. It is agreed that in 1823 the river ran substantially as indicated upon the Humphreys map, and that between that year and the year 1876 the width of the channel, by erosion and caving in of the Tennessee bank south, southwest, and west of Dean's Island, along the mainland and Island No. 37, had increased from its former width of about a

mile or less to a width of $1\frac{1}{4}$ or $1\frac{1}{2}$ miles, with consequent narrowing of the neck of land opposite Dean's Island. It is a matter in controversy between the parties whether during the same period there were accretions to Dean's Island and Plum Island, in the State of Arkansas, and to Island No. 37 and the shore below Point Able, on the Tennessee side. A steamboat reconnaissance of the river was made by Colonel Suter under the direction of the War Department in 1874, and a map of the place in question was prepared under his direction and is in evidence. There being no proof of material changes in the river between 1874 and 1876, this map, while not shown to be entirely accurate, is agreed to represent the general situation as it existed in the latter year.

On March 7, 1876, the river suddenly and with great violence, within about thirty hours, made for itself a new channel directly across the neck opposite the apex of Dean's Island, so that the old channel around the bend of the elbow (a distance of fifteen to twenty miles) was abandoned by the current, and although it remained for a few years covered with dead water it was no longer navigable except in times of high water for small boats, and this continued only for a short time, since the old bed immediately began to fill with sand, sediment, and alluvial deposits. In the course of time it became dry land suitable for cultivation and to a considerable extent covered with timber. The new channel is called, from the year in which it originated, the "Centennial Cut-off," and the land that it separated from the Tennessee mainland goes by the name of "Centennial Island."

The cut-off and the territory affected by it are the same that are mentioned and dealt with in the cases of *Stockley v. Cissna*, 119 Fed. Rep. 812; *State v. Muncie Pulp Co.*, 119 Tennessee, 47, and *Stockley v. Cissna*, 119 Tennessee, 135. The State of Tennessee, in her answer, pleads and relies upon the first and second of these cases as judicial

determinations and evidence of the boundary line between the States at the place in question. Their materiality and effect are matters to be determined.

Prior to 1876, notably around "Island 37" and "Devil's Elbow," the bank on one side of the river was high and subject to erosion, the effect of the water against it; while on the opposite side the bank was a flat or sloping shore, so that the width of the river was materially affected by the rise and fall of the water, being considerably wider at normal than at low-water stage.

The following questions are submitted for the determination of this court:

(1) Arkansas contends that the true boundary line between the States (aside from the question of the avulsion of 1876) is the middle of the river at low water, that is, the middle of the channel of navigation; whereas Tennessee contends that the true boundary is a line equidistant from the well-defined banks at a normal stage of the river.

(2) Arkansas contends that by the avulsion of 1876 the boundary line between the States was unaffected, and remained in the middle of the river bed which was by the avulsion abandoned, whether the first or the second definition of the middle of the river be adopted; whereas Tennessee contends that the line was affected by the avulsion to the extent indicated by the opinion of the Supreme Court of that State in *State v. Muncie Pulp Co.*, 119 Tennessee, 47; that is, that the effect of the avulsion was to press back the line between the two States to the middle of the old channel as it ran previous to the erosions upon the Tennessee banks that occurred between 1823 and 1876.

(3) Tennessee contends that, irrespective of the question of accretions and erosions, it is impossible now to locate accurately the line of the river as it ran in 1876 just prior to the avulsion, and that therefore the line of 1823

must prevail as the boundary line between the States, where it has been or can be located accurately and definitely; whereas Arkansas insists that there is no real difficulty in locating the middle of the river of 1876.

Upon the determination of these points, the court is to appoint a commission to run, locate, and designate the line.

