

THE YALE LAW JOURNAL

EDITORIAL BOARD

ALLEN H. MERRILL

Editor-in-Chief

ROBERT H. HARRY

RUSSELL G. OLSEN

Comment Editors

FRANKLIN M. SCHULTZ

Article and Book Review Editor

LEWIS C. BOSE

JOHN B. BRUECKEL

ALVIN GALLEN

GRANT GILMORE

ERIC H. HAGER

RODNEY HARRIS, JR.

JOHN H. HEIRES

TYLER HULL

JOHN C. JAQUA, JR.

EDWIN P. KAUFMAN

HENRY KOHN, JR.

WILLIAM O'D. LEE

THOMAS C. MASON

JACK M. GINSBERG

MARSHALL HORNDLOWER

Note Editors

RICHARD A. SOLOMON

Case Editor

RICHARD W. McLAREN

LOUIS F. OLDERSHAW

DONALD L. SANDERS

HART H. SPIEGEL

LEA H. SPRING

CHARLES T. STEWART

NORMAN WILLIAMS, JR.

Editors in Military Service

LOUIS F. OBERDORFER, *Editor-in-Chief*

DONALD F. KEEFE, *Comment Editor*

JUSTIN M. GOLENBOCK

PHILIP MANDEL

JAMES D. TREDUP

Subscription price \$4.50 per year

80 cents per number

Canadian subscription price \$5.00 per year; Foreign, \$5.25 per year

Yale Law Journal Company, Inc., Box 401A, Yale Station, New Haven, Conn.

PRORATION OF PETROLEUM PRODUCTION

PETROLEUM proration consists of an extensive system of interlocking state and federal regulations developed during the last fifteen years ostensibly as a program of petroleum conservation, actually as a means of pegging the price of oil.¹ The chief weapon of proration policy—employed in a bewildering

1. For a general description of proration and the petroleum industry, see Marshall and Meyers, *Legal Planning of Petroleum Production* (1931) 41 YALE L. J. 33, *Legal Planning of Petroleum Production: Two Years of Proration* (1933) 42 YALE L. J. 702; Ely, *The Conservation of Oil* (1938) 51 HARV. L. REV. 1209; Ford, *Controlling the Production of Oil* (1932) 30 MICH. L. REV. 1170; NATIONAL RESOURCES COMMITTEE, *ENERGY RESOURCES AND NATIONAL POLICY* (1939) 123-236, 397-404; KEMNITZER, *REBIRTH OF MONOPOLY* (1938); LOGAN, *STABILIZATION OF THE OIL INDUSTRY* (1926); POGUE, *ECONOMICS OF THE PETROLEUM INDUSTRY* (1939); SHUMAN, *THE PETROLEUM INDUSTRY* (1940); STOCKING, *THE OIL INDUSTRY AND THE COMPETITIVE SYSTEM* (1925); WATKINS, *OIL: STABILIZATION OR CONSERVATION?* (1937).

variety of ways—is limitation of output; rather than direct price fixing. Within recent years the outlines of the oil production control policy have taken on the clarity of accepted usage, and the consequences of the program are now to be observed and measured, rather than predicted. Moreover, the scheme of oil proration must be re-examined in the light of the war effort, which is bringing sharp increases in demand and changing patterns of oil consumption.

OIL PRODUCTION: GEOLOGY AND ECONOMICS

Oil is found in vast reservoirs which usually underlie a multitude of small, independently owned, contiguous surface tracts. The typical reservoir contains a layer of free gas in its higher portions, a stratum of water at its base, and a pool of oil compressed between the water and the gas. The free gas and the underlying water exert a constant pressure throughout the pool, which produces a constant diffusion of gas into the oil itself, reducing the viscosity of the oil and increasing its mobility. So long as the reservoir remains untapped by wells it lies in a state of equilibrium. Once its shell is punctured by drilling, the pressure gradients combine to propel the oil toward the aperture and lift it to the surface. Since gas and water tend to move toward any area of reduced pressure more rapidly than oil, the gas and water in the pool, as the rate of withdrawal of oil is unduly increased, tend to by-pass the remaining oil, encircle it, and prevent its production. Moreover, as the pressure of the free gas and the water is reduced, the quantity of gas dissolved in the oil decreases and the mobility of the oil declines. It is therefore essential in order to secure maximum ultimate recovery that pressure not be drawn off too rapidly from the pool as a whole and from localized areas. There exists an optimal rate of production for each pool and for each well tapping the pool, which, if adhered to by well owners, will prevent waste of natural reservoir energy and conversely promote economy in production through superior efficiency.² Yet in the past the optimal rate has been uniformly ignored by oil producers. Production in each oil field has been meteoric. An initial "flush" production, characterized by an enormous output and an indiscriminate utilization of natural reservoir pressure, has been followed by a rapid decline and tapering off of the field's productive capacity; in place of the once abundant natural reservoir pressures, the use of costly artificial repressuring devices has been necessitated to maintain even a reduced output.³

