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TITLE, POINTS AND LINES IN LAKES AND STREAMS

By Edward S. Bade*

The diversity of the law of the several states with reference to the nature and extent of riparian rights and privileges and the nature and extent of title in the beds of waters, makes it impossible to do more than consider the problems of one state in the confines of an article. Hence, the following discussion is confined almost entirely to the problems met in Minnesota. If, however, allowance is made for existing differences in the applicable law, it is believed that the discussion of Minnesota problems will be at least suggestive if not helpful elsewhere. In Minnesota, the woodsman's axe, the pioneer's plow, much ill-advised drainage, and prolonged and recurring droughts have permanently reduced or destroyed streams and lakes. The receding waters have left behind them boundary line problems to trouble abutting owners, surveyors, and the courts.

The late Mr. Rome G. Brown sought to answer some of these problems in an address delivered before the Minnesota Surveyors' and Engineers' Society. He laid down the following propositions: In the case of private or non-navigable streams, the thread of the stream is the boundary between opposite riparians unless

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1 The term "riparian" will be used herein to signify rights and privileges in lakes as well as streams, though the term "littoral" is more precisely applicable to lakes.

2 As early as 1903, the Minnesota supreme court took judicial notice of the fact that our lakes and streams were receding and even disappearing. Hanson v. Rice, (1903) 88 Minn. 273, 92 N. W. 982. The process has continued since and is still in operation.

3 Published in a pamphlet entitled Points and Lines on Lakes and Streams (1908).
some other boundary has been fixed in the conveyances under which they hold. The lateral boundaries in the stream are formed by extending a line from the intersection of the upland side line boundary with the shore line of the stream at the medium stage of water, at right angles to the thread of the stream. In the case of a round lake, the lateral lines in the bed are run from the intersection of the upland side lines with the meander line, if there be one, and if none, then from the intersection of these side lines with the shore, to the geographical center of the lake. If the lake is irregular, one must combine as best one can the method used in the case of streams. The method used in round lakes is applied at the ends and in the larger bays and coves. The stream method is applied through the body of the lake, a "thread of the stream" being found along the geographical center of the body of the lake. The lateral side lines in the bed are projected into the lake at right angles to this "thread of the stream" as in the case of streams. If the waters in question are private or non-navigable, the lines thus run delimit the riparian owner's land in the stream or lake bed. If the waters are public or navigable, he will follow the receding waters between the lateral lines so run to the thread of the stream or center. No doubt this brief résumé is an oversimplification of Mr. Brown's over-simplification of the problems involved. It is not so simple a matter. We shall now see how far these propositions can be supported.

A discussion of the problems involved necessitates a definition of terms and consideration of their legal significance. Among the more important terms are meander lines, thread of the stream, point or line of navigability, high water mark, and public and private waters.

Meander lines are not per se boundary lines, and were not so intended. They are a series of straight lines, roughly blocking out the sinuosities of the banks of larger bodies of waters and streams, and were run for the purpose of computing the area of lands bounded on such waters. Unrestricted patents and deeds of fractional sections and government lots make the meandered waters a boundary unless the description limits the conveyance to the meander or some other line. In other words, a meander line may be made a boundary line, though it was not run for that purpose, and though it normally does not function as a boundary line. These propositions were laid down in an early Minnesota

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4What is meant by "thread of the stream" will appear post.
case, which went to the United States Supreme Court, where the law on that point was settled.

The term "thread of the stream" means the geographical center of the stream at ordinary or medium stage of the water, disregarding slight and exceptional irregularities in the banks. It is fixed without regard to the main channel of the stream; that is, the greater volume of water may flow and the greater depth of water may lie on one side or other of the thread of the stream. The thread of the stream in private boundaries is to be distinguished from the thalweg which is variously described as the thread or center of the main channel, the middle of the navigable channel, the middle or deepest or most navigable channel, the track taken by boats in their course down the stream, and other variants of the same tenor. The thalweg is commonly used as

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5Railroad Company v. Schurmeier, (1868) 7 Wall. (U.S.) 272, 19 L. Ed. 74. The court said at p. 286: "Meander lines are run in surveying fractional portions of the public lands bordering upon navigable rivers, not as boundaries of the tract, but for the purpose of defining the sinuosities of the banks of the stream, and as the means of ascertaining the quantity of the land in the fraction subject to sale, and which is to be paid for by the purchaser . . . the water course, and not the meander-line, is the boundary."
7The current regulations governing meandering may be found in the Manual of Instructions for the Survey of the Public Lands of the United States, 1930 Ed., secs. 226 et seq. This manual will hereafter be cited as "Manual of Instructions, 1930 Ed."

Every plat and survey and patents or conveyances made with reference thereto must be interpreted with reference to the instructions under which the survey and plat was made. Prior to 1855, surveys were made under local or special instructions. In 1855, the first manual of instructions of general application was issued. The Public Domain (1880) 182. This general manual has been revised several times. See Clark, Surveying and Boundaries (2d ed. 1939) secs. 38, 338. Even after general manuals of instruction had been issued, many surveys were made under special instructions. Little thought seems to have been given to the preservation of these instructions. Apparently no department of the United States government has a complete file of the special instructions and general manuals of instructions. The writer is informed that the Minnesota State Historical Society Library in St. Paul, Minnesota has a copy of the 1855 and 1876 manuals, and also of some special instructions.

9Judicial definitions of "thread of the stream" may be found in the following cases:


Presumably it was in this sense that our court used the term in Pinney v. Luce, (1890) 44 Minn. 367, 46 N. W. 561.

marking international and interstate water boundaries, but, of course, not invariably. Private boundaries will commonly coincide with state and national boundaries, though again, this is not necessarily so. Where private boundaries coincide with state or national boundaries on navigable waters, the thalweg, if that is the national or state boundary, rather than the thread of the stream, will mark the private boundary. Local law as to the ownership of the bed of navigable or public waters may limit the private boundary to high or low water mark.

The division of waters into private and public waters is a pervasive and troublesome factor in the problem of boundaries. An ancient recipe for rabbit stew began with the direction to “First catch your rabbit.” Here we must begin with a similar platitude: Boundary lines do not determine ownership, but title or ownership determines the locus of boundary lines. The latter mark the ambit of title, once title is determined. Hence it becomes necessary to determine the nature and extent of riparian ownership on waters.

State and federal definitions of public or navigable waters may or may not be the same. The Minnesota definition of public waters and the federal definition of navigable waters are not equally comprehensive. In Minnesota the idea underlying the definition of public waters is navigability, but it goes beyond that concept. In the case of State v. Lamprey the concept of navigability is not limited to commercial navigation, but is stated to include boating and sailing for pleasure. It is further stated that the term “navigable” should be given a sufficiently extended meaning to preserve and protect the rights of the people to all


See New Jersey v. Delaware, (1934) 291 U. S. 361, 54 Sup. Ct. 407, 78 L. Ed. 847, where private boundaries evidently extended across the state boundary at some points. In this case also the thalweg did not constitute the entire interstate boundary.


These terms are more descriptive of the classification under Minnesota state law; non-navigable and navigable are more descriptive of the federal classification. Public waters means navigable waters.

beneficial public uses of which the waters are capable. This definition of navigable or public waters is broader than that obtaining in many states. All waters not coming within the definition of public or navigable waters are private or non-navigable.\textsuperscript{14}

If a conveyance bounds land on or by a private stream or lake, according to the common law which is followed in Minnesota, prima facie the grant will include the bed to the thread of the stream or center of the lake, if the grantor owns so far.\textsuperscript{15} The beds of private waters are the subject of absolute ownership in precisely the same way as upland is the subject of absolute ownership.\textsuperscript{16}

But riparian owners on public waters under the Minnesota rule own absolutely only to ordinary high water mark. They have a qualified title between ordinary high water mark and low water mark, subject to certain undefined rights in the public to use that space in connection with public uses of the public waters.\textsuperscript{17} Beyond the low water line, the state of Minnesota is said to own the beds of public lakes and streams "in trust" for the general public.\textsuperscript{18} While Minnesota cases are to the effect that the state has no jus privatum in the bed—nothing it can alienate—its "trust" ownership does give it the power to maintain, improve, and preserve the use of public waters for the general public.\textsuperscript{19} While the riparian owner does not have title to the bed under public waters below low water mark, he does have an exclusive right or privilege to construct and maintain suitable landings, piers, and wharves into the water up to the point of navigability, for his own private use and benefit. It is said that it is obviously immaterial, if the public interests are not prejudiced, whether the submerged lands be covered with wharves of timber or stone, or be reclaimed from the water by filling in with earth so that it

\textsuperscript{14}For the federal definition see post.
\textsuperscript{15}Minnesota cases are collected in 1 Dunnell's Dig. (2d ed., 1927) secs. 1067, 1068. An extensive note on the point will be found in 74 A. L. R. 597.
\textsuperscript{16}Lamprey v. Danz, (1902) 86 Minn. 317, 90 N. W. 578; Shell v. Matteson, (1900) 81 Minn. 38, 83 N. W. 491.
\textsuperscript{17}In re Minnetonka Lake Improvement, (1894) 56 Minn. 513, 58 N. W. 295, 45 Am. St. Rep. 494; State v. Korrer, (1914) 127 Minn. 60, 148 N. W. 617, 1095, L. R. A. 1916C 139.
\textsuperscript{18}The origin of this "trust" theory and its significance and the absurd results to which it has carried our court, are fully discussed in Fraser, Title to the Soil Under Public Waters—a Question of Fact, (1918) 2 Minnesota Law Review 313-339, Fraser. The Trust Theory, (1918) 2 Minnesota Law Review 429-447. Cf. Hallam, Rights in Soil and Mineral Under Water, (1917) 1 Minnesota Law Review 34-47.
\textsuperscript{19}See articles cited in note 18 supra; State v. Korrer, (1914) 127 Minn. 60, 148 N. W. 617, 1095, L. R. A. 1916C 139.
becomes dry land. Subject to the power of the state, the riparian owner may so reclaim the bed. This private right of use and enjoyment is not limited to purposes connected with the use of navigable waters, but may extend to any purpose not inconsistent with the public right. No one but the riparian proprietor has the right or privilege to improve and occupy such premises for private purposes. The limit of this riparian privilege is imposed by the public right and exists up to the point beyond which it would be inconsistent with the public right. Furthermore, it has been decided in Minnesota that this riparian privilege of improvement, reclamation, and occupancy, can be dissociated from the land constituting the original shore and can be transferred apart from the original shore lands. The methods or means of access to the sphere of reclaimer action is said to be immaterial.