Mr. Caruthers Ewing, with whom *Mr. John D. Arbuckle*, Attorney General of the State of Arkansas, was on the briefs, for complainant:

The terms "middle of Mississippi River," "middle of the stream of the Mississippi River," "center of the middle thread of the main channel of the Mississippi River," mean the same thing and designate the middle of the river at low water mark—the middle of the channel of navigation. *Iowa v. Illinois*, 147 U. S. 1; *Handley's Lessee v. Anthony*, 5 Wheat. 375; *Lamb v. Rickets*, 11 Ohio St. 311; *Franzini v. Layland*, 120 Wisconsin, 72, and many other cases in this and other courts. This court knows that the Mississippi River is sinuous, and that, on one side, in many places, will be found a sloping bank contiguous to which the water is very shallow, and on the opposite side a high bank with the water deep and navigable. If the contention of Tennessee be maintained, then at the point in controversy the navigable or steamboat channel of the river was wholly within the territorial limits of Tennessee or Arkansas dependent upon the nature of the bank at the particular point. This question is important because at low water stage the river would be about one-half mile wide and the line would therefore be about one-quarter of a mile from the high bank. At a normal stage of water the river at the *locus in quo* might be about a mile and a half wide. The line would therefore be about three-fourths of a mile from the high or bluff bank. The difference amounts to a strip of land many miles in length and a quarter of a mile wide, *i. e.*, about 4,000 acres.

158.

Argument for Complainant.

In deciding otherwise and repudiating the rule announced in *Iowa v. Illinois*, *supra*, the Tennessee court (*State v. Muncie Pulp Co.*, 119 Tennessee, 47) misconceived earlier decisions in this court and ignored later ones.

It is recognized by all authorities that boundary lines are unaffected by an avulsion. The river's sudden abandonment of its bed left the line between the two States exactly as it existed at the time of this sudden and visible abandonment. *Missouri v. Kansas*, 213 U. S. 68; *Missouri v. Nebraska*, 196 U. S. 33; *Philadelphia Co. v. Stimson*, 223 U. S. 605, 624; *Washington v. Oregon*, 214 U. S. 205; *Whiteside v. Norton*, 205 Fed. Rep. 5; and other cases.

Before the avulsion, the boundary line between the States followed the gradual and imperceptible shiftings of the river. What each State lost or gained by gradual and imperceptible shiftings was a permanent loss or gain except and unless these changes were undone as they were made, to wit, gradually and imperceptibly. Gradual and imperceptible changes in property rights and in boundary lines are unaffected by the fact that as the result of an avulsion land which had been lost by erosion is uncovered. The doctrine of reliction only applies when land is uncovered gradually and imperceptibly; it never applies when the recession of the waters from the land is sudden and visible. *Jones v. Johnson*, 18 How. 150, 156; *St. Louis v. Rutz*, 138 U. S. 226; *Sapp v. Frazier*, 51 La. Ann. 1718; *Collins v. State*, 3 Tex. App. 323; *Bowvier v. Stricklett*, 40 Nebraska, 793; *Noyes v. Collins*, 92 Iowa, 566; *Wilson v. Watson*, 141 Kentucky, 324; and many other authorities. The case of *Mulry v. Norton*, 100 N. Y. 424, is about the only support to be found for the proposition that the doctrine of reliction can be invoked when the land is uncovered by an avulsion. The statement in the court's opinion to this effect is mere *dictum*. See *Matter of City of Buffalo*, 206 N. Y. 319. Land submerged by the sudden and violent action of the sea, as in *Mulry v.*

Norton, is land that is lost by an avulsion and the owner still has title thereto. He simply cannot use the land because it is covered with water. Land thus covered by water belongs to the owner wholly on the principle that an avulsion does not affect property rights and titles. To hold that the doctrine of reliction could be applied to land uncovered as the result of an avulsion would be to hold that boundary lines and property rights are affected by an avulsion, whereas the law is well settled to the contrary.

Mr. G. T. Fitzhugh, with whom *Mr. Frank M. Thompson*, Attorney General of the State of Tennessee, was on the brief, for defendant:

The boundary between Arkansas and Tennessee is a line drawn along the middle of the Mississippi River at a point equidistant between its principal and well-defined banks, at a normal stage of water. It was so fixed by treaty and statute. [Citing the treaties and statutes considered in the early part of the statement, and Shannon's Code of Tennessee, § 80; Code of 1858, § 69.]