At the basis of this rapacious and wasteful exploitation of oil fields is the economic motivation of each producer to expand production as rapidly as

2. The optimal rate of production must clearly be differentiated from the efficient oil-gas ratio. The latter is purely a mechanical concept which has no relation to economy. The optimal rate is discussed further *infra* at p. 624.

3. See WATKINS, *op. cit. supra* note 1, at 13-17; PETTENGILL, *HOT OIL* (1936) 62.

possible in order to secure a larger share of the oil from the pool tapped by his wells. Ownership of oil in a pool is not determined by the boundaries of the overlying surface properties but, under the judicially sanctioned rule of capture,⁴ the first producers to reduce any part or all of the oil to physical possession take title to it, regardless of the fact that it may have been drained from a portion of the pool underlying the surface tracts of neighboring producers. Each owner of oil-bearing properties, therefore, necessarily pursues a vicious program of offset drilling and unthrottled production.

In the past output has not been inevitably reduced even by a disastrous fall in price.⁵ The owner of a given well could not easily cease operations, so long as his neighbors continued to produce, without risking the loss of all possible future production. The economic difficulties which the situation presented for the individual producer frequently resulted from a depression in the crude price level originating in the peculiar pattern of oil production itself. Not only did cumulative acceleration in output, inherent in a superimposition of the law of capture upon a divided ownership of surface land, often cause a perceptible fall in petroleum prices but violent downswings were occasioned by the periodic discovery of new flush oil fields.⁶ The low unit operating costs in flush fields, moreover, permitted the price of crude to fall below the unit operating costs of many of the producers in older fields, who, having already fully utilized the mainspring of the natural reservoir pressure of the pools, had been forced to resort to costly artificial pumping.

From the beginning producers evinced more consternation over the low prices resulting from unregulated oil production in general, and from the periodic discovery of flush fields in particular, than over the waste of reservoir energy. As long, however, as output was inadequate in the long run to meet the demand for oil, all attempts to regulate production were defeated. But when output began to increase faster than demand, and finally definitely outdistanced demand, relief was actively sought in the proration mechanism.⁷ Two procedures for restricting supply by means of proration are in use today:

4. The rule of capture has at various times been given three different meanings. In its broadest sense it denotes a condition in which there is no regulation of oil production by any agency, private or governmental. In a strictly legal sense it means a rule of law whereby the operator of one tract of land is permitted to withdraw with impunity oil underlying neighboring tracts. Less frequently it is used as the antithesis of "ownership of oil in place." See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 1479-80. Here the term is employed in its strictly legal sense.

5. See NATIONAL RESOURCES COMMITTEE, *op. cit. supra* note 1, at 192.

6. The most serious price declines were caused by the discovery of the Seminole field in Oklahoma in 1927 and the discovery of the East Texas field in 1931. See *ibid.*

7. The best example is provided by Oklahoma which had a statute on its books, permitting restriction of supply, as early as 1915. No attempt was made to use it until the petroleum output, augmented by production from the newly discovered Seminole field, began to outrun the demands for crude. See Marshall and Meyers, *supra* note 1, 42 YALE L. J. at 702, n. 2; KEMNITZER, *op. cit. supra* note 1, at 54.

- (1) enforced curtailment of production by proration under state laws; and
- (2) voluntary curtailment by proration under a cooperative agreement of producers.

CONTROL OF PRODUCTION

(1) *Enforced Curtailment by Proration Under State Law.* State laws for the conservation of oil resources have been enacted in all but two important producing states.⁸ The typical statute provides for the establishment of a state conservation agency to enforce the prohibition of specifically enumerated wastes.⁹ No reference is made to the federal-state scheme of proration in any of the statutes; but the state agencies, once constituted, have uniformly adopted the mechanism, finding authority under a statutory prohibition either of economic waste or of waste resulting from a market supply in excess of consumptive demand.¹⁰