But the determination of title in navigable waters is not wholly dependent on Minnesota law. The federal definition of navigable waters also has effect on title in all states created out of the United States public domain. The federal definition of navigability divides navigable waters into navigable waters of the United States and navigable waters of the several states. According to the cases cited, navigable waters of either class are such as are used or capable of being used, in their ordinary condition, as highways of commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water. Capacity of such use by the public for purposes of transportation and commerce affords the true criterion of navigability. The mode by which commerce is or may be conducted is not the true test under the federal rule. The waters need not be capable of use by steam or sailing vessels. On the other hand the fact that "a fishing skiff or gunning canoe" can be made to float at high water is not enough. The fact that there are occasional difficulties such as bars, falls, or rapids, which may be removed or circumvented does not render the stream non-navigable, nor is it necessary that

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\(^{20}\)The text here is substantially a quotation from the second opinion in Hanford v. St. Paul & Duluth R. Co., (1890) 43 Minn. 104, 110, 42 N. W. 596, 44 N. W. 1144, 7 L. R. A. 722.


it be navigable at all seasons or all stages of water or over the entire bed. The controlling consideration under the federal definition is navigability in fact for travel, trade, or commerce. If the waters are thus navigable between different points in a state, they are navigable waters of that state. If thus navigable for travel, trade, or commerce between states, or between states and foreign countries, they are navigable waters of the United States.\textsuperscript{23}

Is the federal or state test of navigability applied in determining the navigability of waters wholly within a state and not coming within the classification of navigable waters of the United States? Because the state and federal tests differ, it will be seen that the answer to this question affects, not only the rights of the public in the waters in question, but also title. An answer may best be sought by beginning at the beginning. In the states formed out of the United States public domain, the United States originally had "the entire dominion and sovereignty, national and municipal, federal and state, over all the territories, so long as they remained in a territorial condition" and had power to make grants of this public domain, including lands under water, navigable or non-navigable, as it saw fit.\textsuperscript{24} Its policy was not to convey away lands under navigable waters and it seldom did so.\textsuperscript{28} States organized in this public domain, upon admission to the Union, became vested with title to the beds of all waters then navigable\textsuperscript{26} if not previously granted by the United States,\textsuperscript{27} subject, however, to the paramount power of the United States over such waters in virtue of its power over interstate and foreign commerce, and perhaps its admiralty jurisdiction.\textsuperscript{28}

\textsuperscript{23}If such waters are connected by carrying places or portages, they may thereby be navigable waters of the United States. Economy Light \& Power Co. v. United States, (1921) 256 U. S. 113, 41 Sup. Ct. 409, 65 L. Ed. 847.


In Minnesota the date as of which the question is to be determined is May 11, 1858.

\textsuperscript{28}Economy Light \& Power Co. v. United States, (1921) 256 U. S. 113, 41 Sup. Ct. 409, 65 L. Ed. 847.
When Minnesota was admitted to the Union (and so of the other states organized in the public domain), the United States retained title to vast areas of lands, abutting on waters navigable and non-navigable, some of which it still retains, and much of which it has since disposed of. Other lands, riparian on navigable and non-navigable waters, had previously been granted to settlers. As to lands retained by the United States, it has at least the same rights and powers as any individual proprietor. As to grants or patents made by the United States to individual grantees, some confusion and misapprehension has resulted from the statement that their construction and effect depended on the local law of the state in which the granted land is situated. Chief source of this confusion is probably the case of *Hardin v. Jordan,* which concerned the effect of patents of land in Illinois abutting on a lake which extended into Indiana. The United States surveys labelled the lake as navigable, but the lower courts had found it to be non-navigable. This finding was not questioned by the United States Supreme Court. The question before the court then was this: Does a patent or grant of lands bounded on a meandered non-navigable lake give the patentee title to the bed to the center of the lake? The court said:

"This question must be decided by some rule of law, and no rule of law can be resorted to for the purpose except the local law of the state of Illinois."

The court said further:

"In our judgment the grants of the government for lands bounded on streams and other waters, without any reservation or restriction of terms, are to be construed as to their effect according to the law of the state in which the lands lie."

And before that in the same opinion, in speaking of the power of the states to regulate and control the shores and beds of navigable waters, the court said:

"but it depends on the law of each state to what waters and to what extent this prerogative of the state over the lands under water shall be exercised."

In 1913, more than thirty years later, the United States Supreme Court voiced the same view in this language:

"But it results from the principles already referred to that what shall be deemed a navigable water within the meaning of the

\[29\] (1891) 140 U. S. 371, 11 Sup. Ct. 808, 35 L. Ed. 428.

\[30\] The prevailing opinion contains as much dictum as decision.

\[31\] The quotations are from pp. 380, 384, and 382 respectively. The italics are added.
local rules of property is for the determination of the several states."

As late as 1922, the United States Supreme Court said:

"Some states have sought to retain title to the beds of streams by recognizing them as navigable when they are not actually so. It seems to be a convenient method of preserving their control. No one can object to it unless it is sought thereby to conclude one whose right to the bed of the river, granted and vesting before statehood, depends for its validity on non-navigability of the stream in fact. In such a case, navigability vel non is not a local question."

It then purported to distinguish Wear v. Kansas, and the Donnelly Case.

These expressions, together with many other general statements that unrestricted grants by the United States are to be construed with reference to local property law, certainly furnished a basis for the view that navigability vel non was a local question, a view advanced in recent cases, now to be considered.

In the Brewer-Elliott Case the state of Oklahoma claimed that by its legislative declaration, and by its own court decisions, the waters in question were navigable; but it was held they did not conclude the United States and that they could have no effect on United States grants made before Oklahoma was admitted to the Union. So in Economy Light & Power Co. v. United States and in Oklahoma v. Texas the United States Supreme Court refused to be bound by a state determination of non-navigability or navigability. If any doubt remained that the United States Supreme Court had changed its views as to the law applicable to the determination of navigability vel non, United States v. Holt State Bank dispelled it. In this case the lower courts had applied the state test of navigability. Of this the Supreme Court said:

"We think they applied a wrong standard. Navigability, when asserted as the basis of a right arising under the Constitution of

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This language may lose some force by the subsequent modification of the opinion, in 228 U. S. 708, 33 Sup. Ct. 1024, 57 L. Ed. 1035.
35Supra, note 32.
37(1921) 255 U. S. 113, 41 Sup. Ct. 409, 65 L. Ed. 847.
the United States, is necessarily a question of federal law to be
determined according to the general rule recognized and applied
in the federal courts. To treat the question as turning on the
varying local rules would give the constitution a diversified
operation where uniformity was intended."

It should be noted that the lands abutting on this lake were
granted by the United States after Minnesota was admitted to
the Union. In United States v. Utah,40 the state had title to the
lands in question if the underlying waters were navigable waters
at the date of its admission to the Union. If non-navigable, title
was in the United States. Of the issue thus before the court, it
said:

"The question of navigability is thus determinative of the
controversy, and that is a federal question. This is so, although
it is undisputed that none of the portions of the rivers under
consideration constitute navigable waters of the United States,
that is, they are not navigable in interstate or foreign commerce,
and the question is whether they are navigable waters of the state
of Utah. State laws cannot affect titles vested in the United
States."41

In United States v. Oregon,42 title to 81,786 acres of land lying
within the meander lines of certain shallow waters was in issue.
The several propositions advanced by the state and the court's dis-
position thereof deserve detailed treatment. First the state claimed
title to these lands on the ground that the waters were navigable
at the date of its admission to the Union. This claim was ad-
vanced as an independent question of fact, and also on the basis
of an act of the legislature declaring all meandered waters navig-
able and vesting the bed of such waters in the state. The court
held the state's title to depend on navigability vel non at the date
of its admission to the union determined as a question of fact
under the federal test of navigability, saying:

"Since the effect upon the title to such lands is the result of
federal action in admitting a state to the Union, the question,
whether the waters within the State under which the lands lie
are navigable or non-navigable, is a federal, not a local one. It
is, therefore, to be determined according to the law and usages
recognized and applied in the federal courts, even though, as
in the present case, the waters are not capable of use for naviga-
tion in interstate or foreign commerce."

The state's second contention on the point of title ran thus:

40(1931) 283 U. S. 64, 51 Sup. Ct. 438, 75 L. Ed. 844.
41The court cites Brewer-Elliot Oil & Gas Co. v. United States and
United States v. Holt State Bank. The reference to "state laws" is to a
legislative declaration of navigability of waters in question.
42(1935) 295 U. S. 1, 55 Sup. Ct. 610, 79 L. Ed. 1267.
After statehood, local law controls the disposition of title to land retained by the United States underlying non-navigable waters within the state, and hence the effect of conveyances of adjacent upland by the United States is determined with reference to state law. By state law, the conveyance of adjacent upland limited the grant to the meander line, and the land within the meander line vested in the state. The substance of the court's answer was: That the disposition of such lands is a matter of the intention of the United States. If it has not otherwise shown its intention, it may be taken to have assented that the grant should be construed and given effect according to the law of the state in which the land lies. That the court had never held that a state could deprive the United States of its title to the beds of non-navigable waters or that a grant of upland to an individual which did not by implication include the adjacent land under such waters nevertheless operated to convey the latter lands to the state. The court continued:

"The laws of the United States alone control the disposition of title to its lands. The states are powerless to place any limitation or restriction on that control [citing cases]. The construction of grants by the United States is a federal not a state question [citing cases], and involves the consideration of state questions only insofar as it may be determined as a matter of federal law that the United States has impliedly adopted and assented to a state rule of construction as applicable to its conveyances [citing cases]. In construing a conveyance by the United States of land within a state, the settled and reasonable rule of construction of the state affords an obvious guide in determining what impliedly passes to the grantee as an incident to land expressly granted. But no such question is presented here, for there is no basis for implying any intention to convey title to the state."

The court characterized the state's claim on this ground as:

"not one of the reasonable construction of grants of the United States, but the attempted forfeiture to the state by legislative fiat of land which, so far as they have not passed to the individual upland proprietors, remain the property of the United States."

It may be noted that while the waters in issue in the *Holt Bank Case* were found to be navigable waters of the United States, in the Utah and Oregon cases the court makes the federal test of navigability applicable to navigable waters of the states and of the United States. In the latter case, Oregon pointedly raised the issue in respect to land-locked lakes wholly within the state. Addressing itself to the question of navigability in fact43 it said:

43Pp. 16 and 17 of its brief to the United States Supreme Court.
"But one of the purposes of the present litigation between the United States and the state of Oregon is that the court may clarify the law as to intrastate or wholly inland lakes which are not susceptible to use for water borne trade or travel over and from such lakes across state lines. The state of Oregon, and other states, is vitally interested in knowing what is the law applicable to the large number of its inland lakes, such as those described by the naturalist Stanley G. Jewett... The state of Oregon, as well as the other states in the Union which have many lakes entirely land locked therein, has spent vast sums in stocking these lakes with fish and making the same available for the use of the public... The state of Oregon, as well as other states, is vitally interested in knowing whether this court will adopt a rule of law which will convert all these lakes now used by the public into private ponds under the doctrine of Bristow v. Cornican, L. R. 3 App. Cas. 141, which case was this court's authority for its declaration in Hardin v. Jordan of the common law ownership by the riparian owner to the center of a non-navigable lake, thereby destroying the public right of fishery therein and the public right of hunting thereon and boating or navigation. If the common law as established in Bristow v. Cornican and approved in Hardin v. Jordan, applies, there are no public or navigable lakes except those that come within the commercial test. Hence we are asking the court to clarify herein what is meant by the following definitions of navigable waters, definitions not repeated in recent cases by this court, some of which are cited by the special master on pages 17 and 18 of his report."

