BOUNDARY PROBLEMS ASSOCIATED WITH THE CONTINENTAL SHELF

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Note : This paper on « Boundary Problems Associated with the Continental Shelf » was presented a short time ago by Mr. Shalowitz before the *Congress on Surveying and Mapping*. Mr. Shalowitz is a Special Assistant to the Director of the U.S. Coast and Geodetic Survey and has been actively associated with the « tidelands » cases and the later submerged lands legislation in a legal-technical capacity since 1947. He holds a Master of Laws degree. While the paper is somewhat different from the type of papers usually published in the Review, it is believed that it will generate considerable interest because of its timeliness and because it deals with an area that is becoming increasingly important to maritime countries, from a technical point of view.

This article does not draw conclusions to the existing controversial questions and further does not include any specific demand for a change in legal territorial waters or others. For that reason, the Directing Committee feels that its publication in the « International Hydrographic Review » does not involve the Bureau in the problems of international policy.

INTRODUCTION

This paper might properly being with the question « Where are the seaward boundaries of the United States ? ». In 1952, a congressional committee investigating the problem reported as follows :

> « *Although our country is now 163 years old, no one can say exactly where our seaward boundaries are located. Along much of our coast line, it is impossible to say, even within a few miles, where our territory ends and the high seas begin.* » (1)

This is a rather startling and surprising statement. The committee, however, did not come up with an answer.

In 1953, Congress enacted the Submerged Lands Act establishing titles in the States to the submerged lands within their historic boundaries. Also in 1953, the International Law Commission of the United Nations promulgated draft articles on the Regime of the High Seas, and in 1954 it promulgated provisional articles on the Regime of the Territorial Sea.

These developments in international and domestic law, particularly those aspects which deal with seaward boundaries, are of interest to the surveying and

(1) HOUSE REP. No. 2515, 82d Cong., 2d Sess. 4 (1952).

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mapping profession, because in the final analysis it will be the surveyor and the mapmaker who will be called upon to delimit and demarcate such boundaries or provide the fundamental data from which they can be established.

To better understand these developments and their significance for us, it will be helpful to clarify first some of the fundamental terms generally associated with seaward boundaries.

Seaward of the land area of every coastal nation are three categories of water areas — termed inland waters, marginal sea, and high seas — each with its own significance in point of control which a coastal nation may exercise over it. (See Fig. 1). The *inland waters* include all bodies of water within the land

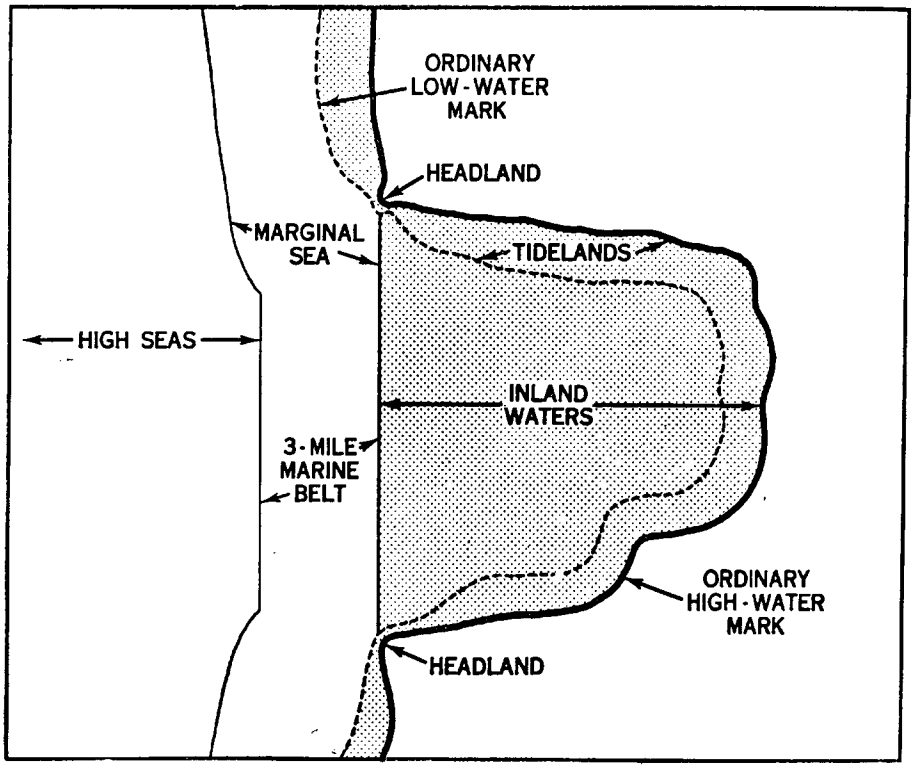

Fig. 1

Terminology used in delimitation of seaward boundaries.

territory, such as rivers and lakes, as well as bodies of water which open on the coast and fall within the category of « true » bays. Along a generally straight coast, without major indentations, it would also include the area subject to the flux and reflux of the tide, that is, between ordinary high-water mark and ordinary low-water mark. The common legal feature of all inland waters is that the nation concerned exercises complete sovereignty over them, the same as it exercises over its land territory. This sovereignty includes the right of exclusion of foreign vessels.

Seaward of the inland waters of a nation is the *marginal sea,* also called the « territorial sea » and the « marine belt ». These waters form part of the national territory of the coastal nation, but foreign merchantmen, and perhaps foreign warships in time of peace, have the right of innocent passage through them, subject

of course to the observance of special regulations laid down by the coastal nation for the protection of navigation, and the execution of municipal laws relating to customs, quarantine, and other local interests. Once the boundaries of the marginal sea have been determined, the territorial limits of a nation become automatically established.

Seaward of the marginal sea lie the *high seas*. Freedom is the characteristic notion used in connection with the high seas, which means they are not subject to the sovereignty of any one country, but every country has equal rights of user in them. This « freedom of the high seas » is today a dominating principle of maritime law, although, as we shall see, it is being modified, to an extent, by the developing continental shelf doctrine.

THE MARGINAL SEA AS A LEGAL CONCEPT

As a legal concept, the marginal sea is closely related to the doctrine of freedom of the seas. The early Roman jurists looked upon the sea as common to all mankind. Theirs was the doctrine of *mare liberum*, or free sea. With the development of commerce in the late Middle Ages, maritime nations began to claim exclusive control over parts of the open sea adjacent to their territories. These claims reached their height of extravagance to ward the end of the 16th century, when Spain claimed the exclusive right of navigation in the Pacific Ocean, the Gulf of Mexico, and the western Atlantic, and Portugal asserted a similar right in the Atlantic south of Morocco, and in the Indian Ocean. There was little law recognized in this matter and each nation asserted such claims as seemed warranted in its own eyes, and obtained recognition of them in proportion to its power to defend them. This was the doctrine of *mare clausum*, or closed sea.

By the close of the 17th century, there was a reversion to the Roman doctrine of freedom of the seas, and the right of free navigation win general acceptance. With this right to navigate the Seven Seas came an unwillingness on the part of nations to say that the free seas touched their very shores. The need for a maritime nation to exercise jurisdiction over the waters along its coasts, to some distance from shore, seemed a logical development in the interest of self-defense, or for the protection of neutral shipping in time of war. The early jurists were unable to agree on an exact distance because they failed to perceive any specific guiding principle. Finally, the « cannon-shot » rule was hit upon, that is, the distance from shore that a nation could defend was the distance to which a cannon shot could be fired, and should be a measure of its jurisdiction. This seemed to capture the imagination of many 18th century writers and jurists, and was generally adopted. Since at that time the range of cannon was approximately a marine league, or 3 nautical miles (2), this distance became the limit to which a coastal nation could exercise territorial jurisdiction. And thus originated the doctrine of the « 3-mile limit » (3).

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(2) The international nautical mile is equal to 6076.10 feet or 1852 metres, and is 1.151 statute or land miles. The nautical mile is also called a geographical mile. A marine league is equal to 3 nautical miles or 3.453 statute miles.

(3) The name of Cornelius van Bynkershoek, a Dutch jurist, is perhaps most frequently associated with the cannon-shot rule. Recent research indicates, however, he was not the actual originator of the rule, but was, perhaps, the earliest jurist to record the existence of the rule. Walker, *Territorial Waters: The Cannon Shot Rule,* BRITISH YEAR BOOK OF INTERNATIONAL LAW (1945) 210. *See* also Kent, *The Historical Origins of the Three-Mile Limit,* 48 AMER. JOURNAL of INT'L LAW 537 (1954).

The cannon-shot concept became fairly well fixed in European jurisprudence, and during the 19th century Great Britain and the United States became the chief protagonists of the doctrine. Other maritime countries claimed wider belts — Norway and Sweden 4 miles, Spain 6 miles, Mexico 9 miles, and the Soviet Union 12 miles (4). Thus far, no international agreement has been reached on a uniform distance. Whether the marginal sea concept arose as a principle of defense or of neutrality, it crystallized as a limitation of the freedom of the seas doctrine, rather than a as residuum of the closed sea doctrine (5).

It is sometimes stated that developments in the science of ballistics have outmoded the 3-mile rule for the marginal sea. But this very reasoning becomes a potent argument against any radical change being made in this long-established concept. For if technological developments be the criteria for the width, then it would be necessary to esablished a belt so wide as to constitute a serious encroachment on the high seas, and we would soon be reverting to the Medieval doctrine of the closed sea, not to mention the international conflicts that would ensue. At any rate, the width of the belt certainly has not kept pace with the increased range of coastal batteries nor with other modern implements of warfare, and this would also seem to raise a presumption in favor of the primacy of the freedom of the seas.

Thus, while the rule is preserved, the reason for the rule must be relegated to the limbo of obsolescence.

The doctrine of the free seas has been one of the keystones of American foreign policy. It is implicit in the position taken by Thomas Jefferson as early as 1793 when, as Secretary of State, he put forward the first official American claim for a 3-mile zone as the territorial limits of the United States. This position has never been departed from. It has been reaffirmed upon numerous occasions, and we have uniformly protested encroachment by other nations on this doctrine (6).

But while adhering to the freedom of the seas doctrine, nations have quite generally, if not universally, exercised some authority on the high seas adjacent to their territorial waters. Such extended jurisdiction is manifested principally in the fields of law enforcement and national security. Thus, in the United States, Congress, as early as 1799, passed an Act directing revenue officiers to board vessels bound for a United States port when within 12 nautical miles of the coast, to determine the character of the cargo. This extended jurisdiction was also invoked in 1920, in connection with enforcement of the National Prohibition Act, and a number of treaties were negotiated with foreign powers which provided for search and seizure of vessels, when within an hour's run from shore, if they were suspected of violating the liquor laws. And in the Declaration of Panama, the United States together with other American Republics, proclaimed a security zone 300 miles wide for the protection of neutral commerce of the Americas during World War II.

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(4) For a comprehensive statement of the various claims of nations to a marginal sea and to contiguous zones, *see* Boggs, *National Claims in Adjacent Seas,* THE GEOGRAPHICAL REVIEW 185, April 1951.

(5) JESSUP, THE LAW OF TERRITORIAL WATERS AND MARITIME JURISDICTION 3-5 (1927).

(6) For a recent reaffirmation of this doctrine by the Department of State, *see* Tate, *Tidelands Legislation and the Conduct of Foreign Affairs,* DEPARTMENT OF STATE BULLETIN 486, March 30, 1953.

These special cases of jurisdiction beyond a nation's territorial waters leave intact, nevertheless, the two basic tenets of the freedom of the high seas doctrine—the right of free navigation and the right of free fishing. These rights are inviolable and belong to the peoples of all nations.

DEVELOPMENT OF A CONTINENTAL SHELF DOCTRINE IN INTERNATIONAL LAW

Recently, the International Law Commission of the United Nations promulgated draft articles on the continental shelf, in which it seeks to establish sovereign rights in a coastal nation over the seabed and subsoil beyond the traditional limits of territorial waters. This developing doctrine will be examined in the light of the freedom of the seas concept, after which specific boundary problems raised by the newly enacted legislation dealing with off-shore submerged lands of the United States will be considered.

What has given rise to this new continental shelf doctrine ? One answer, and an obvious one, is the recognition that the continental shelf holds the key to a vast, new reservoir of natural resources which an ever-increasing world population will have to tap, as its land resources are materially reduced or as they become entirely exhausted. This, together with developments in technology, which made possible the location and actual recovery of offshore petroleum deposits, signalled the need for a legal regime to insure orderly and peaceful exploitation of these resources.