Control of production through proration begins at the United States Bureau of Mines which forecasts the monthly demand for crude oil from each state. The first step in the forecasts is an estimate of total national gasoline demand, based on the number of automobiles in operation throughout the country and the average gasoline consumption per automobile. From this total is deducted the gasoline to be obtained from storage, from imports, or from natural production.¹¹ The balance is the gasoline to be produced from crude oil. An estimated yield factor, based on the average crude oil requirement per unit of gasoline processed, is applied to this balance to determine the total national crude oil demand. It is arbitrarily assumed that the national crude oil demand is unaffected by the demand for fuel oil and that whatever residue is left after processing total national crude for gasoline will satisfy the consumptive demand for fuel oil. Having determined the national petroleum demand, the Bureau of Mines distributes this total among the oil producing states according to past demands for the crude oil of each state. The country is divided into eight refinery districts and reports are secured from each district of its past receipts of crude oil from each state for refining. These amounts are checked with interstate movements of oil to discover any trend in the demand upon a particular state. For example, it may happen that

8. Illinois and California have held out against persistent pressure from neighboring oil producing states. This has not, however, detracted seriously from the effectiveness of the proration mechanism since California has a voluntary system of curtailment and since Illinois produces a low percentage of the country's crude output—for example, 7.5% in 1939. See MINERALS YEARBOOK (U. S. Dep't Interior 1940) 954.

9. See Ford, *supra* note 1, at 1181; Comment (1939) 25 VA. L. REV. 360, 365, n. 44.

10. See Marshall and Meyers, *supra* note 1, 42 YALE L. J. at 727; *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 956-1088.

11. "Natural production" denotes liquid gasoline extracted directly from natural gas by purely physical methods.

a refinery district is increasing its purchases of oil from one state and reducing them elsewhere. After allowances are made for any such trend the adjusted receipts of oil from each state by all refinery districts are added to determine the total demand on that state.¹²

The forecast of demand for crude from each state is communicated to the state's conservation agency for use in setting the state's allowable production for the ensuing month. The estimated demand differs from the allowable production because, during the month, oil may be withdrawn from storage by refiners to satisfy current needs or, on the other hand, purchases in excess of immediate needs may be indulged to add to the total surface stock of crude oil. To check the possibility of such changes in the crude oil stock, the state agency secures nominations from buyers of oil within the state as to prospective purchases. On the basis of these nominations and the estimated fluctuations in crude oil storage, it sets the allowable production for the state, which is in turn allocated to the various fields and wells within the state.¹³ No satisfactory formula for the allocation has yet been worked out by any agency. There are hundreds of factors which should be considered.¹⁴ The ideal as enunciated by the Supreme Court of the United States would give each operator an opportunity to produce substantially the amount of oil and gas under his tract, subject always to the necessity of preventing waste.¹⁵ The efforts of the conservation agencies to realize this ideal are evidenced by the variety of formulae in use among the oil producing states. In general, the state's allowable has been distributed on a per well basis, without reference to the estimated oil reserve underlying each well.¹⁶ This policy has frequently been a consequence of the indiscriminate extension of the benefit of marginal well statutes to all types of wells.¹⁷ But the Supreme Court of the United States has in effect held that the due process clause

12. The procedure used by the Bureau of Mines is described in detail in *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 167-94; *Hearings before the Temporary National Economic Committee on Public Res. 113*, 76th Cong., 2d Sess. (1939) 9583-9603.

13. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 1487-92.

14. The geological characteristics of the pool, the number of wells on its structure, its cost of operation, and its nearness to market are only a few. See *ibid.*

15. See note 94 *infra*.

16. See POGUE, *op. cit. supra* note 1, at 26. Other methods which may be used independently or in connection with a per well measure are potential production and acreage. See Ely, *supra* note 1, at 1226.

17. Statutes prevent any restriction of the production of marginal wells below a certain minimum. The extension of the benefit of these statutes to all types of wells has been most notorious in Texas. In 1940, for example, although well quotas were theoretically measured on a potential production basis, actually 75% of the state's allowable was distributed on a per well basis. See *Railroad Commission of Texas v. Rowan & Nichols Oil Co.*, 311 U. S. 570, 574 (1941).

of the Fourteenth Amendment imposes no restrictions upon the state agency in its choice of a production allocation formula.¹⁸

In order to enforce the restriction of production by each well owner to his pro rata share, the states have set up rigid penal systems. Oil produced in excess of quotas is subject to confiscation.¹⁹ State tender boards require regular reports from oil producers and pipe lines on the quantity of oil shipped.²⁰ The state systems are powerfully bulwarked by a federal penal statute. Under the Connally Act it has become unlawful for any producer to ship in interstate commerce oil produced in excess of his individual quota under state law.²¹ A Federal Tender Board has been set up to enforce the Act, being granted investigatory powers similar to those of the state boards.²²