The waters in question were held to be non-navigable, and the state's claim of title to the bed was denied by the court.

Summarizing the later cases, the following propositions would seem to be reasonably well settled:

Until a state was admitted to the Union, the United States owned all the lands within its territorial ambit, and had all proprietary and political powers and dominion over it.

Until the state was admitted to the Union, the United States could dispose of any part of the domain to anyone it saw fit, including lands underlying navigable waters.

When a state was admitted to the Union, all undisposed of lands underlying waters then navigable according to the federal test of navigability passed to the state.

The citations referred to are:
Thereafter the United States could not dispose of such lands as had thus passed to the state. The state could dispose of such lands, subject, however, to the jus publicum, which it held "in
trust" and subject to the paramount power of the United States to
regulate and improve the waters in aid of navigation and inter-
state and foreign commerce.

The United States retained the full proprietary powers over all
parts of the public domain which did not pass to the state
as before stated and which had not been previously disposed of.

The effect of a grant by the United States is a federal ques-
tion.\textsuperscript{46} If unrestricted, it may be construed in accordance with the
local law—but still as a federal question, it being implied that
nothing having been stated to the contrary it was so intended.

Nothing appearing to the contrary, the incidents of riparian
ownership on navigable\textsuperscript{47} water, arising by virtue of United
States grants or patents made after statehood,\textsuperscript{48} depend on local
law. That is to say, it will depend on the law of the state, whether
the riparian owner owns to high water mark, low water mark or to
the thread of the stream. It would seem clear that the state law
can have no effect on grants made before statehood. At that time
there was no state and no state law. The grant must be construed
in accordance with the applicable United States law.\textsuperscript{49}

Since the United States retained the beds of non-navigable
waters (non-navigable according to the federal test applied at
the time the state was admitted), it may dispose of those beds
as it sees fit.\textsuperscript{50} The controlling factor here is the intent of the
grantor. If the beds of non-navigable waters do not pass with

\textsuperscript{46}Borax Consolidated, Ltd. v. Los Angeles, (1935) 296 U. S. 10,
22, 56 Sup. Ct. 23, 80 L. Ed. 9. On this point the United States Supreme
Court seems to have come around to and adopted as the rule of future
decision the dissent in Kean v. Calumet Canal Co., (1903) 190 U. S.
452, 461, 23 Sup. Ct. 651, 47 L. Ed. 1134. This dissenting opinion gives
an excellent exposition of the older authorities in support of the present
views of the United States Supreme Court. Its logic on the point also
seems unanswerable.

\textsuperscript{47}Navigable according to the federal test applied as of the date of
the state's admission to the union.

\textsuperscript{48}Brewer-Elliott Oil & Gas Co. v. United States, (1922) 260 U. S.
77, 43 Sup. Ct. 60, 67 L. Ed. 140.

\textsuperscript{49}The applicable federal law seems to be stated in Hardin v. Jordan,
(1891) 140 U. S. 371, 11 Sup. Ct. 838, 35 L. Ed. 428. Of course in so far
as the state owns the beds of navigable waters it can make the local law
effective, subject only to the federal powers over navigable waters.

\textsuperscript{50}This proposition must follow on constitutional grounds if it were
not otherwise sustainable.

See United States const. art. IV, sec. 3. Minnesota const. art. II,
sec. 3. The outer states formed out of the United States public domain
had similar conditions imposed as a condition of admission to the union.
a grant of the adjacent upland, then they remain in the United States. The state cannot claim to become the owner of the beds of such non-navigable waters by virtue of grants of the abutting upland to individual patentees.\footnote{United States v. Oregon, (1935) 295 U. S. 1, 55 Sup. Ct. 610, 79 L. Ed. 1267, clearly decided that the state did not get the beds of non-navigable waters by virtue of an unrestricted grant of the adjoining upland to individual patentees. Whether the individual patentees got the bed was not decided. What passed would seem to depend on the terms of the grant construed according to federal law.}

In the light of the recent United States Supreme Court decisions heretofore mentioned, it would seem that state courts generally have misapprehended the purport and effect of \textit{Hardin v. Jordan}. First they seem to have assumed that under that decision, the state test of navigability determined what waters were public waters, and consequently vested the state with title to the beds of all waters thus determined to be public.\footnote{Lamprey v. State, (1893) 52 Minn. 181, 192, 53 N. W. 1139, 1140, 38 Am. St. Rep. 541, 18 L. R. A. 670 is a complete expression of this misconception. It runs through the Minnesota cases thenceforth. In fairness to the state courts let it be said that the federal courts, including the federal supreme court, entertained the same view. E.g. see Shore v. Shell Petroleum Corp., (C.C.A. 10th Cir. 1932) 60 F. (2d) 1, and cases therein cited.}

And second, the state courts seem to have regarded \textit{Hardin v. Jordan} as laying down a rule of property instead of a rule of interpretation with reference to federal grants.\footnote{The master's report in United States v. Oregon at p. 39 et seq. points this out and discusses the matter at length. The long and vigorous argument of the state of Oregon in answer to the master's contention leaves no doubt that this point was before the court in that case. See Brief of the state of Oregon, particularly beginning p. 142, citing many cases and adding more citations in appendix F. In fairness to the state courts it should be said that for many years the United States Supreme Court seems to have been of the view that under \textit{Hardin v. Jordan} the states could determine navigability according to the state's view of the matter. See cases collected in Rose's notes under \textit{Hardin v. Jordan}.} The confusion resulting from these not wholly unwarranted misapprehensions of the effect of \textit{Hardin v. Jordan} will be discussed in greater detail later.

In Minnesota the problem of title is rendered more difficult
because our Supreme Court (probably out of sympathy for the victims of subaqueous land entrepreneurs) 63 thought it necessary to declare that the state had no jus privatum in the beds of navigable waters. 64 Since the United States Supreme Court had repeatedly declared that states formed out of the public domain, upon admission to the union became vested with the title of the United States to the beds of all waters then navigable and not previously disposed of, 65 it becomes necessary to see what became of the jus privatum in Minnesota. As before stated, 66 the United States Supreme Court had said that the riparian rights and title of riparian grantees of the United States on navigable waters is to be determined by the local law—that if a state saw fit to renounce the jus privatum in the beds of such waters, it was free to do so. 67 Hence, under that doctrine, it would seem to have been within the power of the state of Minnesota through its properly authorized agency to say that such grants from the United States should convey title to the thread of the stream or center of the body of water, or that it should be limited to high or low water mark. But has it clearly said any of these things? Our supreme court has said that the riparian owner on navigable waters takes absolutely

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64Bradshaw v. Duluth Imperial Mill Co., (1892) 52 Minn. 59, 53 N. W. 1065; State v. Korrer, (1914) 127 Minn. 60, 148 N. W. 617, 1095, L. R. A. 1916C 139. The same view is implicit in the final opinion in Hanford v. St. Paul & Duluth R. Co., (1889) 43 Minn. 110, 44 N. W. 1144, 7 L. R. A. 722. It must be added, however, that the latter opinion can be construed as holding that the jus privatum in the bed is in the riparian proprietor.

The latest judicial statement that Minnesota has no jus privatum in the beds of navigable waters is found, by way of dictum, in In Re Petition of Schaller, (1935) 193 Minn. 604, 259 N. W. 529, 326.


66Notes 29 and 31 supra, and text passim.

only to high water mark;\(^5^8\) with certain exclusive rights and privileges to the point of navigability;\(^6^9\) and that the state holds title to the bed in trust for the public. This latter title, according to the court, however, includes only the jus publicum.\(^6^0\) The jus privatum must be owned by some one. Either it is still in the United States, on the theory that the state never accepted the jus privatum title, or it is in the riparian owners, or in the state notwithstanding the declarations of the court to the contrary.

Is the jus privatum in these lands in the riparian owners? Under the doctrine of \textit{Hardin v. Jordan},\(^6^1\) \textit{Barney v. Keokuk},\(^6^2\) and other cases of like tenor, it may be assumed that the state through its properly authorized agency could vest the jus privatum title in the riparian owners.\(^6^3\) Conceivably it could say that the jus privatum in the beds of navigable waters should vest in patentees of the United States upon issuance of a United States patent of lands riparian to navigable waters. As to lands conveyed by the United States before statehood, the jus privatum in the beds of contiguous navigable waters must be deemed to have passed from the United States to the patentee when the patent issued, or to have been vested in such riparian owners by some sort of grant from the state after it came into being. Has the state made such grants? It is true that in \textit{Hobart v. Hall},\(^6^4\) Judge Morris, after an exhaustive review of the contradictory Minnesota decisions made up to that time, concluded that in Minnesota the jus privatum in the beds of navigable waters was in the riparian owner subject to the jus publicum in the state. That view was affirmed by the circuit court of appeals.\(^6^5\) It is submitted that these federal courts were in error in so finding. The decision is founded upon a construction of decisions of the state Supreme Court, none of which is founded on any alleged grant by the

\(^{5^8}\) In re Minnetonka Lake Improvement, (1894) 56 Minn. 513, 58 N. W. 295, 45 Am. St. Rep. 494; State v. Korrer, (1914) 127 Minn. 60, 148 N. W. 617, 1095, L. R. A. 1916C 139.

\(^{5^9}\) Bradshaw v. Duluth Imperial Mill Co., (1892) 52 Minn. 59, 53 N. W. 1066; Hanford v. St. Paul & Duluth R. R. Co., (1890) 43 Minn. 110, 44 N. W. 1144, 7 L. R. A. 722; Miller v. Mendenhall, (1890) 43 Minn. 95, 44 N. W. 1141, 19 Am. St. Rep. 219, 8 L. R. A., and see Hobart v. Hall, (C.C. Minn. 1909) 174 Fed. 433, where the Minnesota cases up to that time are exhaustively reviewed.

\(^{6^0}\) Bradshaw v. Duluth Imperial Mill Co., (1892) 52 Minn. 59, 53 N. W. 1066.

\(^{6^1}\) (1891) 140 U. S. 371, 11 Sup. Ct. 808, 35 L. Ed. 428.

\(^{6^2}\) (1876) 94 U. S. 324, 24 L. Ed. 224.


\(^{6^4}\) (C.C. Minn. 1909) 174 Fed. 433.