As long as water flows over the bed of a navigable stream, considerations of international policy may well support the rule that the boundary in such stream is along the "thalweg" or fairway, and this because the preservation of equality in the navigation of the river is of extreme importance to the nations bounded by such stream. The river is owned jointly by the two adjoining nations, and the purpose of the rule is to secure to both equal rights therein, the superlative one being the right of navigation; but when the water leaves its bed and establishes for itself a new channel, we respectfully urge that principles of equity, equality and right constrain the application of a new rule, which will give to each of the adjoining States an equal moiety in the land over which the water ran, and which is, by the aban-

158.

Argument for Defendant.

donment of the stream, rendered fit for cultivation and use. *Iowa v. Illinois*, 147 U. S. 1; *Louisiana v. Mississippi*, 202 U. S. 1, 49; Chitty's Vattel, 4th Amer. ed., p. 156; 1 Moore International Law Digest, § 156; 8 Ops. Atty. Gen. 177, 178; Almeda, Derecho Publico, Tom. 1, p. 199; *Nebraska v. Iowa*, 143 U. S. 359; Sandars' Justinian, 1st Amer. ed., pp. 168, 169; *Missouri v. Nebraska*, 196 U. S. 23, 36; *Buttenuth v. St. Louis Bridge Co.*, 123 Illinois, 535; *Nugent v. Mallory*, 145 Kentucky, 824.

It is next insisted by Tennessee that the line should run at a point equidistant between well-defined banks, at a normal stage of water, because this has been the long-established boundary, acquiesced in by both Arkansas and Tennessee and their predecessors in sovereignty for many years. Whatever may have been the proper construction of the Treaties of 1763 and 1783, it is clear that on the admission of Tennessee into the Union the western boundary of the United States was construed to be the "middle of the channel or bed" of the Mississippi River. It was so fixed by the treaty between the United States and Spain in 1795. Congress had no power to include within the territory of Arkansas, through the enabling act admitting it to the Union, territory within the boundaries of Tennessee, because Tennessee was the older State. Constitution, Art. IV, § 3; *Louisiana v. Mississippi*, 202 U. S. 40; *Washington v. Oregon*, 211 U. S. 127, 134. Arkansas has interpreted the line to be at a point equidistant from the well-defined and permanent banks of the Mississippi River. [Citing cases mentioned in the opinion and *Hearne v. State*, 121 Arkansas, 460.] Tennessee has recognized the same boundary, and acquiesced therein. *Moss v. Gibbs*, 10 Heisk. 283; *Foppiano v. Snead*, 113 Tennessee, 167; *State v. Muncie Pulp Co.*, 119 Tennessee, 47, 73. Where a State has for many years exercised undisturbed jurisdiction over a particular territory, a prescriptive right arises, which is equally binding under

principles of justice on States as well as individuals. [Citing the cases on this subject mentioned in the opinion, and *Missouri v. Kansas*, 213 U. S. 78, 85.]

The line if fixed at the *filum aquæ* should be determined with reference to the normal stage of water. *State v. Burton*, 106 Louisiana, 732; *Hopkins Academy v. Dickson*, 9 Cush. 544, 552; *Warren v. Inhabitants of Thomaston*, 75 Maine, 329, 332; *Cessill v. State*, 40 Arkansas, 501; *State v. Muncie Pulp Co.*, *supra*.

The effect of avulsion is to leave the boundary in the abandoned bed of a stream, and it does not carry the boundary to the new channel. *Missouri v. Nebraska*, 196 U. S. 33; *State v. Muncie Pulp Co.*, *supra*; *Stockley v. Cissna*, 119 Tennessee, 135.