An overall supervision of the proration mechanism is exercised by the Interstate Oil Compact Commission, a voluntary cooperative committee of representatives from the oil producing states.²³ The compact providing for the Commission has been specifically approved by Congress.²⁴ The provisions of the compact encourage the prevention of physical waste but expressly prohibit the Commission from engaging in price stabilization and monopolistic practices.²⁵ In the past membership of the Commission has been limited in number and, although regular meetings have been held, little has been done to prevent physical waste. Recently, under the impact of mounting interest in federal control of oil production, the Commission has shown new activity in the conservation field.²⁶

18. *Railroad Commission of Texas v. Rowan & Nichols Oil Co.*, 310 U. S. 573 (1940), *amended*, 311 U. S. 614 (1940); *id.*, 311 U. S. 570 (1941), Note (1942) 51 YALE L. J. 680.

19. The Texas statute is typical. See TEX. ANN. REV. CIV. STAT. (Vernon, 1935), art. 6066a, § 10; *Thompson v. Spear*, 91 F. (2d) 430 (C. C. A. 5th, 1937), *cert. denied*, 302 U. S. 762 (1937).

20. These measures, even in the absence of specific statutory authorization, have been judicially sanctioned as reasonable police power regulations. *Atlas Pipe Line Co. v. Sterling*, 4 F. Supp. 441 (E. D. Tex. 1933).

21. For the text of the Connally Act, see 49 STAT. 30 (1935), reenacted by 50 STAT. 257 (1937) and 53 STAT. 927 (1939), 15 U. S. C. § 715 (1940).

22. See 49 STAT. 31 (1935), 15 U. S. C. § 715d (1940). Actually the Board has thus far confined its activities to the East Texas field. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on S. 1302, H. R. 4547, and H. R. 2308*, 76th Cong., 1st Sess. (1939) 122-29.

23. See Comment, *Some Legal and Practical Problems of the Interstate Compact* (1935) 45 YALE L. J. 324, 332.

24. For the text of the Compact, see 49 STAT. 939 (1935), reenacted by 50 STAT. 617 (1937) and 53 STAT. 1071 (1939).

25. *Id.* at art. 5.

26. The membership has been enlarged. Federal governmental agencies have been invited to participate in the meetings. Expenses are paid by pro rata contributions from all member states rather than, as was formerly true, by Oklahoma alone. Committees have been set up to study various legal and engineering aspects of oil production and a uniform conservation statute has been devised. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 15 and H. R. 118*, 77th Cong., 1st Sess. (1941) 41-75.

(2) *Voluntary Curtailment by Proration Under a Cooperative Agreement Between Producers.* Curtailment of production in California functions extra-legally through the Central Committee of California Oil Producers, an organization whose membership includes most of the producers of the state. The Committee fixes an allowable production for the state, based on purchasers' nominations and on the Bureau of Mines' quota for California, and distributes this allowable on a potential production measure among the wells in each field.²⁷

Although California became a member of the Interstate Oil Compact Commission in 1939, it has failed to adopt an oil conservation statute.²⁸ There are, accordingly, no state and federal policing regulations,²⁹ and conformance to assigned quotas depends entirely upon whatever sanctions the Central Committee can invoke against non-cooperative producers.³⁰ In all respects other than enforcement, however, the mechanics of restriction are the same as those of states sanctioning proration by statute.

DIAGNOSIS OF PRORATION

Before the general adoption of the proration scheme, the vagaries of the law of real property as applied to the geology of oil fields resulted in a pattern of production which offended many interests. The divided ownership of the land over oil pools made production less responsive than otherwise to declining price; yet the producer was recurrently confronted with a depression of price upon the periodic coming into production of new fields. Moreover, in direct contravention of the interest of the public, maximum total oil recovery was not the goal pursued by producers: much gas and water pressure which might have been utilized in the long run to lift oil to the surface was needlessly dissipated.

The remedy adopted by the oil states and by Congress, the complex program of restricting production known as proration, does not eliminate the structural maladjustments inherent in an unregulated crude oil industry. Under the system of proration the states have assumed leadership of the

27. For a general discussion, see *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 679-788, 1711-17; WATKINS, *op. cit. supra* note 1, at 230.

28. Two attempts have been made. In both instances conservation bills were defeated by popular referendum. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 1711.

29. The Connally Act operates only in those states which have conservation statutes designed to restrict supply. See 49 STAT. 31 (1935), 15 U. S. C. § 715b (1940).