In terms of United States reserves, it is the opinion of geologists and petroleum engineers, that the submerged lands of the continental shelf constitute the largest undeveloped source of oil under our control. These reserves are estimated as of the order of 14 billion barrels for the areas adjacent to California, Texas, and Louisiana, which at today's prices would approximate 40 billion dollars. The magnitude of this potential is further emphasized by the fact that the oil industry on the Gulf coast alone, has invested approximately 500 million dollars in offshore oil. Recently, the Federal Government received 140 million dollars from leases of submerged lands off the coasts of Texas and Louisiana, and this represents but 3 percent of the area mapped as potentially oil-bearing (7). So we are dealing with an economic venture of no mean proportion.

What is the Continental shelf ?

What is the continental shelf and what are some of its physical characteristics ? Every continent rests on a so-called submarine base which extends seaward a varying distance from shore. To this submerged extension of the visible continent has been given the name « continental shelf ». More specifically, it may be defined as the submerged margin of a continent, which slopes gently seaward to a point where a substantial break in grade occurs, at which point the bottom slopes seaward at a considerable increase in gradient until the great ocean depths are reached. The point of break defines the « edge » of the shelf, and the steeper sloping bottom the « continental slope ». Actually, there is no sharp break between the shelf and the slope, but a gradual merging of the one into the other, so

(7) *See* statement by Secretary of the Interior McKay, *Washington Post and Times Herald,* Jan. 2, 1955, p. K-20.

that the junction is a zone rather than a line. This is the true geologic-geographic concept. Conventionally, however, the edge of the shelf is taken as 100 fathoms or 600 feet. (See Fig. 2). (8).

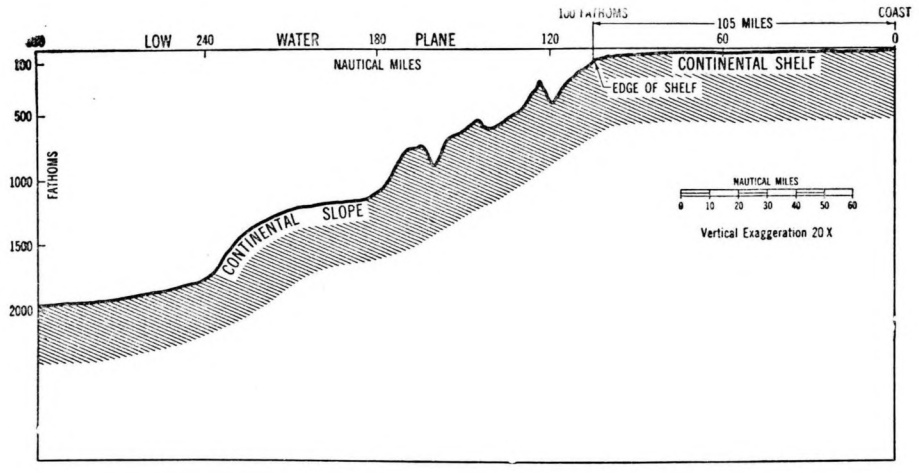

Fig. 2

Profile of shelf and slope in the Gulf of Mexico near the Louisiana-Texas boundary.

The continental shelf is thus a worldwide geomorphological feature and is not peculiar to any one continent or to one hemisphere, although its distribution over the world is unequal. Thus, along the coast of Chile there is practically no shelf, while along the Siberian coast it extends for hundreds of miles from shore. An average width of 42 miles is sometimes given (9).

Along the coast of the United States (Fig. 3), the continental shelf varies from a width of about 1 nautical mile off parts of California to about 200 miles off Cape Cod. In the Gulf of Mexico, near the Texas-Louisiana boundary, it has a width of 120 miles. Figure 4 shows the bottom configuration of an area north of San Francisco Bay from the shore to oceanic depths. Note the closeness of the 100-fathom depth contours on the continental slope as compared with the distance from shore of the first 100-fathom contour. There is actually a drop of 600 feet in the first 14 miles from shore, and a drop of 10,000 feet in the next 21 miles.

The continental shelf should not be confused with the waters overlying it—one is a land mass, submerged it is true, but land nevertheless; the other is a water area,

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(8) In 1952, the International Committee on the Nomenclature of Ocean Bottom Features adopted the following definition for the continental shelf: « The zone around a continent, extending from the low water line to the depth at which there is a marked increase of slope to greater depth... Conventionally its edge is taken at 100 fathoms (or 200 metres) but instances are known where the increase of slope occurs at more than 200 or less than 65 fathoms. » BULLETIN, INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS 555, July 1953. (The world average has been estimated as 72 fathoms or 432 feet.)

(9) *See* world map accompanying *National Claims in Adjacent Seas, supra* footnote 4.

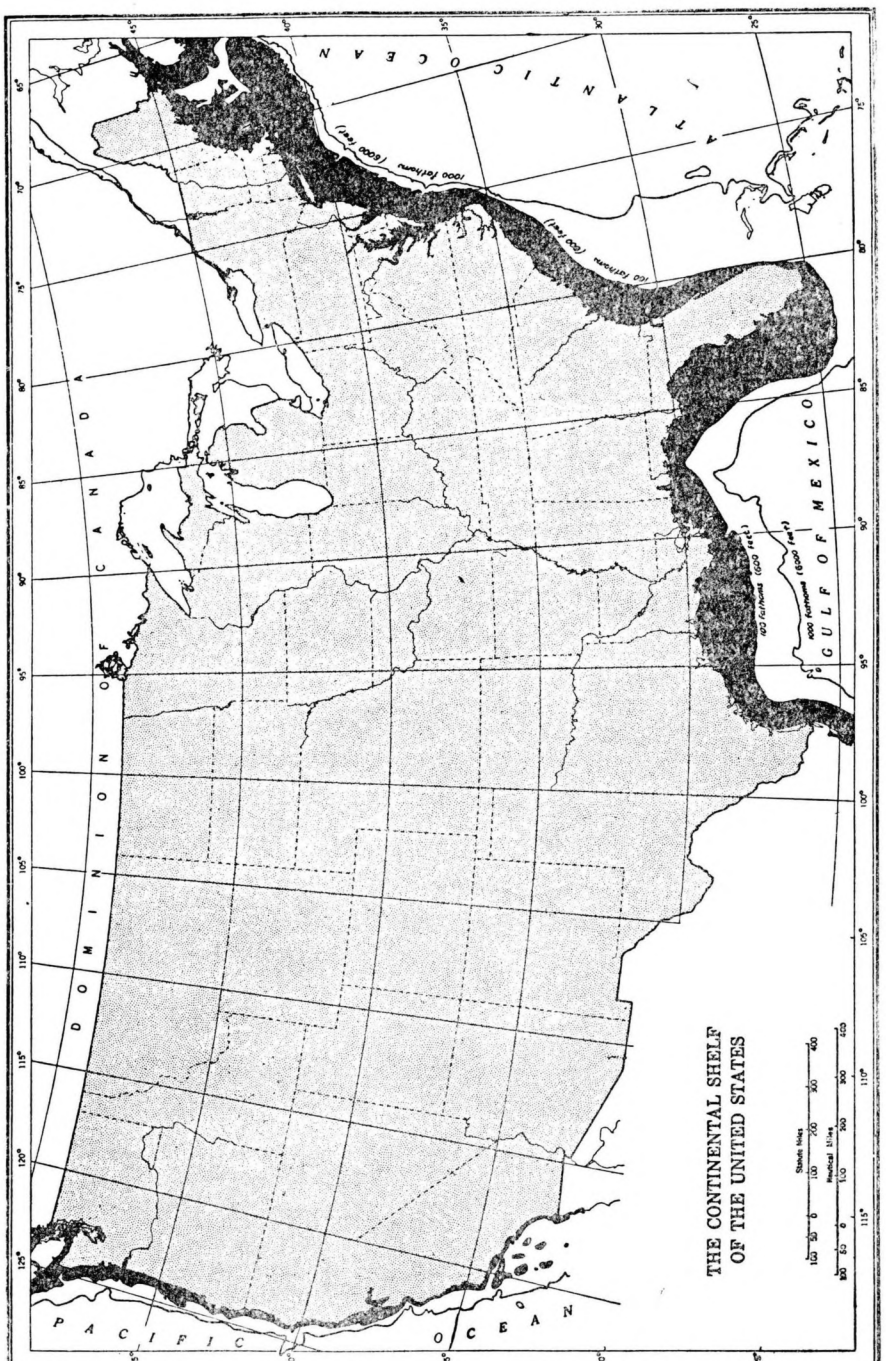

Fig 3

Continental shelf along the coasts of the United States

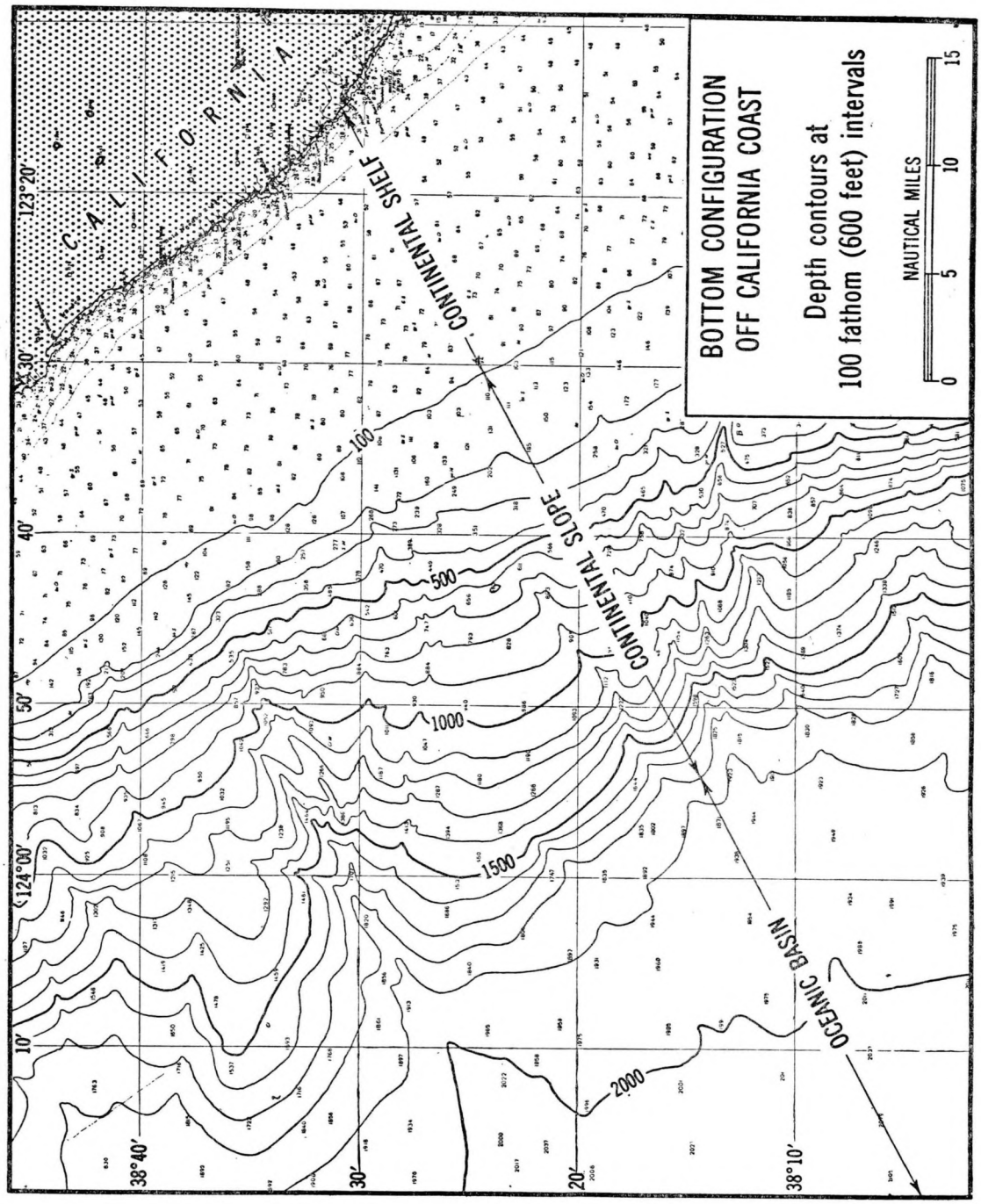

Fig. 4
Bottom configuration off California coast north of San Francisco Bay.