\(^{6^5}\) Hall v. Hobart, (C.C.A. 8th Cir. 1911) 186 Fed. 426.
state of the jus privatum. Furthermore, it is submitted that it is not within the constitutional power of the Minnesota supreme court to make any grants of state lands. That power resides in the legislature.60

That the jus privatum is not in the United States can be shown to a demonstration. By the act authorizing the creation of the state of Minnesota67 the United States offered the new state the same title to these lands as other states had to similar lands. That offer was accepted by the people by the adoption of the state constitution,68 and the grant was completed and confirmed by the act of congress admitting the state of Minnesota to the union on an equal footing with the then existing states.69 This constitutional acceptance of the proffered title would seem to be an incontrovertible fact, and to be beyond the power of our Supreme Court or any other department of state government to gainsay.70 Nevertheless, the view taken by the federal courts in Hobart v. Hall is more sensible than the view later taken by our supreme court in State v. Korrer.71 Before that case was decided our court had said that the state did not have the jus privatum in the beds of navigable waters. It had said that the absolute title of the riparian owner on such waters stopped at high water mark. It had said that the riparian owner had exclusive rights and privileges in the bed opposite his riparian lands which spelled out a jus privatum in the riparian owner, or at the very least gave him an exclusive power to acquire it. It State v. Korrer these contradictory views came in conflict, and the substance of the court's decision in the case seems to be that the jus privatum is owned by no one. That seems to be the last word on the point from our supreme court. It is inconceivable that such a view can prevail. The court must choose.

It may be helped to the right choice by a reading of Angelo v. Railroad Commission,72 decided by the supreme court of Wisconsin in 1928. Prior to that case, the Wisconsin court had fallen

60Minnesota const. art. 4, sec. 32b; art. 8, sec. 2.
6711 Stat. at L. 167.
68Minnesota const. art. 2, sec. 3.
70In Fleckstein v. Lamberton, (1879) 69 Minn. 187, 72 N. W. 65, the court referring to the grant of ten sections of land for the erection of public buildings at the seat of government, says that this grant was "accepted irrevocably" in the manner above stated in the text.
71(1914) 127 Minn. 60, 148 N. W. 617, 1095, L. R. A. 1916C 139.
72(1928) 194 Wis. 543, 217 N. W. 570. The court and anyone else interested will also find a ready made brief on the point in Fraser, Title to the Soil Under Public Waters, (1918) 2 MINNESOTA LAW REVIEW 313, 429.
into the same error as had our court. In the case mentioned the Wisconsin court reviews its prior conflicting decisions and dicta, and declares that the state of Wisconsin owns the jus privatum of the beds of waters it considers and declares navigable.\textsuperscript{73}

As before stated, whether the state shall by some conveyance or declaration vest the jus privatum in riparian owners is a question for the legislature. Soon after \textit{State v. Korrer} was decided, the legislature made a declaration of its views on the point by authorizing certain state officers to make mineral leases of the beds of navigable waters in the state.\textsuperscript{74} It is submitted that the act is valid and is a declaration by the department of government having sole power to dispose of the state's title. It seems to be an unequivocal legislative declaration that the jus privatum in the beds of navigable waters is in the state. That declaration is in accord with the common law.\textsuperscript{75}

Integrating these matters, it will be seen that in the case of private boundaries on waters, it is necessary to find first whether at the date of the admission of Minnesota to the Union, the waters were navigable according to the federal test. If so, the line of absolute ownership will be set at the high-water mark. That will be so whether the original grant of riparian lands to a private owner was made by the state or by the United States and whether made by the United States before or after statehood. If the waters were then non-navigable under state and federal test of public waters, the riparian proprietor owns to the thread of the stream or center of the body.\textsuperscript{76} If the waters were then navigable or public waters according to the state test of navigability but not according to the federal test, confusion results. Clearly if the United States issued an unrestricted grant of lands riparian to such waters to an individual before statehood, the patentee's title would extend to the center of the stream or body of water.\textsuperscript{77}

\textsuperscript{73}The case in question seems wrong in appearing to hold the waters in question to be navigable—certainly under the federal test of navigability.
\textsuperscript{74}Minnesota Laws 1917, ch. 110 and see Minnesota Laws 1937, ch. 118.
\textsuperscript{75}Fraser, \textit{Title to the Soil Under Public Waters}, (1918) 2 MINNESOTA LAW REVIEW 313, 429.
\textsuperscript{76}Shell v. Matteson, (1900) 81 Minn. 38, 83 N. W. 491; Lamprey v. State, (1893) 52 Minn. 181, 193, 53 N. W. 1139, 38 Am. St. Rep. 541, 18 L. R. A. 670. Cases are collected in 1 Dunnell's Dig. (2d ed. 1927) secs. 1067, 1070.
\textsuperscript{77}Brewer-Elliott Oil & Gas Co. v. United States, (1922) 260 U. S. 77, 43 Sup. Ct. 60, 67 L. Ed. 140; United States v. Holt State Bank, (1925) 270 U. S. 49, 46 Sup. Ct. 197, 70 L. Ed. 465; Oklahoma v. Texas, (1921) 258 U. S. 574, 42 Sup. Ct. 406, 66 L. Ed. 771. This must follow from the admitted fact that the United States could, before statehood, convey title to land under navigable waters; Knight v. United States Land
The same result must follow from the issuance of an unrestricted patent of such lands to an individual after statehood. If in the latter case it is claimed that a state rule of law or statute limits the patentee's title to high (or low) water mark because the state test makes the contiguous waters navigable, then that result must be justified on the ground that the United States intended as a matter of fact that its grant should be construed in view of the state rule. That would amount to the implication of an exception of the bed. If such an implication can be and is found, the part of the bed which otherwise would have been granted would then remain in the United States. The state did not get the bed upon admission to the union because at the time of admission, the waters were not navigable according to the federal test. The state cannot acquire title to the bed by a state rule of law or statute by which it purports to say that when the United States patents such lands to an individual, the contiguous bed shall be deemed to belong to the state. Nor can Minnesota control federal grants of such lands.
If the United States granted lands riparian to such waters (navigable by the state test, non-navigable by federal test) to the state, the state would become the owner of the adjacent bed to the center of the stream or body of water. When the state then conveyed these lands to individuals, it could impose its test of navigability in so far as it now owned the bed and by the application of state law limit the title of the state’s grantee to high water mark. The waters overlying the parts of the bed thus owned by the state would be public waters. But the waters overlying the bed opposite riparian lands patented by the United States to individual patentees would be private waters. The rights and privileges of the patentee would be fixed at the time of the patent by federal law and could not be altered by state law. The patentee from the United States could fish, swim, and boat in and over the waters opposite the lands of the state’s grantee, without being guilty of trespass, and so could anyone else who had lawful access to those waters. But the state’s grantee and others would have no right so to use the waters opposite the lands of the patentee of the United States and within his bounds in the bed. They would be trespassers.

lands to themselves see Patton, Titles (1938) 289, n. 169. The state of Iowa has made broad claims in this respect. It is to be noted that Marshall Dental Mfg. Co. v. Iowa, (1913) 226 U. S. 460, 33 Sup. Ct. 168, 57 L. Ed. 300, did not decide that the state of Iowa had title to the bed of the lake. See United States v. Oregon, (1935) 295 U. S. 1, 27, 55 Sup. Ct. 610, 79 L. Ed. 1267; Riparian Rights in Meandered Lake Beds in the State of Iowa, (1931) 53 Land Dec. (U.S.) 429. Cf. In re James J. Spillane, (1935) 55 I. D. (U.S.) 310 in which it is believed that the effect of United States v. Oregon is understated.

Minnesota const. art. 2, sec. 3. Similar restraints were imposed on other states formed out of the public domain.


The dictum in Luscher v. Reynolds, (1935) 153 Or. 625, 56 P. (2d) 1158, decided since United States v. Oregon, is clearly wrong. See the cases cited and discussed in Hardin v. Jordan on the rights of riparian owners on non-navigable waters. On this point, Leonard v. Pearce, (1932) 348 Ill. 518, 181 N. E. 399 is more likely to forecast the history of small inland lakes, than the dictum of the Oregon Case above cited.

Illustrative of the resulting situation is the Reelfoot Lake Case, State ex rel. Cates v. Tennessee Land Co., (1913) 127 Tenn. 575, 158 S. W. 746, Ann. Cas. 1914B 1043. The case is probably unique, involving a lake (two to seven miles wide and fifteen to twenty miles long containing some 30,000 acres) formed by an earthquake after land now submerged had been granted to private owners. Or if an illustration nearer home is desired, reference may be made to the plat in Markusen v. Mortenson, (1908) 105 Minn. 10, 13, 116 N. W. 1021. Assume the lake therein to be of the character here discussed, assume that the odd numbered government lots there shown passed into private ownership directly from the United States and the remainder from the state. The public would be entitled to public uses only over that part of the bed allotted to the owners of the even numbered lots. Intrusions beyond those parts would
Undoubtedly, the state of Minnesota can apply its test of navigability to a considerable area of the beds of lakes non-navigable by federal test but navigable by the state test. The United States granted about one-third of all the land in the state to the state of Minnesota. Over four and a half million acres of this total came under the swamp lands grants. If one may assume that the swamp land grants wholly or partly encircle many small lakes, then it will follow that the state in fact owns or-owned parts or all of the beds of these lakes even though not navigable under the federal test, and in making conveyance of such riparian lands the state could impose its test. But it could not impose its test with reference to lands on any such lakes which the federal government granted directly to settlers.

Thus it will be seen that determining the title to sub-aqueous lands in Minnesota may involve some difficulty. It will be necessary to determine first whether or not the waters in question were navigable according to the federal test at the time the state was admitted to the union. If so, the state has title to the bed and the state law will determine the extent of title and the nature of riparian rights of the abutting land owners. If not, then the history of the title of each abutting land owner must be inquired into. These things must be done before lines can be run.

As to land riparian to navigable waters under the federal or state test, whichever is applicable, another line must be found—the line or point of navigability. It is to this line or point that the riparian owner may reclaim or improve under Minnesota law. He is limited to this line even though we assume that he has the jus privatum to the thread or center of the waters in question.

The locus of the point or line of navigability is as variable as the criteria for its determination. Our court has said that it is incapable of fixed definition, that "its meaning and application


88Orfield, Federal Land Grants (1915) 147-152. The writer states that as of July 31, 1912, the swamp land grants totaled 4,788,712 acres with claims for more pending. As of June 30, 1907, this writer states that 63,356,541 acres had been granted by the federal government to fifteen states under the Swamp-Land Act. Id. 118.