30. The major companies in California have supported proration statutes in preference to this system. See SHUMAN, *op. cit. supra* note 1, at 269. On the other hand, the United States Department of Justice recently initiated an antitrust investigation of the California crude industry. See Department of Justice, *Investigation of the Oil Industry in the Pacific Coast Area* (1939).

multitude of competing oil producers and, through the medium of the Interstate Oil Compact Commission and the Bureau of Mines, collaboration between the new leaders takes place on a national scale. The overall control engendered by this pyramiding of authority is not, however, utilized to promote conservation, but rather to rig prices by artificially restricting output without regard to optimal rates of production of specific fields or of wells in specific fields. Moreover, while total output is artificially held constant behind the damming wall erected by proration, producers continue to engage in a wasteful competitive strife.

In the past there has been stiff competition among states in their roles as producers. The Bureau of Mines' methods of forecasting demand upon the basis of past shipments to market have constantly tempted each state gradually to increase its production in order to obtain a larger share of the market. But of course upon the adoption of such a policy other states would be induced promptly to retaliate. Knowledge of this fact has caused larger producing states to adhere closely to their quotas, even in the absence of interstate agreement. Smaller producing states have tended to deviate often from quotas upon the well-reasoned theory that large producing states would rather relinquish a little of their market than abandon the entire control machinery.³¹ But the growing effectiveness of the Interstate Oil Compact Commission in controlling production can be surmised from the remarkable constancy since 1936 of percentages contributed by each state to total production.³²

Although competition among states may now be on the wane, the competitive struggle continues among individual producers within the insulating barriers set up along state lines. The rule of capture—abolished for production—continues to govern well-drilling. It has proved politically impossible for any state agency completely to deny any well owner the right to produce, and, until recently, to deny any surface owner the privilege of digging a well. A number of states now have well spacing laws.³³ A few

31. Illinois has been the chief offender, poaching heavily upon the Chicago market. States like Oklahoma and Texas which shipped to that area have cut production, apparently reasoning that Illinois' production can have only a limited life. See *Hearings before a Subcommittee of a Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372, 76th Cong., 3d Sess. (1939) 954.*

32. See WATKINS, *op. cit. supra* note 1, at 109; *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372, 76th Cong., 3d Sess. (1939) 1710-11 (Table I).* The effectiveness of the Interstate Oil Compact Commission is also graphically illustrated by the unanimity of state action in August, 1939, when, within four days after one of the major oil refining companies in the country announced a reduction in its posted price for crude oil, all wells in six states were shut down; operations were not renewed until the posted price had resumed its old level. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372, 76th Cong., 3d Sess. (1939) 584.*

33. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372, 76th Cong., 3d Sess. (1939) 351-63.*

have even enacted laws providing for compulsory drilling districts.³⁴ But the general administration of proration on a per well basis, rather than in accordance with underlying oil reserves, has stimulated a circular acceleration of drilling, costly to both producer and community. Since each additional well increases the total permissible production from the tract on which it is located, new wells are constantly being drilled.³⁵ But the quotas of all the other wells in the field are reduced to prevent a production in excess of the field allocation. Therefore the owners of other tracts, in self-defense, must drill new wells to secure their fair share of the underground oil. The consequent overexpansion of capital investments can only result either in all owners ending up with their original allotments or in some, by virtue of superior capital resources, benefiting at the expense of their fellows.³⁶ In either case the capital invested in the new wells is socially unproductive inasmuch as total supply is held to a constant.³⁷ Thus while the multitude of producers and the ease of entry, characteristic of a competitive economy, continue to exist under proration, the advantages which normally flow from such an economy in reduced costs, lower prices, and an optimal use of resources have been blocked by the intervention of the state.

Insofar as the antitrust laws are designed to preserve the advantages of a competitive economy, their policy has beyond doubt been violated. But the mechanism of proration is protected from prosecution by an anomalous type of governmental immunity based on combined practical and legal considerations. Intrastate action under proration statutes may be accorded specific exemption from state antitrust prosecutions.³⁸ But even where no specific exemption is provided, the question of prosecution is practically foreclosed by the fact that the attorney generals in the states are actively engaged in enforcing the proration laws. Interstate restraint of production is also, in practical effect, immunized from prosecution under the federal antitrust laws, for the reason that all action is taken with express Congressional approval. Cooperation among the producing states has been made possible by Con-

34. See *id.* at 1492-94.

35. From 1932 to 1938 there was approximately a 300% increase in the number of wells in the East Texas field which increased total production only 20%. See *Hearings before the Temporary National Economic Committee on Public Res. 113*, 76th Cong., 2d Sess. (1939) 7598. Attempts to restrict drilling activity by means of spacing rules have not proved effective. See Ely, *supra* note 1, at 1230.

36. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 330.

37. The overcapitalization will cause producers to seek a higher price for crude. See *Marrs v. City of Oxford*, 24 F. (2d) 541, 546 (D. Kan. 1928), *aff'd*, 32 F. (2d) 134 (C. C. A. 8th, 1929); Ely, *supra* note 1, at 1234. It has been estimated that the cost of excess drilling is equivalent to a self-imposed gross production tax of ten cents per barrel of oil produced. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 353.

38. California has been most liberal in granting immunity from its antitrust laws. See CODES OF CALIF. (Deering, 1939) *Public Resources Code* § 3301.

gressional ratification of the Interstate Oil Compact; the forecasting service of the Bureau of Mines is supported by annual federal appropriations;³⁹ and effective enforcement of state production quotas by the prohibition of the interstate shipment of "hot oil" is embodied in the thrice reenacted Connally Act.⁴⁰

An analysis of the forecasting methods used by the Bureau of Mines demonstrates conclusively that the monopolistic practices of the cooperating states effect a stabilization of crude oil prices.⁴¹ Both the Bureau of Mines' estimates of demand by states and the purchasers' nominations filed with the state control agency implicitly assume that the size of the market demand is that which exists at current prices. In this fashion the petroleum price level is made virtually self-perpetuating. The present level was originally fixed by the National Industrial Recovery Administration for the purpose of continuing in production all wells, regardless of cost.⁴² After the *Schechter* decision,⁴³ other industries to which a similar policy had been applied reinstated the fundamental law of economic progress that prices should be determined by the low cost producers. Yet the price level for crude oil as set by the Recovery Administration has been maintained with only slight variations.⁴⁴ Moreover, the indications are that it will be directly enforced again by the Federal Government under the developing system of emergency price control.⁴⁵

Prima facie any scheme which stabilizes price at a level to protect the highest cost producer appears unreasonable and therefore a doubtful exercise of governmental authority.⁴⁶ Maintenance of such a level of prices has the

39. This circumvents the holding of the Supreme Court of the United States that a similar trade service constitutes a violation of the Sherman Act. *American Column and Lumber Co. v. United States*, 257 U. S. 377 (1921).

40. The Connally Act recognizes the existence of potential monopolistic practices when it provides for intervention by the President of the United States upon the development of a disparity between demand and supply. See 49 STAT. 31 (1935), 15 U. S. C. § 715(c) (1940). As yet the power has never been exercised, although it was threatened in the shutdown of August, 1939.

41. The prorationists admit that price is affected but claim that such a result is purely incidental to the conservation of oil. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 1178, 2012.

42. NATIONAL RECOVERY ADMINISTRATION, CODE OF FAIR COMPETITION FOR THE PETROLEUM INDUSTRY (1933).

43. *Schechter Poultry Corp. v. United States*, 295 U. S. 495 (1935).

44. See *Hearings before the Temporary National Economic Committee on Public Res. 113*, 76th Cong., 2d Sess. (1939) 7449.

45. Letters from the Office of Price Administration have already been sent to all oil producers and purchasers "requesting" that prices as of a designated date be followed. (1941) 10 U. S. L. WEEK 2290; (1942) 10 U. S. L. WEEK 2461.

46. Compare *Nebbia v. New York*, 291 U. S. 502 (1934); *Champlin Refining Co. v. Corporation Commission of Oklahoma*, 286 U. S. 210 (1932).

effect of granting a substantial subsidy to the operators of the low-cost wells,⁴⁷ and to the refiners who draw on stores of crude oil purchased during pre-proration years when the price structure of crude was demoralized.⁴⁸ The prorationists, however, attempt a justification on principles of conservation. Four stock-in-trade arguments are advanced: (1) A high price level is necessary to prevent abandonment of stripper wells⁴⁹ and loss of their oil. (2) A high price level insures the highest possible use value of oil by avoiding its consumption in satisfaction of low-priced wants. (3) Restriction of production conserves reservoir energy so that the ultimate recovery of oil from the pool is maximized. (4) Restriction of production eliminates wasteful storage consequent upon a market supply greater than market demand.