The doctrine of submergence and reappearance of land applies where lands have been submerged and the bed becomes dry, and old boundaries can be located or distinguished. *State v. Muncie Pulp Co.*, *supra*; Sir Matthew Hale's *De Jure Maris*, reprinted in Hargrave's Law Tracts, 36, 37, and notes to *In re Jennings*, 6 Cow. 518, 536, and *Mather v. Chapman*, 16 Am. Rep. 54; 7 Comyns' Dig., tit. Prerogative, D. 61; 5 Bacon's Abr., tit. Prerogative, p. 495; *Mulry v. Norton*, 100 N. Y. 424; *Morris v. Brook*, repr. Am. Reps. 206; *St. Louis v. Rutz*, 138 U. S. 226; *Stockley v. Cissna*, 119 Fed. Rep. 812; *Stockley v. Cissna*, 119 Tennessee, 135, 171; *Hughes v. Heirs of Birney*, 107 Louisiana, 664; *Chicago v. Lord*, 169 Illinois, 392; *Widicombe v. Rosemiller*, 118 Fed. Rep. 295; *Randolph v. Hinck*, 277 Illinois, 11.

In boundary disputes between nations the same rules will be applied as apply between individuals. *Trustees v. Hopkins*, 8 Porter, 9; *Nebraska v. Iowa*, 143 U. S. 359; 8 Ops. Atty. Gen. 175.

Tennessee contends that after the old channel ran dry, the owners of the banks and the bed should be restored to their own, according to the original boundaries fixed be-

158.

Opinion of the Court.

fore the river changed its course or moved laterally in its bed, such lands being still susceptible of definite location.

MR. JUSTICE PITNEY, after stating the case as above, delivered the opinion of the court.

Concerning the proper location of an interstate boundary line with reference to the shores and channel of a navigable river separating one State of the Union from another, much has been written. The subject was brought under the consideration of this court in *Iowa v. Illinois*, 147 U. S. 1. In that case, Illinois contended that the boundary followed the middle of the channel of commerce, that is, the channel commonly used by steamboats and other craft navigating the river; while on the part of Iowa it was insisted that the line ran in the middle of the main body of the river, taking the middle line between its banks or shores, irrespective of where the channel of commerce might be, and that the measurements must be taken at ordinary stage of water. The contention of each State was supported by a decision of its court of last resort: *Dunlieth & Dubuque Bridge Co. v. County of Dubuque*, 55 Iowa, 558, 565; *Buttenuth v. St. Louis Bridge Co.*, 123 Illinois, 535, 548. This court recognized these cases as presenting in the clearest terms the different views as to the line of jurisdiction between neighboring States separated by a navigable stream, and thereupon proceeded to analyze their reasoning and doctrine. From a review of the authorities upon international law, it was declared that when a navigable river constituted the boundary between two independent States the interest of each State in the navigation, and the preservation by each of its equal right in such navigation, required that the middle of the channel should mark the boundary up to which each State on its side should exercise jurisdiction; that hence, in international law, and by the usage of European

nations, the term "middle of the stream," as applied to a navigable river, meant the middle of the channel of such stream, and that in this sense the terms were used in the treaty between Great Britain, France, and Spain, concluded at Paris in 1763, so that by the language "a line drawn along the middle of the River Mississippi," as there used, the middle of the channel was indicated; that the *thalweg*, or middle of the navigable channel, is to be taken as the true boundary line between independent States for reasons growing out of the right of navigation, in the absence of a special convention between the States or long use equivalent thereto; and that although the reason and necessity of the rule may not be as cogent in this country, where neighboring States are under the same general government, yet the same rule must be held to obtain unless changed by statute or usage of so great a length of time as to have acquired the force of law; and that the Illinois Enabling Act of April 18, 1818, § 2, c. 67, 3 Stat. 428, which made "the middle of the Mississippi river" the western boundary of the State, the Missouri Enabling Act of March 6, 1820, § 2, c. 22, 3 Stat. 545, which adopted "the middle of the main channel of the Mississippi river" as the eastern boundary of that State, and the Wisconsin Enabling Act of August 6, 1846, c. 89, 9 Stat. 56, which referred to "the centre of the main channel of that river," employed these varying phrases as signifying the same thing. Hence we reached the conclusion (p. 13) that as between the different views as to the line of jurisdiction between neighboring States, separated by a navigable stream, the controlling consideration "is that which preserves to each State equality in the right of navigation in the river." It was accordingly adjudged and declared that the boundary line between the contesting States was "the middle of the main navigable channel of the Mississippi River;" and a final decree to that effect was afterwards made, 202 U. S. 59.