sometimes called the epi-continental sea. Figure 5 shows a profile of the shelf and slope for the area off the California coast shown in Figure 4. The inset in

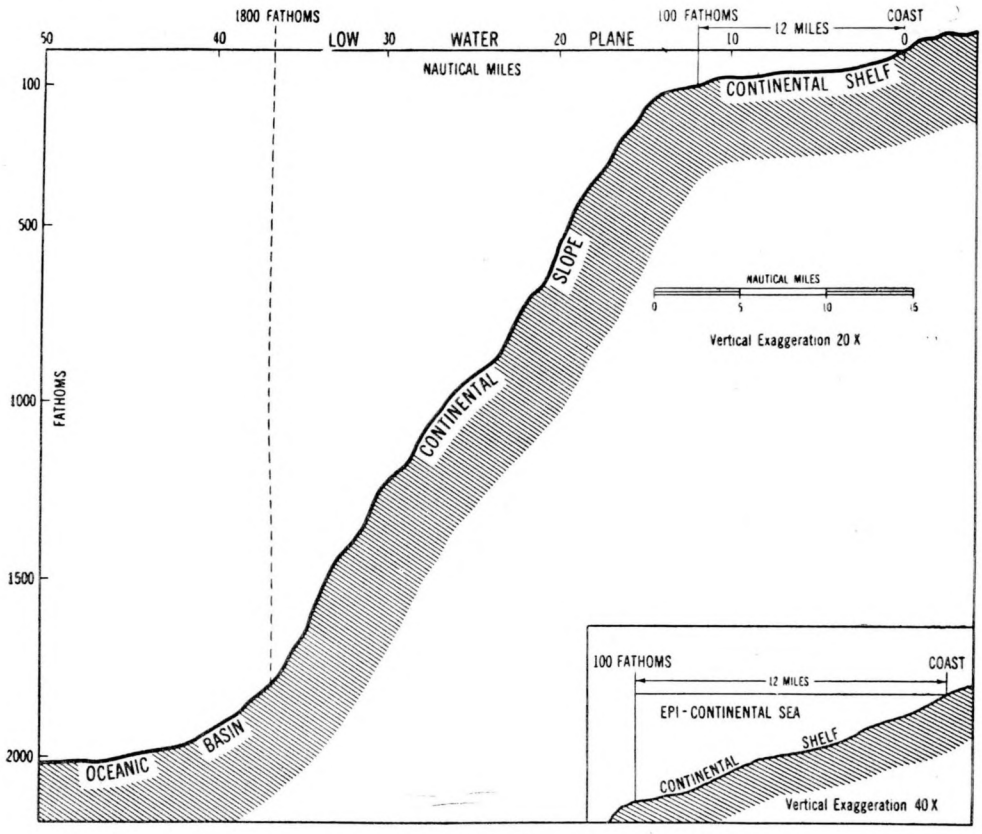

Fig. 5

Profile of shelf and slope along California coast at latitude 38°35'. (*See* Fig. 4.)

the lower right-hand corner illustrates the relationship of the epi-continental sea to the continental shelf.

Figure 6 shows the rather remarkable submarine topography of the continental shelf and slope along the northeast coast of the United States. Many submarine canyons penetrate the shelf, the most pronounced being the one which marks the submerged gorge of the ancient Hudson River. Note the marked difference in the topography of the shelf as compared with the slope. The illustration is a photograph of a plastic relief model based on hydrographic surveys contoured at 5-fathom intervals for the shelf and 25-fathom intervals for the slope.

In considering the legal basis for a continental shelf doctrine, three characteristics of the shelf should therefore be kept in mind : (1) it is a land mass that underlies the marginal sea and the high seas; (2) it is a worldwide feature that varies considerably in extent; and (3) it is the submerged extension of the continents.

Legal Status of the Continental Shelf

The legal status of the seabed of the marginal sea presents no difficulty because the coastal nation has full sovereignty over the superjacent waters. But beyond the marginal sea lie the high seas, and the high seas free to all nations.

Does this mean that the same legal principle applies, or should apply to the earth below these free waters ? If not, then what legal rationale is to be applied ? This leads to a consideration of the claims of nations in this field and of the findings of the International Law Commission.

Historically, the first step taken by coastal nations to appropriate the mineral resources beyond territorial waters was the Anglo-Venezuelan Treaty of 1942, under which the submerged area in the Gulf of Paria, separating the British Island of Trinidad from the mainland of Venezuela, was divided. But this was no more than a bilateral agreement and no claims to sovereignty were made as against other nations and no mention made of a continental shelf.

The real impetus to present-day legal developments was President Truman's Proclamation of September 28, 1945, in which he announced to the world that the natural resources of the continental shelf contiguous to the coasts of the United States were to be regarded « as appertaining to the United States, subject to its jurisdiction and control ». The preamble to the Proclamation states that it is the view of the United States that such exercise of jurisdiction by the contiguous nation is reasonable and just, « since the continental shelf may be regarded as an extension of the landmass of the coastal nation and thus naturally appurtenant to it ». The Proclamation concludes with a declaration that the character as high seas of the waters above the shelf, and the right to their free and unimpeded navigation are in no way affected (10).

Now when the United States lays claim to the subsoil and seabed of an area three times the size of France, as it did under this proclamation, it is indeed a major development in foreign affairs. Early suggestions that the proclamation violated international law were largely discounted by the chain reaction of claims which it precipitated amongst other nations, particularly those of Latin America, many of the claims going far beyond the United States declaration in both purpose and scope. In a number of cases, the claim has been converted into one of actual sovereignty over the shelf, and at least five nations have framed their claims to include the water areas above the shelf. The broadest claim made thus far has been the effort by at least four nations to establish zones of resources control 200 miles wide, irrespective of the width of the contiguous shelf, and one has actually declared such zone to be part of its national territory. A substantial majority of the claims provide that there be no diminution of the traditional right of free navigation over the superjacent waters (11).

These claims, including the United States claim, were all unilateral in nature and had no binding force on the international community other than the voluntary respect that nations chose to accord them, or as the nations involved were able to enforce. It was therefore natural, in a situation as explosive as this, that

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(10) Exec. Proc. No. 2667, 59 STAT. 884 (1945).

(11) For a detailed statement on the various claims of the American States, *see* Young, *The Continental Shelf in the Practice of American States,* INTER-AMERICAN JURIDICAL YEARBOOK 27 (1950-1951). A more comprehensive analysis of these and other claims is contained in MOUTON, THE CONTINENTAL SHELF 63 *et seq.* (1952), and in ANNINOS, THE CONTINENTAL SHELF AND PUBLIC INTERNATIONAL LAW 45 *et seq.* (1953).

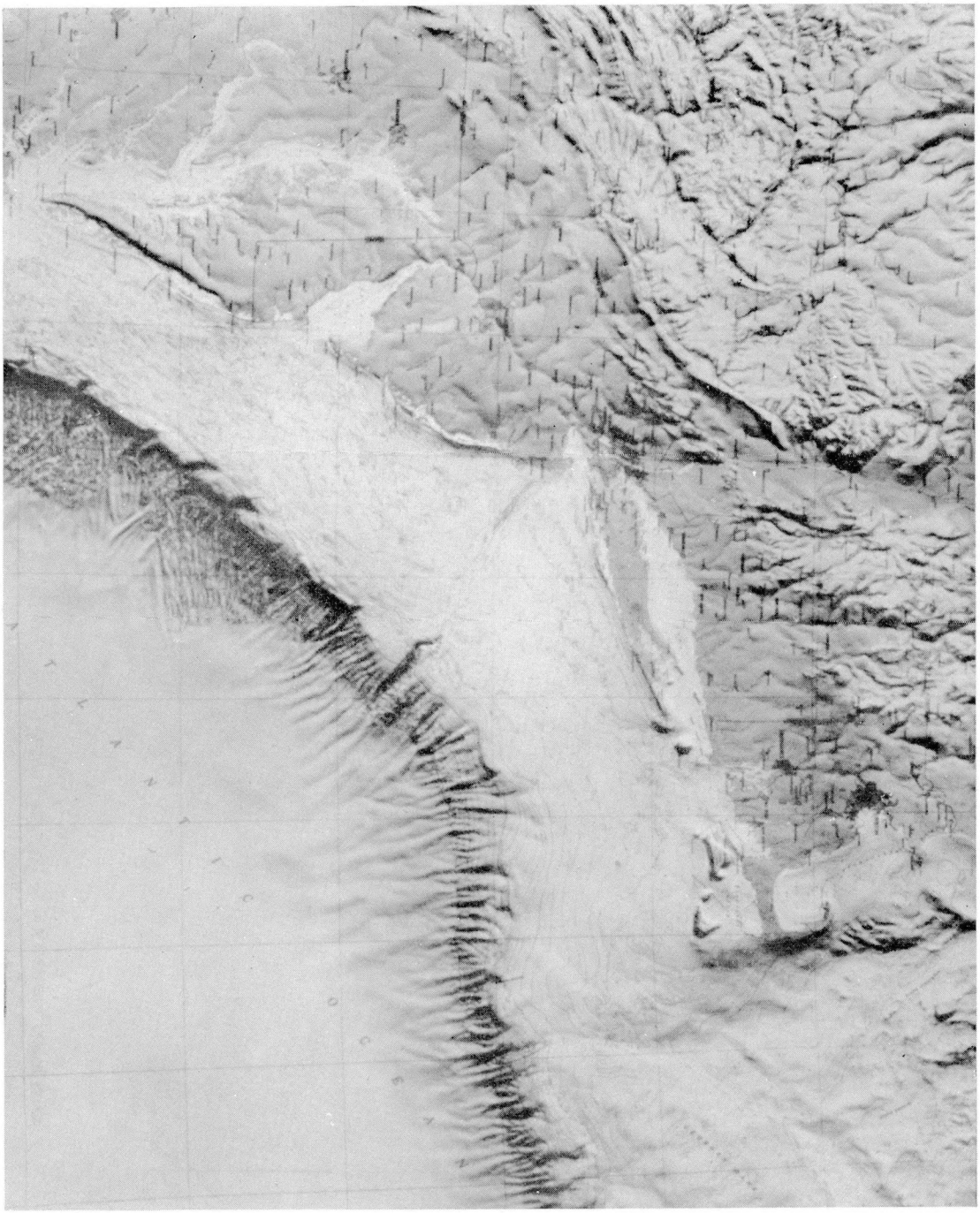

Fig. 6

Submarine topography of shelf and slope along northeast coast of the United States. (After Veatch and Smith.)

the United Nations, through its International Law Commission, should seek to bring order out of the existing chaotic condition (12).

Faced with this *de facto* situation, the Commission, after 3 years of detailed study and prolonged discussion, adopted draft articles in 1953 on the regime of the continental shelf (13). It spells out that a coastal nation exercises sovereign rights over the shelf for the purpose of exploring and exploiting its natural resources. It defines the shelf as « the seabed and subsoil of the submarine areas contiguous to the coast, but outside the area of the territorial sea, to a depth of two hundred metres » (109 fathoms or 654 feet) (14).

The Commission rejects the doctrine of *res communis* (the property of all nations) and the doctrine of *res nullius* (the property of no one) as being impraticable when applied to the land under the high seas. It adopts instead the principle of *ipso jurie* (by the law itself) as the basis for the rights of a coastal nation over the continental shelf. And this it holds to be independent of occupation, actual or fictional, and of any formal assertion of such rights. But the rationale on which this holding is based is the geographical unity of the submerged areas with the non-submerged contiguous land. The Commission thus adopts, to an extent, the geographical and geological test for the continental shelf as the basis for the juridical concept of the term, but it does not necessarily hold that the existence of a continental shelf in its geographical sense is essential to the exercise of the rights of a coastal nation. Nor does it rule out the possibility of equitable modifications of the general rule being made in certain geographic situations. The draft articles are thus partly in the nature of a codification of existing practices of nations, and partly in the nature of a development of international law (15).