88It may be noted that this conflict and confusion will be eliminated if the United States Supreme Court should expand its definition of navigability so as to be as broad as the state test. To accomplish this result it would not have to go nearly so far as it lately has gone in expanding its definition of interstate commerce.
must vary and depend upon circumstances."87 Factors the court suggests for consideration are the kind of navigation for which the waters are used or adapted, the stages of water and the size and kind of vessels navigating the waters in question.88 The application of this definition is also necessarily limited to such waters as are public waters by the state rule and only so far as the state test of public waters is effective. Within that sphere and so far as navigability is a factor in the state test of public waters, it may be seen that in particular cases the line or point of navigability may be determined by the draft of a duck boat, a canoe, or even a saw log destined for a pulp mill. In others it may be determined by the draft of a loaded Great Lakes freighter. In the case of navigable waters of the United States, the point or line of navigability must be determined in harmony with the federal test of navigability. Furthermore, in navigable waters of the United States, the power of the United States is paramount. Regardless of what the state may have permitted in the way of reclamation or construction in, on, or over the beds of such navigable waters, the United States may compel its removal, or itself remove it without liability to the person who put it there, and without compensation paid for alleged injuries resulting therefrom.89 Not only that, but all reclamation of the beds of such navigable waters or structures on the beds thereof are unlawful except as authorized by the United States.90 Clearly, the owners of docks, wharves, piers, and filled-in lands on the bed of Lake Superior have nothing more than a license revocable by the United States in aid of navigation, and without compensation.91

91Greenleaf Johnson Lumber Co. v. Garrison, (1915) 237 U. S. 251, 35 Sup. Ct. 551, 59 L. Ed. 939; and see cases cited in note 89 supra. With the Greenleaf Johnson Lumber Co. Case, supra, compare the language of Mitchell, J. in Bradshaw v. Duluth Imperial Mill Co., (1892) 52 Minn. 59, 64, 53 N. W. 1066, 1068, in reference to the nature of the riparian right in the submerged lands, the effect of establishing dock lines, and the power of the state over that area. It would seem the views there expressed on these points are erroneous and must be modified at least
In such waters, the line to which improvements may be made must be ascertained by application to the proper United States authorities. The dock lines established in Duluth harbor by the municipality are effective only until the United States chooses to act. They are not binding on the federal authorities. Nor does the establishment of dock or harbor lines by the federal government create vested rights. They may be changed from time to time, and without compensation. Nevertheless, dock or harbor lines established by the United States, or, in the absence of federal action, by the state, mark the point or line of navigability, subject, however, to change.

Still another factor in determining water boundaries is the law of accretion. By the common law of accretion, the owner of lands abutting on public or private waters becomes owner of the addition made to his lands by the gradual deposit of soil, or the dereliction of the boundary waters. Title to the accreted or relicted land is in him against whose water front it forms. Title may be gained or lost by the common law of accretion. If a stream, public or private, shifts over by a process of accretion on one side and erosion on the other, the thread of the stream will shift and if that is the boundary, the boundary shifts with it. A stream may widen by erosion on one side without corresponding accretion on the other, and again the thread of the stream will shift to the new geographical center. In theory a water boundary is a fixed boundary. But this is true only in the sense that the riparian owner retains his water boundary however much or far it may shift, provided only that the change or shift be gradual and not a sudden process. Thus it will be seen that high water mark, low water mark, the thread of the stream or lake, and the point so far as navigation is concerned. See in re Minnetonka Lake Improvement, (1894) 56 Minn. 513, 520, 58 N. W. 295, 296, 45 Am. St. Rep. 494. Philadelphia Co. v. Stimson, (1912) 204 U. S. 364, 27 Sup. Ct. 367, 51 L. Ed. 523; Greenleaf Johnson Lumber Co. v. Garrison, (1915) 237 U. S. 251, 35 Sup. Ct. 551, 59 L. Ed. 939. So far as land locked lakes within the state are concerned, it may be said that the state has been and is inexcusably remiss in the performance of its public trust. In such waters the point or line of navigability seems to be determined by the will of the riparian owner. Dredges destroy lake bottoms and fill in the bed at other points, generally without let or hindrance. Farnham, Waters and Water Rights (1904) 320 et seq. Patton, Titles (1938) sec. 170 et seq. Farnham, Waters and Water Rights (1904) 328. Jefferis v. East Omaha Land Co., (1890) 134 U. S. 178, 10 Sup. Ct. 518, 33 L. Ed. 872; Widdecombe v. Chiles, (1903) 173 Mo. 195, 73 S. W. 444, 61 L. R. A. 309, 96 Am. St. Rep. 507. Arnd v. Harrington, (Iowa, 1939) 287 N. W. 292.
or line of navigability in public waters, can in fact be determined only as of a particular time, and they are always subject to change. Water boundaries in lakes may change by the gradual action of the waters washing away soil or building it up. Lakes may slowly disappear. The law of accretion applies to lakes as well as to streams. In cases where the water level remains constant, but there is erosion of the shore line or the deposit of alluvion against the shore, the law of accretion will apply. It is applicable also to the reliction of lake waters, and no doubt will be applied when actions to determine title and boundaries of relicted lands are brought at frequent intervals while the reliction is in progress. If however, the riparian owners delay such action until all or most of the former bed is dry land, our court has largely ignored the law of accretion. The law of accretion is relied on to give the riparian owners title generally, but not for the purpose of delimiting the title. The delimitation of the bed is said to be an equitable one.

After the nature and extent of the riparian owner's title has been determined in accordance with the principles heretofore reviewed, the surveyor may be called in to run the lines delimiting the title. The private stream that is the boundary between opposite riparians furnishes the simplest case. If the stream is not meandered, the government survey lines will cross the stream in a straight line.

Unmeandered streams are not boundaries of anything so far as the government surveys are concerned. Hence a conveyance of land crossed by such a stream, according to the United States government survey, incorporates the government subdivision lines as shown by the government plats, and where these lines cross the stream, they indicate the boundary in and across the stream.  

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89Farnham, Water and Water Rights (1904) 329.
90Hanson v. Rice, (1903) 88 Minn. 273, 92 N. W. 982. Cases are collected in an annotation, (1938) 112 A. L. R. 1121.
91This is true in most of the cases cited in 1 Dunnell's Dig. (2d ed. 1927) sec. 1070.
92Scheifert v. Briegel, (1903) 90 Minn. 125, 96 N. W. 44, 101 Am. St. Rep. 399. In this case the court purports to follow the law of accretion in delimiting ownership, and notes that it would be easier to apply had there been but a slight recession. If in delimiting ownership of the bed the equitable solution of this case follows the law, it would seem not to be the law of accretion. Some of the division lines appear to be purely arbitrary.
93The dictum in Kirkpatrick v. Yates Ice Co., (1891) 45 Mo. App. 335 supports this view and is believed correct.
If the stream is made a boundary in a private conveyance, then the thread of the stream will be the stream boundary. Descriptions by lines or calls other than the government survey lines will place the points and lines wherever the conveyance places them. In either case, if the locus of the side lines in the stream is left in doubt, one would expect them to run in a straight projection of the upland side line into the unmeandered stream. The reason for thus projecting the upland side lines into and across unmeandered streams is that where the government did not meander waters, the beds were disposed of as so much land.\textsuperscript{104}

In the meandered private stream, the thread of the stream is still the boundary between opposite riparians, but a different rule will apply to the running of the side lines in the stream. The east, west, north, and south government survey lines now do not run across the stream.\textsuperscript{105} In surveying practice they run to the meander line and stop there,\textsuperscript{106} although the thread of the stream is the exterior boundary at this point. The effect of meandering is to make the section or other government subdivision in or through which the waters extend fractional subdivisions. These fractional subdivisions are disposed of as such by the United States government.\textsuperscript{107} Should the upland side line boundaries of the fractional subdivisions be projected into meandered waters in a straight line to form the boundary between the meander line and the thread of the stream? It has been so held in a few cases,\textsuperscript{108} but the weight of authority is to the effect that the angle at which the upland side boundaries approach a water

\textsuperscript{104}It is not to be understood that because waters are not meandered, therefore their presence is ignored in the surveys, field notes, and plats. It simply means that the government surveys have not made the unmeandered waters one boundary of a fractional section. If waters are not meandered, the section is not a fractional section. As to what waters are to be meandered, see Manual of Instructions (1930 Ed.) 216-222.


\textsuperscript{106}Manual of Instructions (1930 Ed.) 182, 216.


\textsuperscript{108}Rector v. United States, (C.C.A. 8th Cir. 1927) 20 F. (2d) 845, 872, in which the decision on the point seems to be off hand and unconsidered. The briefs did not discuss the point. The decision therein is in conflict with the decision in three appeals from the same final decree in United States v. Hayes, (C.C.A. 8th Cir. 1927) 20 F. (2d) 873, which will be discussed post. See also Burton v. Isaacson, (1913) 122 Minn. 483, 142 N. W. 925; and Sherwin v. Bitzer, (1906) 97 Minn. 252, 106 N. W. 1046, where the court seems so to hold without considering the point. These Minnesota cases do not, however, represent the rule in this state. The cases can be explained as judicial aberrations.
boundary is of no consequence in determining the direction of the lateral lines in the bed.\textsuperscript{109} Reason sustains the weight of authority. The rule adopted should be one of the widest possible if not universal application. The rule should be one that fits into the fabric of the law; one that promotes the best use of the bed and gives each riparian owner his due in accordance with the physical situation of his land on the water. Projecting the side lines straight into the bed does none of these things except occasionally and by mere accident.

It is submitted that the correct rule is set down by the special master in \textit{Rector v. United States} and \textit{United States v. Hayes}.\textsuperscript{110} His conclusions of law on this point read thus:

"The riparian rights of the abutting lot owners are to be determined by dropping a perpendicular from where the meander line intersects the boundary line, to the thread of the stream and these perpendiculars mark the boundaries of the riparian rights from the meander line to the thread of the stream, and also include the land between the river and the meander line."

"In dropping the perpendiculars from the intersections of the meander line with the boundary lines of the various lots, the thread of the stream is to be considered as a straight line and the perpendiculars dropped to that straight line."