158.

Opinion of the Court.

The rule thus adopted, known as the rule of the "*thalweg*," has been treated as set at rest by that decision. *Louisiana v. Mississippi*, 202 U. S. 1, 49; *Washington v. Oregon*, 211 U. S. 127, 134; 214 U. S. 205, 215. The argument submitted in behalf of the defendant State in the case at bar, including a reference to the notable recent decision of its Supreme Court in *State v. Muncie Pulp Co.* (1907), 119 Tennessee, 47, has failed to convince us that this rule ought now, after the lapse of twenty-five years, to be departed from.

It is said that Arkansas has interpreted the line to be at a point equidistant from the well-defined and permanent banks of the river, that Tennessee likewise has recognized this boundary, and that by long acquiescence on the part of both States in this construction, and the exercise of jurisdiction by both in accordance therewith, the question should be treated as settled. The reference is to certain judicial decisions, and two acts of legislation. In *Cessill v. State* (1883), 40 Arkansas, 501, which was a prosecution for unlicensed sale of liquors upon a boat anchored off the Arkansas shore, it was held that the boundary line, as established by the original treaties and since observed in federal legislation, state constitutions, and judicial decisions was the "line along the river bed equidistant from the permanent and defined banks of the ascertained channel on either side." This was followed in subsequent decisions by the same court. *Wolfe v. State* (1912), 104 Arkansas, 140, 143; *Kinnanne v. State* (1913), 106 Arkansas, 286, 290. The first pertinent decision by the Supreme Court of Tennessee is *State v. Muncie Pulp Co.* (1907), 119 Tennessee, 47, in which a similar conclusion was reached, partly upon the ground that it had been adopted by the courts of Arkansas. The legislative action referred to consists of two acts of the General Assembly of the State of Tennessee (Acts 1903, p. 1215, c. 420; Acts 1907, p. 1723, c. 516), each of which authorized the

appointment of a commission to confer and act with a like commission representing the State of Arkansas to locate the line between the States in the old and abandoned channel at the place that we now have under consideration; and the Act of 1907 further provided that if Arkansas should fail to appoint a commission, the Attorney General of Tennessee should be authorized to institute a suit against that State in this court to establish and locate the boundary line. These acts, far from treating the boundary as a line settled and acquiesced in, treat it as a matter requiring to be definitely settled, with the coöperation of representatives of the sister State if practicable, otherwise by appropriate litigation.

The Arkansas decisions had for their object the establishment of a proper rule for the administration of the criminal laws of the State, and were entirely independent of any action taken or proposed by the authorities of the State of Tennessee. They had no particular reference to that part of the river bed that was abandoned as the result of the avulsion of 1876; on the contrary, they dealt with parts of the river where the water still flowed in its ancient channel. The decision of the Supreme Court of Tennessee in *State v. Muncie Pulp Co.*, 119 Tennessee, 47, sustained the claim of the State to a part of the abandoned river bed which, by the rule of the *thalweg*, would be without that State. The combined effect of these decisions and of the legislation referred to, all of which were subsequent to the year 1876, falls far short of that long acquiescence in the practical location of a common boundary, and possession in accordance therewith, which in some of the cases has been treated as an aid in setting the question at rest. *Rhode Island v. Massachusetts*, 4 How. 591, 638, 639; *Indiana v. Kentucky*, 136 U. S. 479, 510, 514, 518; *Virginia v. Tennessee*, 148 U. S. 503, 522; *Louisiana v. Mississippi*, 202 U. S. 1, 53; *Maryland v. West Virginia*, 217 U. S. 1, 41.

Therefore we find it unnecessary to decide whether the supposed agreement between the States respecting the boundary would be valid without the consent of Congress, in view of the third clause of § 10 of Art. 1 of the Constitution of the United States.