Under the Commission's recommendations, the seaward boundary of a coastal nation takes on a three-dimensional character. At the outer limit of the marginal sea or territorial sea (Fig. 7), it is defined by the vertical plane (A) rising from the sea floor through the superjacent waters and the airspace above for an indefinite

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(12) The International Law Commission is an organ of the United Nations General Assembly charged with the codification and development of international law. The Commission, composed of 15 eminent international lawyers and jurists, meets for severa months annually and reports its conclusions and recommendations to the General Assembly for consideration.

(13) REP., INT'L LAW COMM., 5th Sess. 12 *et seq.* (1953) and recorded in Official Records, U.N. General Assembly, 8th Sess., Supp. No. 9 (1953) (U.N. DOC. A/2456).

(14) The adoption of the 200-metre depth contour instead of the 100-fathom contour is due to the use of metres as a depth unit for nautical charts by the great majority of maritime nations. BOWDITCH, AMERICAN PRACTICAL NAVIGATOR 42 (1943). *See* also *The Metric System,* INT'L HYD. REV. 45 (Nov. 1925). As a practical matter the use of 200 metres (109 fathoms) in place of 100 fathoms will result in only a slight difference horizontally, inasmuch as this depth in general will fall on the continental slope.

(15) The 1953 draft articles differ in two important respects from those promulgate by the Commission in 1951. « Sovereign rights » of the coastal nation is now substituted for « jurisdiction and control », and the test of jurisdiction is no longer made to depend upon the ability to exploit the natural resources. While there is something to be said in favor of the principle of competence on the ground of flexibility, and this principle had the support of the United States, the Commission, in its final draft, adopted a fixed legal edge because of its belief that the exploitability rule does not satisfy the requirement of certainty which is essential in any legal concept. REP., INT'L LAW COMM., *supra* footnote 13, at 13.

height. From plane (A) the boundary is the inclined plane (B) of the continental shelf extending seaward until the 200-metre isobath is reached, after which it becomes the descending vertical plane (C) penetrating into the subsoil for an indefinite distance.

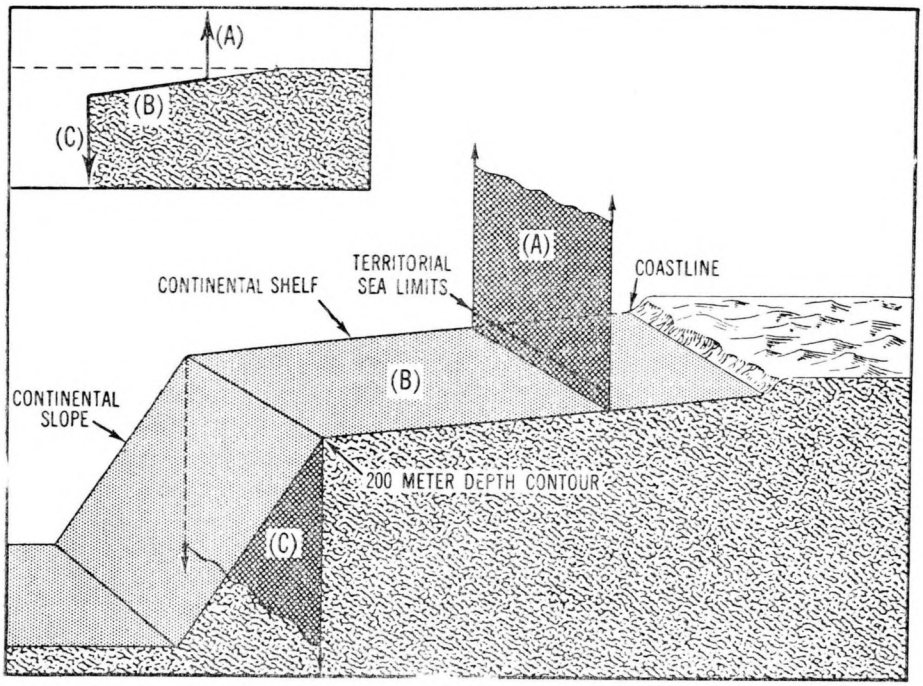

Fig. 7

The tree-dimensional character of a seaward boundary. (After Moodie.)

In profile, the boundary would appear as shown in the inset in the upper left-hand corner of Figure 7.

The Continental Shelf Doctrine and Freedom of the High Seas

The question might be asked, does the new continental shelf doctrine mean that we are receding from the principle of freedom of the high seas ? Theoretically, any restriction on the use of the high seas, no matter how slight, would be a recession from the principle. But practically, it becomes a matter of the balancing of interests. The « free seas » developed when navigation and fisheries were the primary economic interests associated with the open sea. The paramount consideration was the need of the international community. New interests have now arisen that are equally important to the community of nations. What yardstick is then to be applied in assessing the relative importance of the interests involved ?

The International Law Commission, while holding that the continental shelf doctrine is subject to, and within the orbit of, the paramount principle of freedom of the seas, nevertheless points out that « the progressive development of international law, which takes place against the background of established rules, must often result in the modification of those rules by reference to new interests or new rules ». It therefore formulates the general test of « unjustifiable interference » as the basis for invoking the full rigidity of the freedom of the seas principle. Under this test,

the construction of installations on the continental shelf would be sanctioned in the interest of mankind, as long as the interference with free navigation can be justified. But such construction in narrow channels or in recognized sea lanes essential to international navigation is expressly prohibited (16).

This, then, is the present international situation. What, now, is the United States picture ?

THE UNITED STATES PICTURE

By two legislative enactments, Congress has provided the machinery for the exploration of the natural resources of our continental shelves. Public Law 31, 83d Congress, 1st Session (identified as the Submerged Lands Act, and approved May 22, 1953), establishes titles in the States to lands beneath navigable waters within their historic boundaries (17); and Public Law 212, 83d Congress, 1st Session (identified as the Outer Continental Shelf Lands Act, and approved August 7, 1953), provides for jurisdiction by the United States over the submerged lands

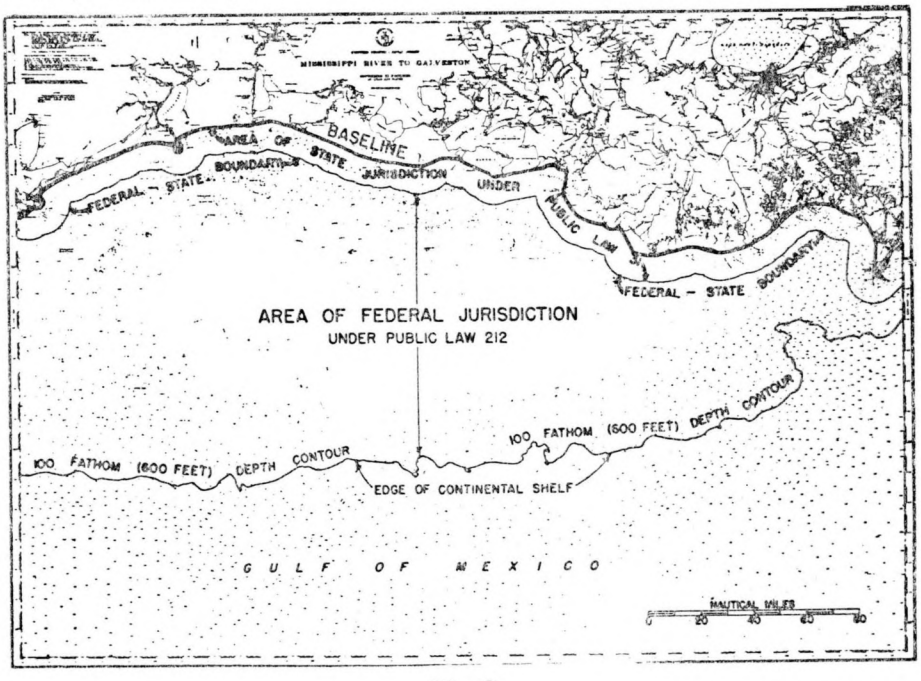

Fig. 8

Relative areas of state and federal jurisdiction under Public Laws 31 and 212, respectively. (*See* footnote 20.)

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(16) REP., INT'L LAW COMM., *supra* footnote 13, at 12, 13, and 15. Some apprehension has been expressed regarding the effect of extending sovereignty over the continental shelf on freedom of oceanographic research at sea. The Governing Board of the National Academy of Sciences Research Council took cognizance of this on June 20, 1954 and adopted a resolution urging that « the traditional freedom of scientific research at sea be protected by international agreement ». *See* NEWS REPORT (National Academy of Sciences, National Research Council) 57, July-August 1954.

(17) 67 STAT.29 (1953). Historic boundary refers to the boundary of a State at the time it « became a member of the Union, or as heretofore approved by Congress ». *Id.* at Section 2 (a) (2).

seaward of the States boundaries as defined in the Submerged Lands Act (18). The Federal boundary is thus coterminous with State boundaries. (See Fig. 8). But before the Sates can know the seaward extent of their jurisdiction and the Federal Governement the landward extent of its jurisdiction, the boundaries of the States will have to be ascertained. Are these susceptible of finite determination from the language of the Act ?

PROBLEMS OF DELIMITATION

Two types of problems are usually associated with boundary making—problems of delimitation and problems of demarcation. Delimitation refers to the definition of the boundary as given in treaties and statutes and generally involves problems of interpretation before the boundary can be laid down on a map or chart; demarcation refers to the actual laying down of the boundary on the ground and its definition by monuments (19). This discussion deals primarily with delimitation problems.

Repeated references are made in Public Law 31 to the boundaries of the States as extending 3 geographical miles *from the coast line* (20). Basic to a determination of the Federal-State boundary is thus an understanding of the term « coast line » as used in the Act. The crucial language is contained in Section 2 (c) which defines « coast line » as « the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters ». This specifies generally the baseline from which the State boundaries are to be measured and is the same as the term « baseline » used in international law for designating the line from which the marginal sea is measured. (See Fig. 1). But does the definition provide adequate criteria for delimiting, with legal and technical certainty, the boundaries of the State ? Obviously, it does not. Where, for example, are the seaward limits of inland waters in the case of indentations ? Would it be a headland-to-headland line, or would the limits follow the sinuosities of the indentation; and if the former, would there be a limitation on distance between headlands ? And how is the definition to be applied where islands fringe a coast at varyng distances from the mainland ? Would the state boundary, whatever it may be, be measured from line of low water along the mainland coast or from the outer island coast ? Even the matter of « ordinary low water » will require interpretation. If applied to the Pacific coast, where successive low waters fall to different levels during a tidal day, the question arises which of the lows should be used. These and other matters are left unsettled by the Act. How then are they to be resolved ?

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(18) 67 STAT.462 1953.

(19) BOGGS, INTERNATIONAL BOUNDARIES 32 (1940).

(20) The Act (Sections 2 (a) (2), 2(b), and 4) also provides that States bordering the Gulf of Mexico may assert a claim to a boundary up to 3 marine leagues (9 geographical miles), if it was so provided by its constitution or laws prior to or at the time Such State became a member of the Union, or if it has heretofore been approved by Congress. Figure 8 shows the relative areas of Federal and State jurisdiction, under Public Laws 31 and 212, for a section of the Gulf Coast. A 9-mile State boundary is shown, being the maximum allowable under Public Law 31, and the baseline is an interpretation of the recommendations of the Special Master in the *California* case (*see* footnote 23 *infra*); however, neither of the lines should be considered definitive, since both are subject to future modification.

It is a cardinal rule of statutory construction that the intent of the legislative body, expressed or implied, governs in the interpretation of language. This intent may be inferred from the legislative history of an Act, and from the circumstances surrounding its enactment. Implicit in the legislative history of Public Law 31 is the desire on the part of the sponsors to change the law of Federal paramount rights in the submerged lands of the open sea which the Supreme Court laid down in the so-called « tidelands » cases (21). Equally implicit is the desire to leave the question of boundary determinations for future adjudication or agreement (22). Within this framework, it is appropriate then to develop interpretive guides based on historical precedents in the judicial, legislative, and executive fields.

If the Submerged Lands Act replaces the Federal paramount rights doctrine, then it must of necessity apply to the submerged lands of the marginal sea, control over which the Supreme Court said is a function of national external sovereignty. Therefore, in interpreting the boundary provisions, we may be guided by the principles of delimitation which the United States has traditionally adhered to in the conduct of its external affairs.

This traditional position was considered by a Special Master, named by the Supreme Court, in the case of *United States* v. *California,* to interpret the broad terms of the Court's decree and to apply it to the California coastline.