This report of the special master was adopted by the lower court in its final decree,\textsuperscript{112} and the final decree of the lower court was affirmed in \textit{United States v. Hayes}.\textsuperscript{113}

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\item[\textsuperscript{109}]C. J. 178, sec. 48; 45 C. J. 513, sec. 167; 45 C. J. 521, sec. 184. Patton, Titles (1938) sec. 77.
\item[\textsuperscript{110}]The Rector Case, (C.C.A. 8th Cir. 1927) 20 F. (2d) 845, was but one appeal of four from the final decree in an action brought by the United States against numerous defendants and intervenors. The other three appeals were disposed of in United States v. Hayes, (C.C.A. 8th Cir. 1927) 20 F. (2d) 873.
\item[\textsuperscript{111}]Vol. II, p. 1259 of the Record in United States v. Cimarron River Oil Co., (C.C.A. 8th Cir. 1927) 20 F. (2d) 873. Apparently this record was common to all the appeals. Defendant Rector did not except to this conclusion.
\item[\textsuperscript{112}]Vol. II, p. 1357 of the Record in United States v. Cimarron River Oil Co., (C.C.A. 8th Cir. 1927) 20 F. (2d) 873.
\item[\textsuperscript{113}]Vol. II, p. 1357 of the Record in United States v. Cimarron River Oil Co., (C.C.A. 8th Cir. 1927) 20 F. (2d) 873.
\end{itemize}
\end{footnotesize}
The injustice and conflicts that result from the application of the erroneous rule of straight projection of the upland side lines are easily demonstrated by means of figure 1. Figure 1 represents part of the land in issue in Rector v. United States and in United States v. Hayes. For the purpose of this discussion, the meander line is assumed to coincide with high water mark although in fact it did not. The unbroken lines indicate how the lateral lines in the bed should run into the bed at right angles to the thread of the stream, in accordance with the master's report affirmed in United States v. Hayes. Appellant Rector in Rector v. United States owned government lots 6 and 7 of section 5, and government lots 9 and 10 of section 6. By the rule of straight projection of the upland side lines, the owners of government lots 3 and 7 in section 6 would get a relatively large area of river bed. The owners of lots 2, 5, and 13 of section 6 would never reach the thread of the stream at all, and would by this rule cease to be riparian owners when the waters receded, contrary to the law of accretion and the general rule applicable to riparian rights. Lot 13 of section 6, although it has a short water boundary according to the government survey, would to all intents and purposes be nonriparian according to this rule. Again, the rule of straight projection results in conflicts and may leave parts of the bed, especially of lakes, without an owner. Suppose that lot 6 of section 5 were owned by A and lot 9 of section 6, by B. A could now claim that his western boundary should be

It is doubly unfortunate that the true rule is not stated in the decision in the Hayes Case. There was no further proceeding in the Rector appeal. Certiorari was denied by the U. S. Supreme Court in the other three appeals. (1927) 275 U. S. 552, 555.

114(C.C.A. 8th Cir. 1927) 20 F. (2d) 845.
115(C.C.A. 8th Cir. 1927) 20 F. (2d) 873.
116See Manual of Instructions (1930 Ed.) secs. 196 et seq. for the meaning of government lot.
118The rule of straight projection would "sectionize" the beds of meandered waters, whereas the United States government surveys did not run its lines into or through such beds. 43 U. S. C. A., sec. 752. In the case of a lake, if the side lines of a fractional subdivision are extended into the bed the same conflicts pointed out in the text and more would result. The possibilities may be explored by thus projecting the lines in the figures given in Scheifert v. Briegel, (1903) 90 Minn. 125, 96 N. W. 44, 101 Am. St. Rep. 399 or in Hanson v. Rice, (1903) 88 Minn. 273, 92 N. W. 982, where the straight projection method was disapproved because of the resulting conflicts. Further difficulties are indicated in Blatchford v. Voss, (1928) 197 Wis. 461, 219 N. W. 100 and the cases therein cited. Some rule for limiting the straight projection of upland boundaries seems a necessary accompaniment of the straight projection rule.
projected straight north to the thread of the stream. B could claim that his south boundary should be extended straight east to the thread of the stream. Which shall prevail? Again, if the eastern upland boundary of lot 5 of section 6 were extended it would conflict with the claims of the owner of lot 4, unless the projection of the line were stopped at its intersection with the projection of the east and west line between lots 4 and 5. The conflict between the Rector boundaries in the bed as stated in the Rector Case (indicated by broken lines in Figure 1) with the boundaries of her neighbors as laid down by the master and affirmed in the Hayes Case is apparent at a glance. When it is remembered that the record in these cases showed the bed of this river to be peppered with producing oil and gas wells, the importance of just and nonconflicting boundaries in the bed is apparent.

Another reason for projecting the lateral line in the bed from the intersection of the upland boundary with high water mark at right angles to the stream is that most improvements in the beds of waters are located along those lines. Docks, piers, wharves, dams, and bridges are commonly placed at right angles to the thread of the stream. Thus the rule contended for promotes the best use of the bed and waters. Again this direction of the lines tends to preserve riparian rights when the waters recede and is in harmony with the maxim, once a riparian always a riparian. It accords with the process and the law of accretion and reliction.

A further reason for running the lateral lines at right angles to the thread of the stream is that the rule can and should be applied to private boundaries whether the description is made with reference to the United States government surveys or not. In the construction of conveyances, there is no reason for differentiating between various forms of describing land. If by the terms of a metes and bounds description the grantee is given a water boundary, he is as much a riparian owner and has the same riparian rights as if the land had been described by reference to the United States government surveys. There is the same practical reason for construing all conveyances of lands bounding on meandered waters in harmony with conveyances of such lands according to the United States government surveys as there is in

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It is assumed that the description does not indicate the direction of the lateral lines in the bed. If the description does so, it controls, of course, provided the grantor owns what he purports to convey.
the case of lands bounded by unmeandered waters.\textsuperscript{120} The rule of projecting the upland boundary in a straight line into the bed would produce more conflicts in the case of metes and bounds descriptions than it does in the case of government survey lines, because metes and bounds descriptions may run lines in any direction, whereas government lines run only north and south or east and west. If one rule were applied to government survey lines and a different rule were applied to metes and bounds descriptions, the result would be chaotic. That may be seen by simply superimposing boundaries approaching the stream in Figure 1 by lines not parallel to the government survey lines, and then projecting them into the bed by straight continuations.

Finally, the rule that lateral boundaries in the bed shall be at right angles to the thread of the stream can be and is applied in determining the bounds within which riparian rights may be exercised in navigable waters.\textsuperscript{121} Likewise it can be and is applied through the body of elongated lakes.\textsuperscript{122} Granted that the rule stated may not be applicable in some exceptional cases, it is submitted that it is a rule that can be applied by courts and surveyors with just and equitable results in the great majority of all cases.

Another formula frequently stated and applied by the courts in apportioning accretions and relictions is also applied in running the lateral boundaries in waters. This formula runs thus: Measure the entire water front of the riparian owners concerned as it was at the time the parcels were laid out, whether by original government survey or subsequent plotting, noting also the extent of original frontage of each lot or parcel. Then measure the thread of the stream as it now lies opposite the original frontage.

\textsuperscript{120}Again it may be pointed out that the difference between meandered and unmeandered waters is that in the case of the former, the government surveys make the waters one or more of the boundaries of a fractional subdivision and the north and south, and east and west lines, do not enter or cross the bed, they go simply to the water. In the case of the latter, the surveys do not make the unmeandered waters the boundary of any subdivision, and the survey lines run through and across these waters.\textsuperscript{121}Clark v. Campau, (1869) 19 Mich. 325; A. M. Campau Realty Co. v. City of Detroit, (1910) 162 Mich. 243, 127 N. W. 365, 139 Am. St. Rep. 555; Menasha Wooden-Ware Co. v. Lawson, (1888) 70 Wis. 600, 36 N. W. 412.

In all cases the objective sought by the courts is a fair division. The rules and methods for reaching it are not uniform, as may be seen by examining the cases cited to the point in 9 C. J. 178, notes 38 and 39; and see Patton, Titles (1938) secs. 77, 172.\textsuperscript{122}Rooney v. Stearns County, (1915) 130 Minn. 176, 153 N. W. 858. See also Hardin v. Jordan, (1891) 140 U. S. 371, 11 Sup. Ct. 808, 35 L. Ed. 428.
first measured. Then divide the thread of the stream line into as
many equal parts as there were lineal feet of original frontage.
Then give each riparian owner as many parts on the thread of the
stream line as he had lineal feet of original frontage, and com-
plete the delimitation by drawing straight lines from the termini
of the upland boundaries as they were on the original frontage
to the points found as above on the thread of the stream. In
brief, divide the new frontage in proportion to the old. In many
cases, perhaps most cases, the results will be the same as by the
method just given. The latter formula, however, would seem to
be slipshod. It leaves indefinite the points between which the
thread of the stream is to be measured. Presumably they are
found at points on the thread of the stream from which a line run
at right angles to the thread of the stream will strike the termini
of the outside upland side lines at the original water front. If
those two points are thus found, why should not the other inter-
mediate points be found by the same method? Of course there
is the impractical alternative of measuring the whole river front
or sea coast.

The question remains when, if ever, should the shore termini
of the lateral lines in the bed be at the intersection of the upland
side lines with the meander line? Since meander lines are not
normally boundary lines, and since in Minnesota absolute own-
ership extends to high water mark on public waters and to the
thread of the stream or center in private waters, taking a meander
corner as the starting point is merely a matter of convenience.
The regulations for the United States government surveys direct
the surveyors to run the meander line as nearly as conveniently
may be at high water mark. In practice they frequently are
run far inland. Granted that these deviations from high water
mark exist, nevertheless, in the absence of evidence showing the
location of high water mark, the meander line may be presumed
to coincide with high water mark. As time goes on, it will


124Manual of Instructions (1930 Ed.) 216 et seq.
125See Everson v. City of Waseca, (1890) 44 Minn. 247, 46 N. W. 405; Hanson v. Rice, (1903) 88 Minn. 273, 92 N. W. 982; Gardner v. Green, (1937) 67 N. D. 268, 271 N. W. 775; Olson v. Thorndike, (1899) 76 Minn. 399, 79 N. W. 399.
126In the Matter of County Ditch No. 67, Murray County, (1922) 151 Minn. 292, 186 N. W. 711; Gardner v. Green, (1937) 67 N. D. 268, 271 N. W. 775.
be easier to find the government meander line than original high
water mark as it existed at the time of the government survey. The
Wherever there is a marked departure of the meander line from
high water mark, the intersection of the upland boundary extend-
ed with high water mark ought to be the point of beginning of the
lateral boundaries in the bed. The cases last cited illustrate
graphically the considerable difference that may result between
taking the meander line and taking high water mark as the point
of beginning of the lateral boundary line in the bed. In particular
explanation, the rules and methods used for running
cases, taking the meander corner as the point of beginning
does not deprive a riparian owner of fast land.

As has been indicated, the rules and methods used for running
the lateral lines in the beds of private streams are equally applic-
able to navigable streams. Under the Minnesota rule the limit
of absolute riparian ownership on navigable waters is high water
mark, with a qualified ownership to low water mark. The point or
line of navigability will mark the outside limit of the privilege
of private use and occupation. In navigable waters, the lateral
lines in the bed will mark the bounds within which, subject to
state or federal regulation and permission, the riparian owner
may build wharves and piers, or fill in the bed. Likewise these
lateral lines will determine whether an accretion or reliction be-
ongs to one riparian owner or to his neighbor.

Lake beds furnish more troublesome problems than stream
beds, as will be seen. As in the case of unmeandered streams, so
unmeandered marshes, swamps, ponds, and lakes give the least
trouble if courts will only bear in mind the difference in result
between meandered and unmeandered waters. The difference
should be obvious, but the errors and troubles courts have fallen

127 The field notes may indicate the extent of the deviation of the
meander line from high water mark. Manual of Instructions (1930 Ed.)
p. 219. In that case, of course, high water mark may be determined
from the field notes.