The next and perhaps the most important question is as to the effect of the sudden and violent change in the channel of the river that occurred in the year 1876, and which both parties properly treat as a true and typical avulsion. It is settled beyond the possibility of dispute that where running streams are the boundaries between States, the same rule applies as between private proprietors, namely, that when the bed and channel are changed by the natural and gradual processes known as erosion and accretion, the boundary follows the varying course of the stream; while if the stream from any cause, natural or artificial, suddenly leaves its old bed and forms a new one, by the process known as an avulsion, the resulting change of channel works no change of boundary, which remains in the middle of the old channel, although no water may be flowing in it, and irrespective of subsequent changes in the new channel. *New Orleans v. United States*, 10 Pet. 662, 717; *Jefferis v. East Omaha Land Co.*, 134 U. S. 178, 189; *Nebraska v. Iowa*, 143 U. S. 359, 361, 367, 370; *Missouri v. Nebraska*, 196 U. S. 23, 34-36.

There is controversy with respect to the application of the foregoing rule to the particular circumstances of this case. It is insisted in behalf of the State of Tennessee that since the rule of the *thalweg* derives its origin from the equal rights of the respective States in the navigation of the river, the reason for the rule and therefore the rule itself ceases when navigation has been rendered impossible by the abandonment of a portion of the river bed as the result of an avulsion. In support of this contention we are referred to some expressions of Vattel, Almeda, Moore, and other writers; but we deem them inconclu-

sive, and are of the opinion, on the contrary, that the contention runs counter to the settled rule and is inconsistent with the declarations of this court, in *Nebraska v. Iowa*, 143 U. S. 359, 367, that "avulsion would establish a fixed boundary, to wit: the centre of the abandoned channel," or, as it is expressed on page 370, "the boundary was not changed, and it remained as it was prior to the avulsion, the centre line of the old channel," and in *Missouri v. Nebraska*, 196 U. S. 23, 36, that the boundary line "must be taken to be the middle of the channel of the river as it was prior to such avulsion."

It is contended, further, that since the avulsion of 1876 caused the old river bed to dry up, what is called "the doctrine of the submergence and reappearance of land" must be applied, so as to establish the ancient boundary as it existed at the time of the earliest record, in this case the year 1823, with the effect of eliminating any shifting of the river bed that resulted from the erosions and accretions of the half century preceding the avulsion.

This contention is rested chiefly upon a quotation from Sir Matthew Hale, *De Jure Maris*, c. 4: "If a subject hath land adjoining the sea, and the violence of the sea swallow it up, but so that yet there be reasonable marks to continue the notice of it; or though the marks be defaced; yet if by situation and extent of quantity, and bounding upon the firm land, the same can be known, though the sea leave this land again, or it be by art or industry regained, the subject doth not lose his propriety; and accordingly it was held by Cooke and Foster, M. 7 Jac. C. B., though the inundation continue forty years." (1 Hargraves' Law Tracts, 15; Note to *Ex parte Jennings*, 6 Cow. 542.) To the same effect, 2 Roll. Abr. 168, l. 48; 7 Comyns' Dig., tit. Prerogative, D. 61, 62; 5 Bacon's Abr., tit. Prerogative, B. 1. A reference to the context shows that the portion quoted is a statement of one of several exceptions to the general rule that any increase

158.

Opinion of the Court.