The language of Public Law 31 relating to « coast line » is singularly similar to that used by the Court in the *California* case, so that the boundary problems raised by the Act are not unlike those considered by the Special Master. Although his recommendations have not yet been finalized by the Court (23), his findings represent the nearest approach thus far made in this country to a judicial determination of the inland waters and associated boundary problems and, in the absence of legislative guidance, should provide a basis for an interpretation of the boundary provisions of Public Law 31.

The Inland Waters Problem

The first problem to be considered is the establishment of criteria for determining the seaward limits of inland waters. In the delimitation of the marginal sea, the United States has traditionally taken the position that the baseline—the line that separates inland waters from marginal sea—is the low-water mark following the sinuosities of the coast (25). This fundamental « rule of the tidemark », as it is called, would be applicable to a relatively straight coast or where slight curvatures exist. Major indentations, however, present special problems of national interest, and it is well established in international law that such embayments form exceptions

(21) The case of United States v. California, 332 U.S. 19 (1947); United States v. Louisiana, 339 U.S. 699 (1950); and United States v. Texas, 339 U.S. 707 (1950) established the doctrine of Federal, rather than State, paramount rights in the submerged lands of the open sea, seaward of the inland waters of the States.

(22) 99 CONG. REC. 2620 (1953).

(23) The Report of the Special Master (dated Oct. 14, 1952) was ordered filed Nov. 10, 1952. 344 U.S. 872 (1952).

(24) The lines established by the United States Coast Guard, pursuant to the Act of Feb. 19, 1895, 28 STAT. 672 (1895), has sometimes been mentioned as establishing the seaward limits of inland waters. However, in United States v. Newark Meadows Improvement Co., 173 Fed. 426, 428 (1909), it was held that such lines divide the areas along our coasts where the Inland Rules of the Road apply from the areas where the International Rules apply and have no application other than the specific purpose of determining what rules of navigation should be followed.

(25) *See* Tate, *supra* footnote 6, at 486.

to the rule of tidemark, and the baseline follows a headland-to-headland line, thus making the indentation part of the inland waters of a nation. What is not so well established is the yardstick to be used in determining the dividing line between a slight curvature and a major indentation.

In 1910, the Permanent Court of Arbitration at The Hague laid down the rule that :

> « In case of bays, the three marine miles are to be measured from a straight line drawn across the body of water at the place where it ceases to have the configuration and characteristics of a bay. At all other places the three marine miles are to be measured following the sinuosities of the coast. » (26).

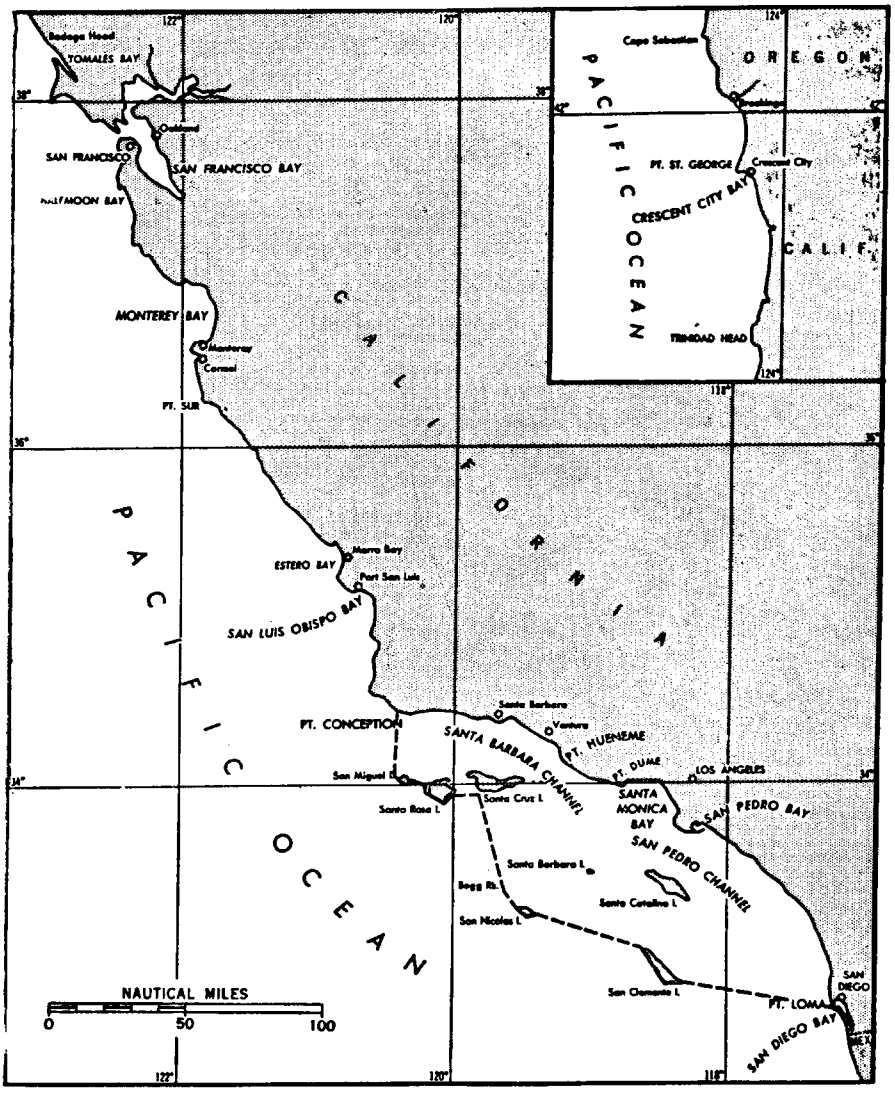

Fig. 9
Portion of California coastline.

(26 I NORTH ATLANTIC COAST FISHERIES ARBITRATION, *Award* of the Tribunal, at 96-98 (1910). For a full discussion of this arbitration, *see* JESSUP, *supra* footnote 5, at 363-382.

But the Tribunal left unsettled the important question of how to determine the kind of indentations that possess the « configurations and characteristics » that would bring them into the category of inland waters. This remained for future technicians to grapple with.

The difficulty that would be encountered in the practical application of the principle laid down by The Hague Tribunal is illustrated by a consideration of the California coastline (Fig. 9). Undoubtedly, indentations such as San Francisco Bay and San Diego Bay would possess the configurations an characteristics contemplated by the Tribunal and would be inland waters. But would the same apply to Halfmoon Bay, to Monterey Bay, to Estero Bay, and to Santa Monica Bay ? And if not, then where is the dividing line[6] ?

An attempt to answer this question was made in 1930 when the Hague Conference for the Codification of International Law was convened. The United States delegation proposed a geometrical method which took into account the extent to which an embayment penetrated the land area, or more precisely the

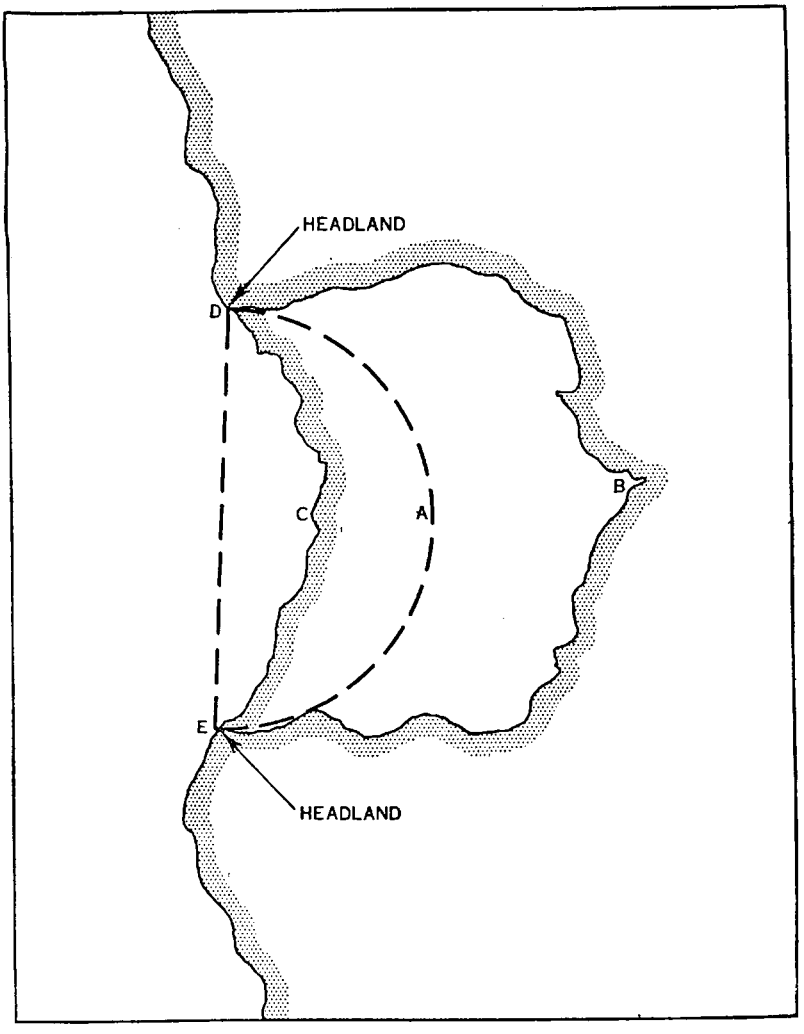

Fig. 10
Application of semicircular method.

ratio of the penetration to the dimension of the entrance. It was called the « semicircular method » because the theoretical bay which is on the borderline between a true bay and a slight curvature was taken to be that of a semicircle (27).

The genesis and development of this method, together with a French proposal, are discussed in considerable detail in the article « The Concept of a Bay as Inland Waters » in the October-December 1953 issue of *Surveying and Mapping*, and I do not wish to repeat what I said there. It will suffice here to say that in applying the rule to an indentation (see Fig. 10), whose status is to be determined, a semicircle is constructed at the entrance with the headland-to-headland line as a diameter. Then if the area of the indentation is *less* than the area of the semicircle, as is the case with indentation DCE, then the indentation is part of the open sea and the marginal sea would be measured from the ordinary low-water mark following the sinuosities of the coast. But if the area of the indentation is *greater* than the area of the semicircle, as is the case with indentation DBE, then it is part of the inland waters and the marginal sea is measured from the headland-to-headland line DE.

In the *California* case, the Special Master recommended the use of this geometrical formula, not as an established general rule of international law nor even as the traditional position of the United States, but as « an appropriate technical method of ascertaining whether a coastal indentation has sufficient penetration into the land area to constitute inland waters » (28).

The 10-Mile Rule. — Closely related to the problem of determining the seaward limits of inland waters at indentations is the question whether there should be a limitation on the distance between headlands. The United States in its diplomatic representations has adhered to the so-called 10-mile rule, a doctrine limiting the inland waters of a bay to a distance of 10 nautical miles at the entrance. In other words, in the case of indentations wider than 10 nautical miles, a straight line is drawn across the indentation at the first point nearest the entrance at which the width does not exceed 10 nautical miles, and the semicircular formula then applied. This line would be the maximum seaward extent of inland waters. (See Fig. 11).

A basis for the rule has sometimes been stated to be the elimination of fishing hazards that would result from a strict application of a 3-mile marginal belt to an indentation. Since the encroachment upon the marginal sea by fishing vessels is generally a grave offense, involving in many instances the forfeiture of the offending vessel, it has been thought expedient not to allow it where the extent of free waters, between the 3-mile line drawn on each side of the bay, is less than 4 miles.

Under this theory of the rule, the distance limitation on bays would depend upon the width of the marginal sea and would be equal to twice its width plus 4 nautical miles. Thus, countries claiming a 6-mile belt would have a 16-mile limitation on bays, those claiming 9 miles would have a 22-mile limitation, etc.

Another basis for the rule is that, equally with the 3-mile limit, it has resulted form the impact of the doctrine of the freedom of the seas on claims to maritime territory by coastal nations. Under this theory, the 10-mile limit is regarded as an essentially independent rule that has established itself empirically in international

(27) *See* 3 Acts of the Conference for the Codification of International Law (League of Nations Publications V: Legal) 218 (1930).

(28) Report of Special Master, United States v. California, Sup. Ct. No. 6, Original, Oct. Term, 1952 (cited hereinafter as Final Report of Special Master), at 26.