The first argument proceeds upon a common confusion of stripper wells with marginal wells.⁵⁰ The marginal well is defined as a well whose ratio of value returns to cost of production is dangerously low. The stripper well by definition is a well with a low ratio of energy output to energy input. The former is an economic concept, the latter an efficiency concept. It does not follow in principle or in practice that because the stripper well has a low efficiency ratio it also has a low economy ratio, nor that if a high price is not maintained operation of the stripper wells must shortly be abandoned.⁵¹ The argument may have validity for marginal wells. So restricted, however, it loses its poignancy; while stripper wells constitute about three-fourths of the total number of wells in the country,⁵² the number of marginal wells in relation to the total is insignificant.⁵³ Even when wells are shut in, the oil is not lost.⁵⁴ The equipment may deteriorate but the oil is still in the

47. The variations in costs between individual wells are extremely wide. See UNITED STATES PETROLEUM ADMINISTRATIVE BOARD, REPORT ON THE COST OF PRODUCING CRUDE (1935) 26, 62. The operating costs of pumped wells are about 25% more than the operating costs of flush wells. See *Hearings before the Temporary National Economic Committee on Public Res. 113*, 76th Cong., 2d Sess. (1939) 8227.

48. For statistics on the accumulations of crude in storage, see KEMNITZER, *supra* note 1, at 114.

49. Stripper wells as a class comprise the less efficiently producing wells in the country. Usually wells which must be artificially pumped fall into this category. They may be compared with flush wells which are enervated by natural reservoir pressures.

50. The same confusion exists in the granting of minimum allowances to stripper wells under marginal well statutes. See note 17 *supra*.

51. See *Humble Oil and Refining Co. v. Railroad Commission of Texas*, 35 F. Supp. 573, 575 (W. D. Tex. 1940), *rev'd*, 311 U. S. 570 (1941); KEMNITZER, *supra* note 1, at 106. The argument naturally has great political appeal: low-cost producers are not unwilling to boost their own prices.

52. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 1802.

53. In the East Texas field, for example, they comprise less than 1% of the total. See *Humble Oil and Refining Co. v. Railroad Commission of Texas*, 35 F. Supp. 573, 574 (W. D. Tex. 1940), *rev'd*, 311 U. S. 570 (1941).

54. There is some authority for the view that wells temporarily shut in will re-establish themselves. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 738.

ground and can be recovered when price, by the unregulated operation of the forces of supply and demand, rises to a level which indemnifies costs of production.⁵⁵ It is the law of progress that the high-cost producer be driven to the wall. If principles of humanity, or even of conservation, require that he be continued in operation, the only economical method is direct government subsidy to the one affected, not maintenance of an artificially high price level which indirectly subsidizes those producers who by the fortune of nature have relatively low costs of production.

The contention that use value is conserved by restricting production and maintaining a high price level is epitomized in the criticism of the industry for producing for the satisfaction of wants which could be satisfied by comparatively low-priced resources. According to this argument, when the price of oil falls to the level of the price of coal, crude which could be saved for the future production of gasoline will be used for fuel.⁵⁶ But carrying the argument to its logical conclusion, domestic crude production would be curtailed whenever a cheaper substitute was available. Imports of foreign oil would therefore be encouraged. Yet the prorationists have insisted upon a high protective tariff upon foreign oil. This inconsistency aside, it is basically dangerous to toy with estimates of future wants. While the present generation may owe certain obligations to future generations, it should not be burdened by the enforced non-use of oil on the hazard that this oil might be economically more significant at a later date, when it can now be employed to yield more than its cost of production under proper methods of recovery.

Restriction of the rate of production will maximize the ultimate recovery of oil from a field, as the prorationists contend, if, and only if, it is administered with that end precisely in view. There exists an efficient rate of production for each field and for each well in the field. If any one of these rates is varied either above or below its efficient percentage, maximum recovery will be reduced.⁵⁷ Yet under the present methods of determining states' allowables, no consideration is given to the efficient rates of production of the various pools in the states.⁵⁸ Nor, in the distribution of the allowables, is any account taken of the varying characteristics of different pools. Likewise pool allocations are prorated among the wells in the field largely on a per well basis without regard to excessive drilling, oil-gas ratios,

55. The best example of secondary recovery is found in the Pennsylvania oil fields. Abandoned wells were given a new lease on life by the application of different production methods. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 111.

56. As might be expected this argument has been fostered mainly by coal mine operators who fear crude oil competition. See PETTENGILL, *op. cit. supra* note 3, at 99-106.

57. It is not often realized that a pool can be damaged by a too restricted rate of flow as well as by a too liberal rate. See WATKINS, *op. cit. supra* note 1, at 14, n. 14.