128 Menasha Wooden-Ware Co. v. Lawson, (1888) 70 Wis. 600, 36
N. W. 412; Clark v. Campau, (1869) 19 Mich. 325; City of Peoria v.
Central National Bank, (1906) 224 Ill. 43, 79 N. E. 296, 12 L. R. A.
(N.S.) 687; Gardner v. Green, (1937) 67 N. D. 268, 271 N. W. 775. The
suggestion in this case that the projection of the upland boundary should
stop at the section line is rejected in Minnesota, Hanson v. Rice, (1903)
88 Minn. 273, 92 N. W. 982, and is not widely followed. Where by
the state rule absolute title extends to low water mark, that mark should
be the point of beginning of the lateral lines in the bed.

129 That would seem to be true of the owner of lot 1 sec. 20 and the
owner of lot 11 sec. 18 in Scheifert v. Briegel, (1903) 90 Minn. 125,
96 N. W. 44, 101 Am. St. Rep. 399. The court's solution at these points
seems arbitrary.
into indicate a want of understanding which justifies the use of some space in expounding the obvious. The effect of meandering has been stated. It makes sections and subdivisions thereof fractional. The meandered waters are the water boundaries of these fractional subdivisions according to the government surveys, field notes, and plats. When wet or water-covered lands are not meandered, it means that the government survey lines have been run through and across such waters. The government survey lines do not run to or stop at a meander line or run to or stop at the water's edge. The field notes and plats do not show fractional subdivisions. They show regular government survey subdivisions. The area covered by such unmeandered waters is not excluded from the amount paid for when the United States patents lands embracing unmeandered waters. The land embraced within the survey lines as shown on the official plats is all conveyed as so much land. The plats show to a demonstration that the waters are not a boundary, and that land within straight east-and-west and north-and-south survey lines has been conveyed as such. The boundary lines are straight through and across such waters.

It should be borne in mind that "the government survey creates, not merely identifies, sections of land." The general rule is that the government plats and field notes are conclusive as to the location of boundaries. When the United States government, or others, convey such lands with reference to the United States surveys and plats, the plat is a part of the description and it binds all parties, including the government, as to the boundaries of the land thus described to the same extent as if the descriptive data of the plat were incorporated at length in the description. A description with reference to the United States surveys and plats is but a description by recorded metes and bounds. Obviously, then, the lateral lines into or through such unmeandered waters must be straight continuations of the government subdivision lines. The better cases so hold. Certain decisions of the


181 Cases are cited in R Dunnell's Digest (2d ed. 1927) secs. 1077, 1079; 43 U. S. C. A., secs. 751, 752, and see the many cases cited in the annotations thereeto.

182 Lamprey v. Danz, (1902) 86 Minn. 317, 90 N. W. 578; City of Albert Lea v. Nielsen, (1900) 80 Minn. 101, 82 N. W. 1104, 81 Am. St.
Wisconsin supreme court seem contra.\textsuperscript{135} The Wisconsin decisions, however, rest on the premise that the waters in question were navigable waters, and that therefore the state has title to the beds. The court makes no point of the date of the patent from the United States, whether it was issued before or after statehood. If the waters in question were in fact navigable according to the federal test at the date of statehood and the United States patents were issued after statehood, then, to be sure, the state of Wisconsin had title to the beds and the United States could not convey them to anyone thereafter. It is submitted, however, that on the facts stated in the cases cited, it would be difficult, if not impossible, to sustain a finding of navigability according to the federal test, and that if the land owners concerned litigate that issue in the federal courts, the state of Wisconsin will have to revise its views on this issue.

It is, of course, possible that by reason of palpable mistake or fraudulent surveys, waters navigable by the federal test may not be meandered. Surveys and plats may show land where such waters exist.\textsuperscript{136} Thus in a case\textsuperscript{137} involving a fraudulent survey of lands lying in Minnesota,\textsuperscript{138} the United States Supreme Court quotes from the lower court's findings of fact as follows:

"Southerly and westerly of said Cedar Island Lake [the lake in issue in the case] are five other deep, navigable, and permanent lakes in the same township, none of which are shown by the field notes of Howe's survey or upon said government official plat of

\begin{quote}
\end{quote}

The rule of the text is also supported in (1926) Minnesota Attorney General Report, opinion No. 187 in which the owner of three forties partly in an unmeandered lake which extended beyond his lands was advised "that if the lake is not meandered he may lawfully fence on the lines of the land which he owns."

\textsuperscript{135}\textsuperscript{Munro v. Meilke, (1929) 200 Wis. 107, 227 N. W. 394. (Title to islands only in issue. The court seems to assume the bed belonged to the state); Baker v. Voss, (1935) 217 Wis. 415, 259 N. W. 413; Angelo v. Railroad Commission, (1928) 194 Wis. 543, 217 N. W. 570.}

\textsuperscript{136}\textsuperscript{This would be the converse of such cases as Jeems Bayou Fishing & Hunting Club v. United States, (1922) 200 U. S. 561, 48 Sup. Ct. 205, 67 L. Ed. 402; and Security Land & Exploration Co. v. Burns, (1904) 193 U. S. 167, 24 Sup. Ct. 425, 48 L. Ed. 662, and cases therein cited.}

\textsuperscript{137}\textsuperscript{Kirwan v. Murphy, (1903) 189 U. S. 35, 23 Sup. Ct. 599, 47 L. Ed. 698.}

\textsuperscript{138}\textsuperscript{The same survey was in issue in Security Land & Exploration Co. v. Burns, (1904) 193 U. S. 167, 24 Sup. Ct. 425, 48 L. Ed. 662.}

\textsuperscript{137}
said township, and all of which have, since the making of said official plat, been sold and patented by the government as land according to said plat."

Since the fraudulent survey was made after statehood, the patents in question with reference to the survey and plats must have been made after statehood. If the statement of the navigability of the unnoted and unplatted lakes means that they were navigable according to the federal test of navigability, the federal government could no longer convey the beds of these lakes. They would belong to the state. Had the patents been made before statehood, other questions would arise.

The fact that unmeandered waters are not a boundary of anything so far as the United States surveys and plats are concerned does not prevent such waters from being made a boundary in private conveyances. If they are, they become a monument, and an unqualified call for such waters as a monument would, as in all cases of a call for a monument, mean the center thereof. If a boundary is specified as running along the line of such waters, it will mean the thread of the stream or center line of such waters. Such calls should not affect the direction of the side lines into such waters, however. Unless otherwise stated in the description, the upland side line should run in a straight line into the unmeandered waters for the purely practical reason of maintaining consistency with the government surveys with reference to which most conveyances are made. There is, of course, nothing to prevent a land owner from limiting his grant as he will. He may convey all, or none, or any part of the bed underlying waters by boundaries of his own choosing, so long as he owns what he purports to convey.

There remain for consideration meandered lakes. Most of the following discussion concerning points and lines in such lakes applies equally whether the lakes are navigable or non-navigable. In the case of navigable lakes the lines will delimit the areas within which the riparian owners can exercise exclusive riparian rights and privileges. In the case of non-navigable lakes, the lines will mark the ambit of absolute ownership of the several riparian owners. In the case of navigable lakes, as in streams, we must find a point or line of navigability, marking the exterior limit of

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1Bauman v. Barendregt, (1930) 251 Mich. 70, 231 N. W. 70.
2Den v. Wright, (C.C. N.Y. 1813) 1 Peters C. C. 64 is an old but interesting case on this obvious point. Also Oklahoma v. Texas (1922) 258 U. S. 574, 594, 42 Sup. Ct. 406, 66 L. Ed. 771.
exclusive riparian rights and privileges. In the case of non-navigable lakes such a point or line does not exist.

The two matters of greatest importance here are the point of beginning of the lateral lines into the bed, and the direction or angle of the lateral lines. Here as in the case of meandered streams, the shore point of beginning of the lateral line should be the intersection of the upland side line with high water mark. Usually that will mean high water mark as it existed at the time of the United States government survey. In the absence of evidence as to its locus, the meander line may be presumed to coincide with high water mark. In most of the Minnesota cases, the shore point of beginning has been the intersection of the upland side line with the meander line. Our court has commented on the fact that meander lines sometimes are run at a considerable distance from the high water mark. It admits that generally the meander line is not a boundary line and that the water is. Hence, as has been pointed out, the upland side line runs straight to the water or high water mark. Even if it is assumed that prima facie the meander line coincides with high water mark, evidence is admissible to show it does not.

If a shown departure of the meander line from high water mark is ignored and the lateral line into the lake bed begins its deflection inland from high water mark, the result is to deprive the riparian owner of fast land which he owns absolutely. What has heretofore been said on this point applies to all navigable waters. It will not be repeated here.

Shell v. Matteson, (1900) 81 Minn. 38, 83 N. W. 491 (from the shore or meander line. As to the meaning of “shore,” see In re Petition of Schaller, (1935) 193 Minn. 604, 259 N. W. 529, 826. Here probably intended as synonymous with meander line or high water mark); Hanson v. Rice, (1903) 88 Minn. 273, 92 N. W. 982 (meander line); Schelfert v. Briegel, (1903) 50 Minn. 125, 96 N. W. 44, 101 Am. St. Rep. 399 (marginal line with arbitrary and unjustified exceptions specified as to some tracts); Markusen v. Mortenson, (1908) 105 Minn. 10, 116 N. W. 1021 (meander line); Burton v. Isaacson, (1913) 122 Minn. 483, 142 N. W. 925 (“From the established corners,” meaning no doubt meander corners. In this case the court erroneously directed the upland boundaries to be extended in a straight line. The point of beginning would then be of no consequence, and the angle of approach of the upland boundary would be decisive); Rooney v. County of Stearns, (1915) 130 Minn. 176, 153 N. W. 858 (“ordinary high water mark—that is the meander line”); Everson v. Waseca, (1890) 44 Minn. 247, 46 N. W. 405; Hanson v. Rice, (1903) 88 Minn. 273, 92 N. W. 982; Olson v. Thorndike, (1899) 76 Minn. 399, 79 N. W. 399.

A multitude of cases are to the same effect.


141 See note 128 supra and text passim.
arbitrary points of beginning taken by the court in *Schiefert v. Briegel*,\(^{147}\) to accomplish a supposed equity between neighboring riparian owners is quite inexcusable. Each acquired his land according to boundaries marked on the government survey plats and with reference to its situation on the water. Those facts should be controlling. The court's action was as arbitrary as would be a decree that set a section line over because one section as surveyed contained better land than did its neighbor. It is submitted that while the Minnesota cases sustain placing the point of beginning at the intersection of the upland boundary with the meander line, they do not preclude placing it at the intersection of the upland boundary with high water mark as it existed at the time of the United States government survey. That is where it should be.

The direction and termini of the lateral lines in the bed depend on the form of the meandered lake. If the lake is substantially round, the geographical center of the lake will be the common terminus of the lateral boundaries of all the riparian owners on the lake.\(^{148}\) This is sometimes graphically described as the pie-cutting method of apportioning the bed. The center should be found with reference to original high water mark, or the meander line, whichever is taken as marking the shore point of beginning of the laterals into the bed.