(29) *See* JESSUP, *supra* footnote 5, at 355-356.

practice as the reasonable and practical limit for bays rather than by any process of deduction from the 3-mile limit (30).

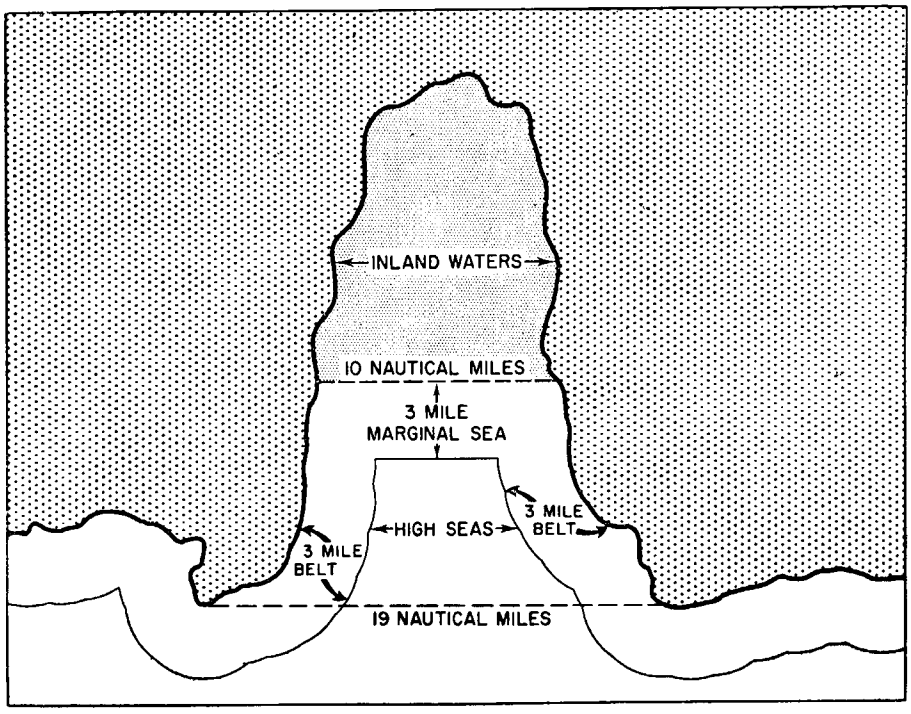

Fig. 11

Application of 10-mile rule to an indentation.

In the *California* case, the Special Master found that the 10-mile rule had had a considerable background in the practice of nations and that the United States has traditionally recognized such limitation on bays (31).

Insofar as Public Law 31 is concerned, the provision which allows States bordering the Gulf of Mexico to assert a claim to a boundary of 9 miles from the coast line, under certain specified conditions, would not be affected under

(30) A Committee of Experts meeting at The Hague in April 1953, under the aegis of the International Law Commission of the United Nations, to study problems in connection with the delimitation of the territorial sea, adopted, subject to the approval of the Commission, a 10-mile limitation on bays, stating: « The closing line across a (juridical) bay should not exceed 10 miles width, this being twice the range of vision to the horizon in clear weather, from the eye of a mariner at a height of 5 metres ». *See* Report of the Committee of Experts on Technical Questions Concerning the Territorial Sea (1953) (U.N. DOC. A/CN. 4/61/Add. 1/Annex).

(31) Final Report of Special Master, *supra* footnote 28, at 21. In the century-long North Atlantic Fisheries dispute with Great Britain over the meaning of the Treaty of 1818 (*see* footnote 26 *supra*), the United States took the position that inland waters were limited by the 3-mile marginal belt rule to bays not more than 6 miles wide at the entrance, that is to twice the 3-mile limit. On recommendation of the Arbitration Tribunal, however, the 10-mile rule was accepted by the United States as a proper limitation on the sweeping headland-to-headland doctrine contended for by Great Britain.

either theory of the 10-mile rule, as long as the United States adheres internationallv to the 3-mile limit.

The Offshore Islands Problem

Another aspect of the « coast line » problem that will require interpretation is the case where islands fringe a coast at various distances from the mainland. Is a State's seaward boundary to be measured from the mainland coast or from the outer island coast ? In other words, is the status of the strait separating the islands from the mainland, inland waters or open sea ? Public Law 31 is silent on this point and no congressional intent can be inferred from the legislative history other than a desire to leave the question where Congress found it.

Here again we way look for guidance in the position taken by the United States in its international relations and as expressed in diplomatic correspondence (32). In the *California* case, the Special Master found the traditional position of the United States to be that where islands or groups of islands fringe a coast, and the strait between the mainland and the offshore islands connects two seas having the character of high seas, then each is to be surrounded by its own marginal belt. (See Fig. 12). He noted that the rule of the tidemark (*see* text at footnote 25 *supra*) « in itself excludes the idea of drawing the coastline from headland-of-headland around offshore islands », and stated that placing a 3-mile marginal belt around each offshore island goes naturally with the fact that the « islands are part of the territory of the nation to which the mainland belongs » (33). On this basis, he found the channels and other water areas between the mainland and offshore islands off the southern California coast not to be inland waters (34).

The question naturally arises whether the finding by the Special Master with regard to offshore islands and to the 10-mile rule contravenes international law, particularly as exemplified by the decision of the International Court of Justice in the *Anglo-Norwegian Fisheries* case (35), and whether the decision requires any change in the traditional position of the United States.

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(32) The position of the United States relative to islands and straits may be summarized as follows: (1) Where islands or groups of islands lie off the coast, irrespective of their distance from the mainland, each island is to be surrounded by its own marginal belt; (2) Where a strait between the mainland and offshore islands connects two seas having the character of high seas, the waters of the strait are not to be considered as inland waters and the marginal sea is to be measured as described under (1); and (3) Where a strait is merely a channel of communication to an inland sea, the rules regarding bays apply. *See* Letter of Nov. 13, 1951 from Acting Secretary of State to Attorney General, printed in Brief for the United States before the Special Master, 167-73 (May 1952), United States v. California, Sup. Ct., No. 6, Original, Oct. Term, 1951.

(33) Final Report of Special Master, *supra* footnote 28, at 26-27. This view is supported by JESSUP, *supra* footnote 5, at 66-67.

(34) The islands are separated from the mainland by 10 to 60 nautical miles with depths in between as great as 6,000 feet. It was California's position that the marginal belt should be measured not from the physical coastline of California but from an « exterior » or « political » coastline drawn by a series of straight lines from Point Conception around the outermost offshore islands to Point Loma at San Diego Bay (see Fig. 9). This contention was bottomed on considerations of history, physical and geographic factors, use and occupancy of the area, national security, and the status of international law in this field.

(35) Judgement of Dec. 18, 1951: I. C. J. Rep. 151, p. 116.

In upholding Norway's method of delimiting an exclusive fisheries zone by drawing straight baselines along the seaward projections of the outermost of the numerous islands, islets, and rocks (about 120,000 in all) that constitute the so-called « rock rampart » of the Norwegian coast, the Court found that this method was part of a traditional « Norwegian System », which had been acquiesced in by other nations. It took cognizance of the unique geography of the Norwegian coast

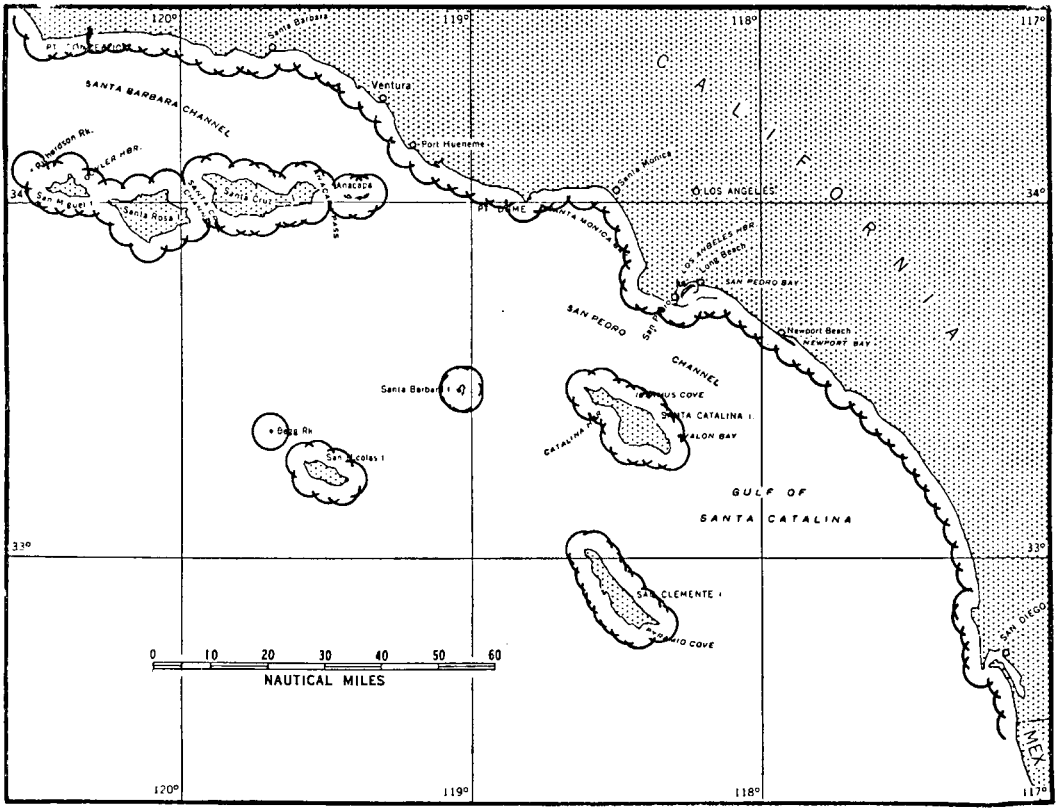

Fig. 12

Delimitation of the marginal sea in the vicinity of islands.

and held that Norway's method did not violate international law, notwithstanding the fact that some of the baselines spanned water areas 18 to 44 miles across (36)

The decision does not, however, make it obligatory upon a coastal nation to adopt the sweeping Norwegian method of drawing straight baselines between widely separated islands, just as its holding that the 10-mile rule « has not acquired the authority of a general rule of international law » does not stand for the doctrine

(36) *Id.* at 127. The Court nevertheless carefully circumscribed the conditions under which straight baselines may be drawn. For example, it said: (1) « the drawing of baselines must not depart to any appreciable extent from the general direction of the coast »; (2) « the choice of baselines is in effect whether certain sea areas lying within these lines are sufficiently closely linked to the land domain to be subject to the regime of internal waters »; and (3) « certain economic interests peculiar to a region, the reality and importance of which are clearly evidenced by a long usage » should not be overlooked. *Id.* at 133.

that the adoption of such a limitation is contrary to international law. This is implicit in the Court's statement that « the coastal State would seem te be in the best position to appraise the local conditions dictating the selection » (37). It follows, *a fortiori,* that any method that exhibits a more liberal approach to the problem *vis-à-vis* the family of nations would not infringe customary law. There is, therefore, no conflict between the holding in the *Fisheries* case and the recommendations of the Special Master in the *California* case (38).

The Tidal Boundary Problem

Boundaries determined by the course of the tide involve two engineering aspects : a vertical one, predicated on the height reached by the tide during its

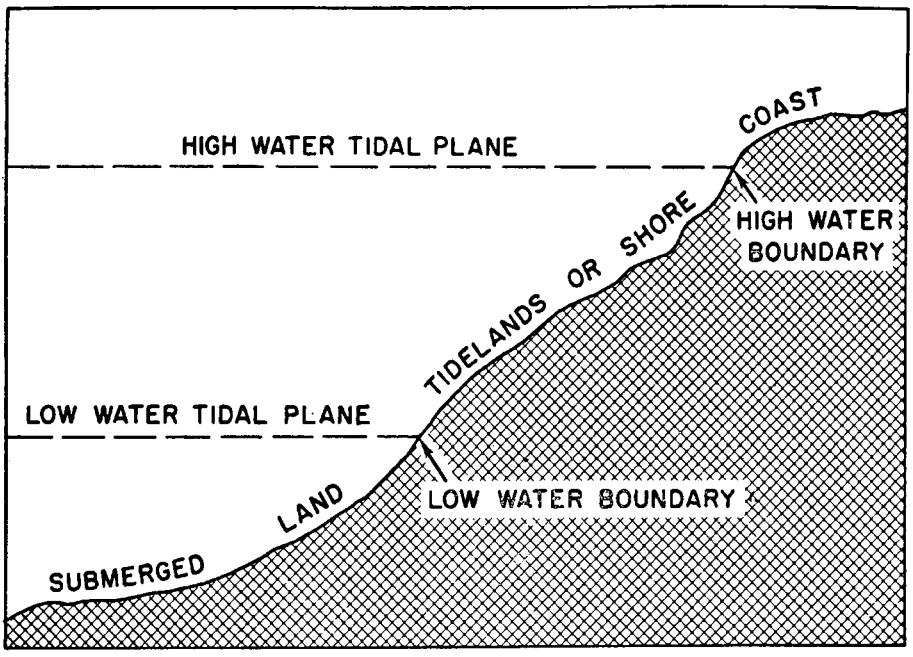

Fig. 13

Intersection of tidal planes with shore.