of land *per relictionem*, or sudden recession of the sea, belonged of common right to the King as a part of his prerogative. It amounts to no more than saying that where the reliction did but restore that which before had been private property and had been lost through the violence of the sea, the private right should be restored if the land is capable of identification. Such a case was *Mulry v. Norton*, 100 N. Y. 424, the true scope of which decision was pointed out in *In re City of Buffalo*, 206 N. Y. 319, 326, 327. But this doctrine has no proper bearing upon the rule we have stated with reference to boundary streams. Certainly it cannot be regarded as having the effect of carving out an exception to the rule that where the course of the stream changes through the operation of the natural and gradual processes of erosion and accretion, the boundary follows the stream; while if the stream leaves its former bed and establishes a new one as the result of an avulsion, the boundary remains in the middle of the former channel. An avulsion has this effect, whether it results in the drying up of the old channel or not. So long as that channel remains a running stream, the boundary marked by it is still subject to be changed by erosion and accretion; but when the water becomes stagnant, the effect of these processes is at an end; the boundary then becomes fixed in the middle of the channel as we have defined it, and the gradual filling up of the bed that ensues is not to be treated as an accretion to the shores but as an ultimate effect of the avulsion. The emergence of the land, however, may or may not follow, and it ought not in reason to have any controlling effect upon the location of the boundary line in the old channel. To give to it such an effect is, we think, to misapply the rule quoted from Sir Matthew Hale.

How the land that emerges on either side of an interstate boundary stream shall be disposed of as between public and private ownership is a matter to be determined

according to the law of each State, under the familiar doctrine that it is for the States to establish for themselves such rules of property as they deem expedient with respect to the navigable waters within their borders and the riparian lands adjacent to them. *Pollard's Lessee v. Hagan*, 3 How, 212, 230; *Barney v. Keokuk*, 94 U. S. 324, 338; *Hardin v. Jordan*, 140 U. S. 371, 382; *Shively v. Bowlby*, 152 U. S. 1, 40, 58; *St. Anthony Falls Water Power Co. v. Water Commissioners*, 168 U. S. 349, 358; *Scott v. Lattig*, 227 U. S. 229, 242. Thus, Arkansas may limit riparian ownership by the ordinary high-water mark; (*Railway v. Ramsey*, 53 Arkansas, 314, 323; *Wallace v. Driver*, 61 Arkansas, 429, 435, 436;) and Tennessee, while extending riparian ownership upon navigable streams to ordinary low-water mark, and reserving as public the lands constituting the bed below that mark (*Elder v. Burrus*, 25 Tennessee, [6 Humph.] 358, 368; *Martin v. Nance*, 40 Tennessee [3 Head], 649, 650; *Goodwin v. Thompson*, 83 Tennessee [15 Lea], 209), may, in the case of an avulsion followed by a drying up of the old channel of the river, recognize the right of former riparian owners to be restored to that which they have lost through gradual erosions in times preceding the avulsion, as she has done in *State v. Muncie Pulp Co.*, 119 Tennessee, 47. But these dispositions are in each case limited by the interstate boundary, and cannot be permitted to press back the boundary line from where otherwise it should be located.

It is hardly necessary to say that *State v. Muncie Pulp Co.*, *supra*, and *Stockley v. Cissna*, 119 Fed. Rep. 812, relied upon in defendant's answer as judicial determinations of the boundary line, can have no such effect against the State of Arkansas, which was a stranger to the record in both cases.

Upon the whole case we conclude that the questions submitted for our determination are to be answered as follows:

158.

Opinion of the Court.

(1) The true boundary line between the States, aside from the question of the avulsion of 1876, is the middle of the main channel of navigation as it existed at the Treaty of Peace concluded between the United States and Great Britain in 1783, subject to such changes as have occurred since that time through natural and gradual processes.

(2) By the avulsion of 1876 the boundary line between the States was unaffected, and remained in the middle of the former main channel of navigation, as above defined.

(3) The boundary line should now be located according to the middle of that channel as it was at the time the current ceased to flow therein as a result of the avulsion of 1876.

(4) A commission consisting of three competent persons, to be named by the court upon the suggestion of counsel, will be appointed to run, locate, and designate the boundary line between the States at the place in question in accordance with the above principles.

(5) The nature and extent of the erosions and accretions that occurred in the old channel prior to its abandonment by the current as a result of the avulsion of 1876, and the question whether it is practicable now to locate accurately the line of the river as it then ran, will be referred to said commission, subject to a review of its decision by this court if need be.

The parties may submit the form of an interlocutory decree to carry into effect the above conclusions.