If the lake is long or irregular, the direction and termini of the lateral lines in the bed are determined by applying the stream formula through the body of the lake and the round lake formula in the arcs at the ends and in the larger bays and coves. Thus the lateral lines at the ends will converge to foci that are the geographical center of the arcs at the ends. Larger bays and coves may be treated as if they were independent small lakes.\(^{149}\) Through the body of the lake, a thread of the stream is found at the geographical center line of the lake. The laterals in this part of the bed are then run to the thread of the stream from the intersection of the upland boundary with the meander line, or better, high water mark, and at right angles to the thread of the

\(^{147}\) (1903) 90 Minn. 125, 96 N. W. 44, 101 Am. St. Rep. 399.

\(^{148}\) Markuson v. Mortenson, (1908) 105 Minn. 10, 116 N. W. 1021; Scheifert v. Briegel, (1903) 90 Minn. 125, 96 N. W. 44, 101 Am. St. Rep. 399 (the above two cases contain good plats illustrating the method); Hanson v. Rice, (1903) 88 Minn. 273, 92 N. W. 982; Shell v. Matteson, (1900) 81 Minn. 38, 83 N. W. 491.

\(^{149}\) This is illustrated in *Schiefert v. Briegel*, (1903) 90 Minn. 125, 96 N. W. 44, 101 Am. St. Rep. 399, although here the bay or cove was part of a substantially round lake.
If the lake is non-navigable, each riparian owner will own that part of the bed lying between his upland and the thread of the stream or center of the lake and between the lateral lines thus run in the bed. If the lake is navigable, each riparian owner may exercise his exclusive riparian privileges between the lateral lines thus run and the point or line of navigability. If a navigable lake gradually and permanently dries up, each riparian owner will severally own the bed divided as stated exactly as if the lake had been a private lake from the beginning, subject to such changes as the law of accretion may produce. The lateral lines will determine whether accretion or reliction belong to one riparian owner or another.

It now becomes necessary to muddy the waters by further consideration of the law of accretion. The law of accretion applies to meandered waters, navigable and non-navigable. The absolute ownership of the beds of non-navigable waters implies fixed boundaries. But by reason of the law of accretion, the points and lines heretofore indicated are fixed in theory only in the same sense as the thread of a stream (being a boundary) is a fixed boundary. In fact such water boundaries change under the force of the law of accretion.

How the law of accretion operates to shift the points and lines in water beds is easily demonstrated by reverting again to the

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151Temporary recession of the waters, even though a lake dries up entirely for a time, does not destroy the lake, or give title to its bed by the law of accretion and reliction, at least if it is restored by natural causes. Troska v. Brecht, (1918) 140 Minn. 233, 167 N. W. 1042, in which the court seems to regard the term "meandered lake" as synonymous with "navigable lake." See also Hildebrand v. Knapp, (1937) 65 S. D. 414, 274 N. W. 821, 112 A. L. R. 1104.

152Our court has indicated that a navigable lake (according to the state rule at least) may cease to be a public and become a private lake by reason of the permanent lowering of the waters. Shell v. Matte son, (1900) 81 Minn. 38, 83 N. W. 491.

153E. g., see Webber v. Axtell, (1905) 94 Minn. 375, 102 N. W. 915, 6 L. R. A. (N.S.) 194; Warren v. Chambers, (1867) 25 Ark. 120, 4 Am. Rep. 25. The rule is not the same in all states. See Patton, Titles (1938) sec. 170.

round, meandered, non-navigable lake. Beginning with this lake in its original state, the lines in the bed run as before stated from the intersection of the upland boundary lines with high water mark (or the meander line in the absence of other evidence of high water mark) to the geographical center of the lake. If the bed of the lake is a perfect inverted cone, the recession of the waters will be uniform at all points, and the last of the water will disappear at the original geographical center of the lake. In such a case, the points and lines will remain as originally run. But such a lake would probably be unique. If the bed of the lake is a steep declivity on one side and has a gentle slope on the other, the horizontal recession of the waters will be slight on the steep slope and much greater on the gentle slope. The center of the lake will shift accordingly. The riparian owners on the side having a gentle slope may find their relicted lands crossing the original geographical center of the lake while water still intervenes between them and the riparian owners on the other side. The fundamental reason underlying the law of accretion is that a riparian owner shall maintain his right of access to the water over his own land, not by way of easement over the land of another. According to this reason, the ultimate boundary between opposite riparians is where their accretions or relictions meet—where the last of the intervening water disappears.

This being so, it will be seen that as the center of our round lake shifts, the lateral lines in the bed must shift with it. This is easily illustrated by drawing a circle with lines from the circumference to the center, and then drawing lines from the same points on the circumference to a point off center in the circle. Similar shifts of the foci and the thread of the stream or lake result from the uneven horizontal recession of the waters in long and irregular lakes. The lateral lines in the body of the lake may or may not remain the same, but the foci at the ends and in bays, and the lines converging there, and the thread of the lake are almost certain to shift as the waters recede. If the lines in the bed are determined from time to time while the lake is drying up, the laterals in the bed are not likely to be straight lines, but will deflect in keeping with the contour of the bed. The ultimate exterior boundary in the bed will be the last water line. In other words, the points and

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lines in the beds of waters, as found at a particular time, are subject to such change as the law of accretion from time to time may effect.\textsuperscript{167}

The Minnesota supreme court has not paid much attention to this aspect of the law of accretion. It has not required proof of the configuration of the bed to determine how it was laid bare. Sub silentio it seems to assume that lake beds have a uniform slope from all points to the original geographical center—at least in the absence of evidence to the contrary. If this is supposed to be a presumption, it would seem to be contrary to well known facts. Possible explanations of this slight regard for the law of accretion in the Minnesota decisions are: First, the question of apportionment of lake beds has commonly arisen after the bed had been wholly or nearly all laid bare. If actions had been brought from time to time while the waters were going down, the boundaries fixed might have been more in accord with the contours of the bed.\textsuperscript{168} When the matter first comes up after the waters are all gone, the beds look like a windiall or manna from heaven and it seems equitable and is certainly easier to divide it up in proportion to original frontage. Second, this solution is invited by the circumstance that the parties seem not to have adduced any evidence of contour lines in the bed. The court has not said that such evidence would be disregarded if it were produced. It has suggested that such evidence might be material.\textsuperscript{159} If the parties who would be benefited by such evidence and relief based on it do not produce the evidence and ask for the relief, the court has not seen fit to insist that they must. Third, the court has dubbed its solution as "equitable."\textsuperscript{166} Subconsciously, this adjective has

\textsuperscript{167}Even interstate water boundaries are subject to change by the law of accretion. E. g., see Nebraska v. Iowa, (1892) 143 U. S. 359, 12 Sup. Ct. 396, 36 L. Ed. 186.

\textsuperscript{168}Hanson v. Rice, (1903) 88 Minn. 273, 92 N. W. 982; Webber v. Axtell, (1905) 94 Minn. 375, 102 N. W. 915, 6 L. R. A. (N.S.) 194; Scheifert v. Briegel, (1903) 90 Minn. 125, 96 N. W. 44, 101 Am. St. Rep. 399; and Rooney v. County of Stearns, (1915) 130 Minn. 176, 153 N. W. 888, are cases in which the court mentions the possible effect of the law of accretion on boundary lines.

\textsuperscript{159}Scheifert v. Briegel, (1903) 90 Minn. 125, 96 N. W. 44, 101 Am. St. Rep. 399 and see the other cases cited in note 124 supra.

\textsuperscript{166}See Scheifert v. Briegel, (1903) 90 Minn. 125, 96 N. W. 44, 101 Am. St. Rep. 399. Equitable considerations may well control the choice of one formula for division as against another, and the location of foci in long or irregular lakes. It cannot justify what was done in the case above cited. It cannot justify treating fast land between the meander line and high water mark—land never part of the lake bed—as subject to the law of accretion and reliction as was done in the case above cited. It is true that riparian owners on meandered waters own the land lying between
probably operated as an effective epithetical argument for a division of the bed between the riparian owners in proportion to the spread of the handhold each seemed to have on it. However, equity should follow the law. The law does not give effect to all the possible serpentine vagaries of accretion and reliction. Practical considerations require that the boundary lines leave the bounded lands usable so far as possible. One must assume that each riparian owner acquired his riparian lands with reference to its physical situation on the waters. If the physical situation of A's land on a lake gives him a legal advantage in the bed of the abutting lake over other riparian owners in view of their physical situation, it is not just to deprive him of it under the guise of equitable apportionment. For example, according to the law of accretion, a riparian owner is entitled to follow the water as it recedes, over his own land, to the point or line where it finally disappears. If the land to that point or line is his by the law of accretion, there is no warrant in law or equity for fixing his boundary line anywhere except where the relictions of opposite and neighboring riparians finally met. In fixing points and lines in meandered lakes, it seems one must begin with the lake in its original condition, that is, as of the time of the original government survey, and fix the points and lines according to the formulae heretofore discussed. These lines will be fixed lines, in theory delimiting the absolute ownership in the bed of non-navigable lakes and delimiting the area within which exclusive riparian privileges may be exercised in navigable lakes. These points and lines, however, are subject to such changes as the law of accretion through the reliction of the waters will ultimately produce.

the meander line and the water "precisely the same as accretions and relictions," as stated in Hanson v. Rice, (1903) 88 Minn. 273, 92 N. W. 982. That statement can, however, easily be misunderstood. In the case of navigable lakes, the abutting riparian owner acquired title in the bed by the law of accretion, not so of the abutting fast land. In the case of non-navigable lakes, the riparian owners have title to the bed by the terms or construction of the conveyance, but the boundaries in the bed are again in part controlled by the law of accretion which is not true of the fast land.

Instances where the courts have refused to follow its vagaries may be found in Waring v. Stinchcomb, (1922) 141 Md. 569, 119 Atl. 336, 32 A. L. R. 453; Crandall v. Allen, (1893) 118 Mo. 403, 24 S. W. 172, 22 L. R. A. 591; Widdicombe v. Rosemiller, (C.C. Mo. 1902) 118 Fed. 295.


Since the physical situation at the shore point of the lateral line between coterminous owners will be the same, the greatest change will be in the body of the lake. The exterior point or line in the lake will be affected most.
When the question of boundaries first comes up after the lake has wholly disappeared, the contour lines of the bed should not be disregarded but should be given effect.  

— Clark, Surveying and Boundaries, (2d ed. 1939) ch. 15, contains a valuable discussion of many cases from divers jurisdictions concerning points and lines in lakes, streams, and tidewaters. The various formulae applied are discussed and illustrated. Clearly in many cases, the courts were making ad hoc decisions while blindly searching for a just and workable rule of general application. Consultation with a group of expert surveyors might assist the courts in formulating such a rule, an end as desirable with reference to riparian land titles as certain rules of law are desirable with reference to all titles.