(37) *Id.* at 131. This was the position taken by the Government, following the pronouncement in the *Fisheries* case, and successfully urged in the *California* case. *See* Letter of Feb. 12, 1952 from the Secretary of State to the Attorney General, printed in Brief for the United States before the Special Master, *supra* footnote 32, at 173-75.

It is of interest also to note that in the hearings before the Special Master, evidence was introduced by the Government to show that the relation of land (comprising the islands) to water area off the Norwegian coast is 1 to 3 1/2, while in the case of the islands off California it is 1 to 29.

(38) In the provisional Articles concerning the Regime of the Territorial Sea, the International Law Commission took cognizance of the *Fisheries* decision regarding the drawing of straight baselines, where islands fringe a coast, without regard to the « rule of the tidemark », but with modifications as to distance from the mainland coast and as to distance between islands, based on the recommendations of a Committee of Experts (*supra,* footnote 30). REP., INT'L LAW COMM., 6th Sess. 14 (1954), Regime of the Territorial Sea (Article 5), recorded in Official Records, U. N. General Assembly, 9th Sess., Supp. No. 9 (1954) (U. N. DOC. A/2693).

vertical rise and fall, and constituting a tidal plane; and a horizontal one, related to the line where the tidal plane intersects the shore to form the boundary desired. (See Fig. 13). The first is derived from tidal observations alone and, once derived (on the basis of long-term observations), is for all practical purposes a permanent one. The second is dependent on the first, but is also affected by the natural processes of erosion and accretion, and the artificial changes made by man.

As stipulated in Public Law 31, the coastline from which the seaward boundaries of the States are to be measured is the « line of ordinary low water ». But the term « ordinary » lacks the technical precision that is required in the establishment of tidal boundaries and raises problems of interpretation that require an analysis of tidal phenomena insofar as they pertain to the types of tide encountered along the coasts of the United States. (See Fig. 14). For example, along the Pacific

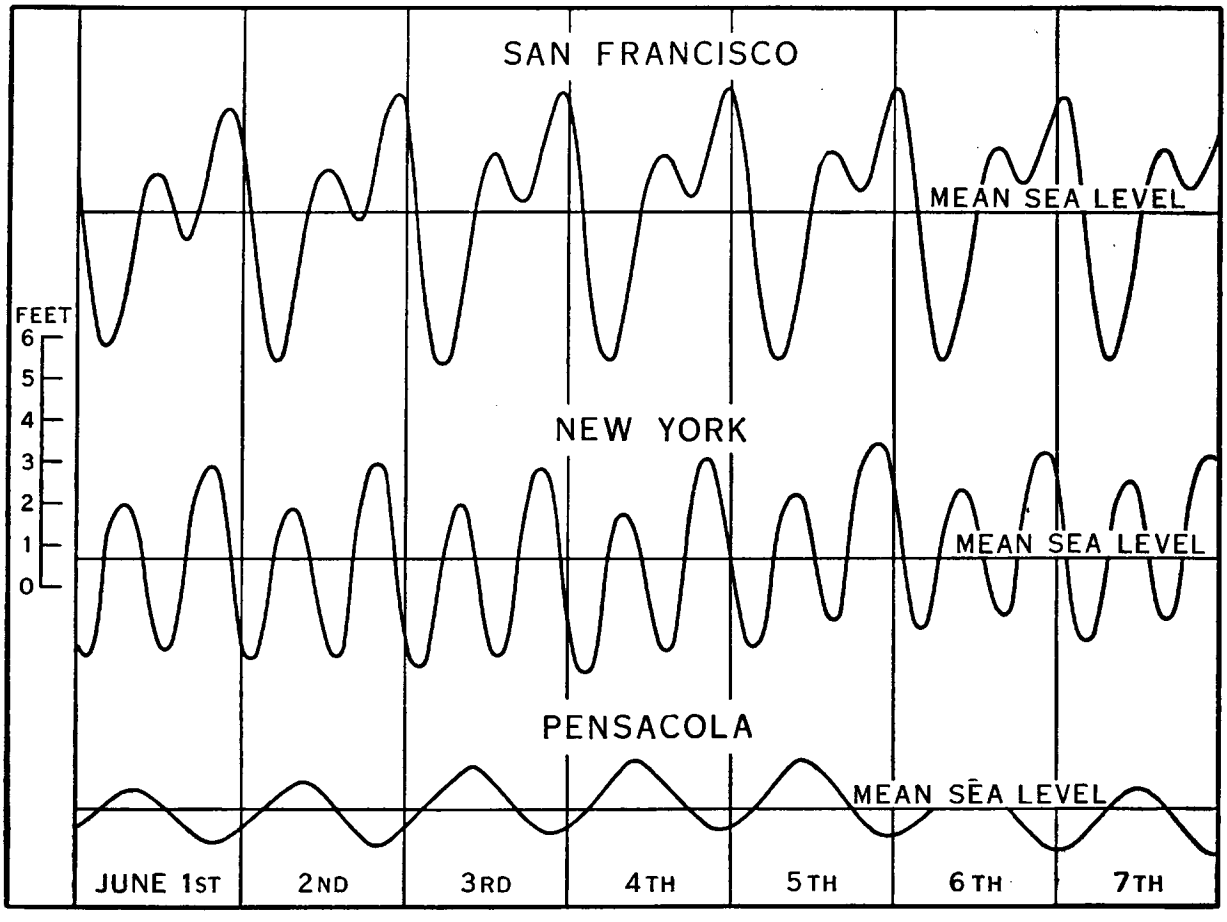

Fig. 14

Types of tide along coasts of the United States.

coast, the tide exhibits a marked diurnal inequality—that is, successive high waters rise to different levels and successive low waters fall to different levels. The question therefore arises whether to use an average of the lower low waters, the higher lows, or all the lows. The seaward boundaries would extend farther inshore or farther offshore, depending upon the plane used.

Tidal boundaries are not new in American jurisprudence. The early grants, charters, and conveyances, which constitute the first links in the chains of titles on which the present ownerships of lands along our seacoasts are based, contain such phraseology as « high-water line », « high-tide line », « line of ordinary high water », and similar phrases pertaining to a low-water datum. These references are at best indefinite and reflect an oversimplification of a phenomenon inherently complex. Decisions interpreting such references sometimes contain imperfections, which suggest that appropriate scientific data may not have been made available to the court. *Teschemacher* v. *Thompson,* 18 Cal. 11 (1861) is a case in point. The court there said :

> « The limit of the monthly spring tides is, in one sense, the usual high water mark; for, as often as those tides occur, to that limit the flow extends. But it is not the limit to which we refer when we speak of « usual » or « ordinary » high water mark. By that designation we mean the limit reached by the *neap tides;* that is, those tides which happen between the full and change of the moon, *twice in every twenty-four hours* ». (Emphasis added).

From the language quoted it is impossible to be certain what the court had in mind. Neap tides are those which occur when the moon is in quadrature, that is, at right angles to the sun. This happens *twice every month* when the moon is in its first and third quarters. The range of the tide at such times is less than the average, and high water does not rise as high nor low water fall as low as usual (39).

The case of *Borax Consolidated* v. *Los Angeles* (40), decided by the Supreme Court in 1935, established the first precise standard for interpreting the term « ordinary high-water mark » in connection with a Federal grant in the inner harbor of Los Angeles. The Court there held that in determining ordinary high-water mark, neither the spring tide nor the neap tide is to be used, but a mean of all the high tides, thus ruling out the higher highs only and the lower highs only. It accepted the Coast and Geodetic Survey's definition of the term « mean high water » at any place as being « the average of all the high waters at that place over a considerable period of time » (41).

If used in the same context, this decision should be authority for interpreting the cognate term « ordinary low-water mark » as the average of all the low waters, rather than the average of the higher lows only, or the lower lows only.

This was the recommendation of the Special Master in the *California* case. He predicated his finding on the consideration of property rights, stating that from the point of view of a disputed real estate boundary line, there would « be no more reason to choose the mean of the lower low tides (as one interested claimant might suggest from self-interest) than to choose the mean of the higher low tides (as self-

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(39) SCHUREMAN, TIDE AND CURRENT GLOSSARY 25, Special Publication No. 228, U.S. Coast and Geodetic Survey (1949). The cognate term « spring tides » is applied to those tides which happen when sun, moon, and earth are in line. They also occur twice each month, taking place at the times of new and full moon. The tides then rise higher and fall lower than during the rest of the month. *Id.* at 34.

(40) 296 U.S. 10 (1935).

(41) MARMER, TIDAL DATUM PLANES 86, Special Publication No. 135, U.S. Coast and Geodetic Survey (1951).

interest might likewise move the other claimant to suggest) ». In his view, the middle way, that is, the mean of all the low tides, would seem to be the only choice of which neither contestant could justly complain. This, he believes, is also the effect of the *Borax* decision with regard to « ordinary high water » (42).

As applied to Public Law 31, this finding would seem to afford a yardstick for at least an abstract interpretation of the term « ordinary low water ». But a distinction must be noted between the two situations. In the *California* case, the line of ordinary low water was the actual Federal-State boundary; in Public Law 31, it is not the boundary line but the baseline from which the seaward boundaries of the States are to be measured, and is the same baseline from which the marginal sea is measured. In these circumstances, and in the absence of any choice having been made by the United States in its international relations (43), some guidance in this matter may be had from the provisional articles on the Regime of the Territorial Sea, promulgated in July 1954, in which it is recommended that the low-water line as marked on the largest-scale official chart of the coastal nation be used for measuring the limits of the marginal sea (44). On the Pacific coast of the United States, the mean of the lower lows is used as the reference plane for the nautical charts.

The Seaward Boundary Problem

Thus far, we have been considering the resolution of boundary problems with respect to the landward base. Unlike the *California* case, Public Law 31 also poses problems associated with seaward boundaries. These fall into two categories : (1) a determination of the outer boundaries of the States, and (2) a determination of the lateral boundaries between the States. As in the case of the landward base, there is nothing in the Act, nor in the legislative history, that provides a guiding principle for the solution of these problems.

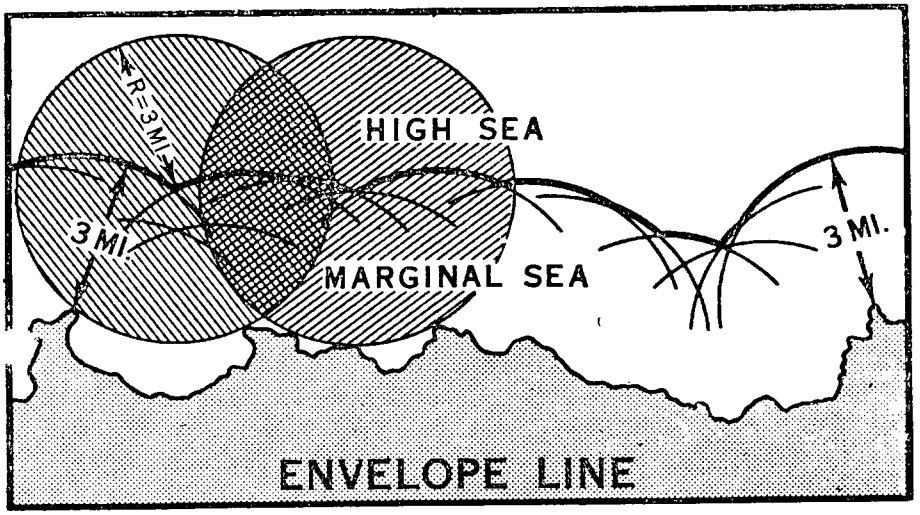

Fig. 15

Principle of the envelope line.

(42) Final Report of Special Master, *supra* footnote 28, at 39-40.

(43) *Id.* at 42.

(44) *See* REP., INT'L LAW COMM., *supra* footnote 38, at 14 (Article 4).

Exterior Boundaries — The Envelope Line. — While various methods are sometimes mentioned in the literature for delimiting the outer limits of the marginal sea, the method proposed by the United States at the 1930 Codification Conference merits the most serious consideration (45). (See Fig. 15). Technically, it consists of drawing a line every point of which is a fixed distance (the width of the marginal sea) from the nearest point of the low-water line. Such line is constructed by swinging arcs from points along the low-water line, the most seaward arcs forming the outer limits of the marginal sea. It is called an « envelope line » because it envelops, so to speak, all arcs that fall short of it, as for example, the arcs drawn from the indentation in the left-hand portion of the figure. Geometrically, it is the locus of the center of a circle of fixed radius, the circumference of which is always in contact with the low-water line or with the seaward limits of inland waters. Although often referred to as the « arcs of circles method » because of the manner in which the line can be drawn, it will occasion less confusion if thought of in its geometric sense, that is, as a derivative of the coast line.

The envelope line possesses the unique feature that only one such line can be drawn from a given coastline, so that even though no actual line is charted, a navigator would have no difficulty in determining whether he is in the marginal sea or on the high seas. Having plotted his position on his chart, he describes an arc to landward with a radius equal to the width of the marginal sea: If the arc cuts land or inland waters, he is in the marginal sea; if it just touches, he is exactly on the boundary; and if it fails to touch at all, he is on the high seas. (See Fig. 16).

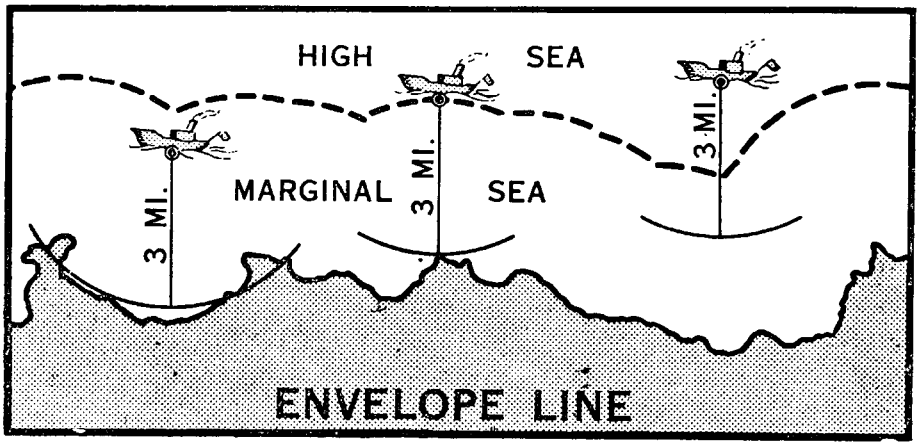

Fig. 16

Use of envelope line in practice.

The envelope line was adopted by the International Law Commission in 1954 as an appropriate method for drawing the outer limit of the marginal sea, and would seem to be applicable to the delimitation of the seaward boundaries of the States (46). However, in applying it to the context of Public Law 31 and

(45) *See* 3 Acts of the Conference, *supra* footnote 27, at 197.
(46) *See* REP., INT'L LAW COMM., *supra* footnote 38, at 15 (Article 6).

Public Law 212, it may be desirable, in the interest of simplified leasing procedures, as well as for identification purposes, to adopt, within the framework of the envelope line, a straight-line approach to the delimitation problem. Such a line would in reality be a jurisdictional line, and would not be the actual boundary of the territorial limits of the United States, insofar as international law is concerned.

Lateral Boundaries — The Equidistant Line. — Delimitation of the seaward lateral boundaries between adjacent States under Public Law 31 poses the same problem as delimitation of the lateral boundaries between adjacent coastal nations through the marginal sea and through the high seas to the outer edge of the continental shelf. The objective in all such delimitations is to apportion the area in such manner as will be equitable to both countries or to both States. This principle of equity was embodied in the Presidential Proclamation of 1945 (*supra* footnote 10). But to proclaim an abstract principle is one thing, and to formulate a working rule is quite another.

If coastlines were relatively straight, and the land boundary between adjacent nations reached the shore at right angles, the problem of delimiting the lateral boundary would be a simple one—an extension seaward of the last land frontier would be the logical solution. But coastlines are rarely straight, and land boundaries seldom reach the shore at right angles. Figure 17, for example, illustrates a condition where an extension of the land boundary through the marginal sea would clearly be inequitable for « Country A » because it would deprive it of a portion of the marginal sea that clearly belongs to it. The inequity would be intensified as the line is extended seaward to the edge of the continental shelf.

Other solutions sometimes proposed are : drawing a line at right angles to the general direction of the coast, or using as a dividing line the parallel of latitude or the meridian of longitude of the points at which the land boundary meets the coast.

The International Law Commission rejected these methods as impracticable for a general rule of law, although suitable in special situations. It adopted instead the « principle of equidistance » as the basis for drawing the lateral boundary between adjacent countries through the territorial sea, « in the absence of agreement or unless another boundary line is justified by special circumstances » (47). The latter proviso would definitely include exceptional configurations of a coast, which might require a modification of the principle.

Fig. 17 shows one method of applying the principle of equidistance to a coastline from the shore to the edge of the continental shelf. With the shore terminus of the land boundary as a center, intercepts are draw at equal intervals on the coastline of each country. Arcs are then swung seaward from corresponding intercepts with radii equal to the distance between them. The intersection of corresponding arcs form points on the lateral boundary.

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(47) REP., INT'L LAW COMM., *supra* footnote 38, at 17 (Article 16). This follows the principle adopted by the Commission for delimiting lateral boundaries through the continental shelf. The latter, however, contains the additional provision that disputes should be submitted to arbitration. To that extent the rule partakes of some elasticity, but any arbitral solution must be conceived within the framework of the principle of equidistance. REP., INT'L LAW COMM., *supra* footnote 13, at 13, 15-16. No arbitral provision is at present drafted for the delimitation of lateral boundaries in the territorial sea, since the Commission has decided to hold over all provisions relating to this subject. REP., INT'L LAW COMM., *supra* footnote 38, at 17 (comment on Articles 15 and 16).

There may be other ways of adhering to the principle of equidistance, and this aspect of the problem requires further study.

These principles, or some adaptation thereof, would appear to afford criteria for interpreting those portions of Public Law 31 and Public Law 212 that pertain to lateral boundaries (48).

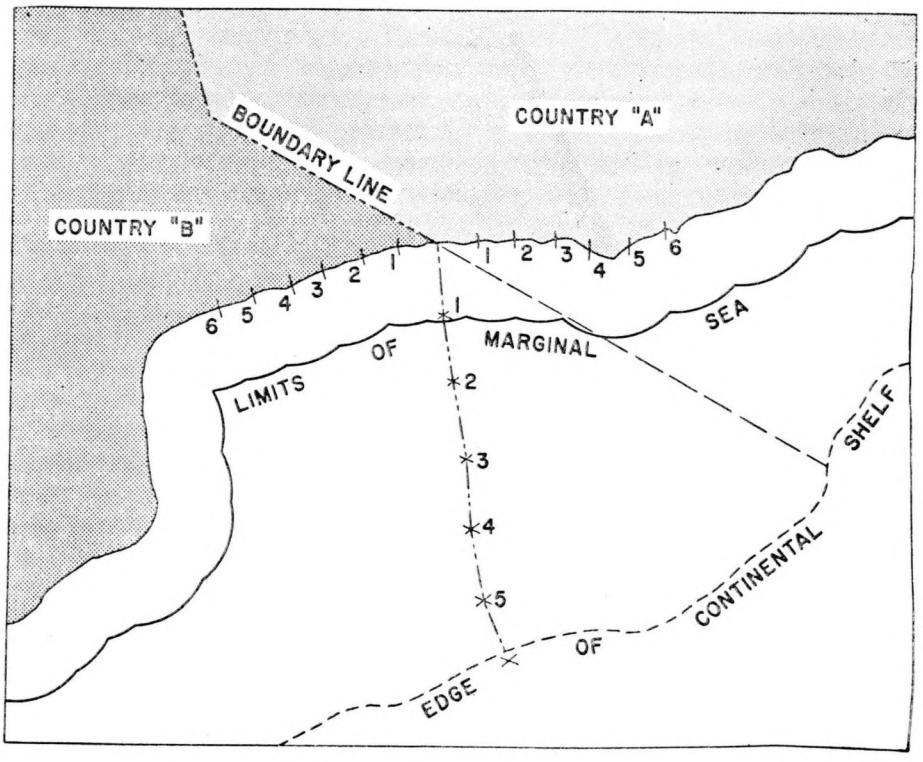

Fig. 17

The principle of equidistance in drawing lateral boundaries.

SUMMARY

To summarize then, adoption by the International Law Commission of draft articles on the Regime of the Continental Shelf marks a major forward step in the development of an orderly and peaceful basis for the exploration by nations of the natural resources contiguous to their coasts. National sovereignty is established within the orbit of the paramount principle of freedom of the seas. If the recommendations of the Commission are accepted by the United Nations General Assembly, a source of possible friction will have been removed from the international scene.

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(48) For a comprehensive discussion of Public Law 212, *see* Christopher, The Outer Continental Shelf Lands Act.: Key to a New Frontier, 6 STANFORD L. REV. 23 (1953).

On the national level, passage by Congress of the Submerged Lands Act and the Outer Continental Shelf Lands Act has clarified generally the status of these areas in relation to Federal and State jurisdiction. But neither of the Acts provide criteria for determining with engineering certainty the specific areas of jurisdiction. Nor has the validation by the Supreme Court of the Submerged Lands Act remedied these defects (49). These remain for future adjudication or agreement. On the Atlantic and Pacific coasts, the problem will be primarily one of establishing criteria for interpreting the baseline from which the seaward boundaries of 3 nautical miles are to be measured. This will involve problems not unlike those considered by a Special Master in the case of *United States* v. *California*, and his recommendations, together with the draft articles of the International Law Commission, should provide at least an approach to a resolution of this phase of the boundary problems.

On the Gulf coast, there will be the additional problem of determining which of the States are entitled, under the provisions of Public Law 31, to a seaward boundary of 9 nautical miles, and the extent to which such provision is valid as against other coastal States and as against other nations.

From a surveying and mapping point of view, there will be the matter of the actual location of the line of ordinary low water and the seaward limits of inland waters, as well as the seaward boundaries of the States, with an accuracy commensurate with the specialized nature of the problem. A survey of the low-water line at indentations, together with islands and reefs at the entrance, will be necessary for a determination of the status of such indentations, that is, whether inland waters or open sea. Along a generally straight coast, the condition of reefs and rocks (with respect to the chart datum) will have to be ascertained so as to provide a baseline for delimiting the seaward boundaries of the States (50). Finally, intensive mapping of the topography of the continental shelf, together with oceanographic surveys of the superjacent waters, may be required as a base for future exploration of this vast, but relatively untapped, reservoir of natural resources.

With these problems of delimitation and demarcation resolved, we should not be at a loss to provide an answer to the question « Where are the seaward boundaries of the United States ? ».

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(49) Alabama v. Texas, 347 U.S. 272, 273 (1954). In a brief *per curiam* opinion, the Court held that « The power of Congress to dispose of any kind of property belonging to the United States is vested in Congress without limitation' » and that « Congress not only has a legislative power over the public domain, but it also exercises the powers of the proprietor therein » and « may deal with such lands precisely as a private individual may deal with his farming property ».

(50) The actual survey of the low-water line will involve vertical ties to established bench marks and horizontal ties to existing triangulation. In some areas, such as along the Gulf coast, additional triangulation will be required, as well as additional control tide stations to furnish an adequate datum. Once these fundamental data are determined, the mapping of the low-water line can be accomplished by photogrammetric or by other methods, or by a combination of methods. The difficulty in many areas will be getting on the ground with the proper data, from which the low-water line can be established.