58. Moreover, the allowables once determined become stereotyped without regard to increases or decreases in productive efficiency. See *id.* at 110.

and the location of wells on the geological structure. Such an indiscriminate curtailment of production can only result in damaging wells and reducing the recovery obtainable under a program of scientific control. If ultimate recovery is increased at all, it is only because of a fortuitous circumstance that any restriction is beneficial by comparison with uncontrolled flow. But proration itself embodies no considered policy to conserve reservoir energy.

Storage of oil, it can be agreed with the proponents of proration, causes both economic and physical waste. It is costly to erect and maintain storage facilities and, once in storage, oil may be lost by fire or evaporation.⁵⁹ But the contention that storage is inevitable when no curb is placed on production requires close scrutiny. Ordinarily in the economic system there is always a demand at some price. The demand for crude is created by refiners. If, then, refiners store the oil, two alternative reasons may be assigned: either they expect a rise in the price of crude or they desire to prevent a fall in gasoline prices. On the other hand, if the oil is stored by its producer, he may himself be speculating on a rise in the price of crude or he may be unable to sell to refiners at any price. Most of the storage capacity of the country has been owned by refineries' and pipe line companies. In the past enormous stocks of crude were accumulated in anticipation of a shortage of oil.⁶⁰ When so motivated it seems highly doubtful that storage raises any question of conservation. Speculation is generally believed to aid economic processes in achieving the maximum utilization of resources. But recently, from the time when an adequate supply of crude became definitely assured, storage has tended to develop more from a lack of demand for crude and from a desire to preserve the gasoline price structure than from speculative hoarding. This practice does constitute needless waste. The total loss, however, is slight when compared with total production.⁶¹ Certainly it does not alone justify such an artificially high price level as the proration mechanism has effected.⁶² More important, its underlying cause is a monopolistic condition on the demand side of the crude oil market. Remedial efforts should thus be directed to the demand factor of the price equation rather than to the supply variable.

The monopolistic character of the demand for crude goes far to explain the entire system of proration control. Refineries create the demand. And the early monopoly of refineries, achieved by the first Standard Oil Company,

59. It has been estimated that the cost of erecting storage tanks is \$.50 per barrel of capacity and the cost of storing oil about \$.35 per barrel per year. See LOGAN, *op. cit. supra* note 1, at 102. Losses from evaporation today approximate 1.5%. See SHUMAN, *op. cit. supra* note 1, at 121.

60. The shortage failed to materialize. See KEMNITZER, *op. cit. supra* note 1, at 52.

61. See SEUMAN, *op. cit. supra* note 1, at 121.

62. See *Danciger Oil and Refining Co. v. Railroad Commission of Texas*, 49 S. W. (2d) 837, 844 (Tex. Civ. App. 1932), *rev'd on other grounds*, 122 Tex. 243, 56 S. W. (2d) 1075 (1933).

still has virility despite numerous judicial dissolution decrees.⁶³ The close ownership of essential refining patents today assures a concentrated control of refineries.⁶⁴ As formerly, the price of crude is posted by one of the major oil companies in each of the large oil fields and that price is usually followed by the other oil companies.⁶⁵ The price is determined by the value of crude at the refinery less transportation costs.⁶⁶ Prior to the advent of proration, it was entirely unrelated to the costs of producing the crude. But proration, by a rigid limitation of production, has inaugurated a more favorable balance between costs and price. The posted price now approximates the well costs of the highest cost producers.⁶⁷

Even more significant to the producer than the posted price has been the control of pipe lines exercised by the large integrated refiners.⁶⁸ The Supreme Court in 1920 recognized monopolization of transportation facilities as an effective method of controlling the production of any commodity.⁶⁹ Pipe lines are the only practical means of transporting crude oil.⁷⁰ Since each field usually has only one pipe line as an outlet,⁷¹ there is an absence of competition not only between pipe lines and other forms of transportation, but also among pipe lines themselves.⁷² Faced with this situation before the establishment of proration, oil producers were forced to sell to the integrated refiner unless some independent refiner located in the field. It was not feasible to ship to an independent refiner located along the route of the

63. See Hale, *Trust Dissolution: "Atomizing" Business Units of Monopolistic Size* (1940) 40 COL. L. REV. 615 *passim*; STOCKING, *op. cit. supra* note 1, at 49.

64. See HAMILTON, PRICE AND PRICE POLICY (1938) 143. In 1937, 83.7% of total refining was done by the 20 largest refiners in the country. See POGUE, *op. cit. supra* note 1, at 4.

65. See *Hearings before the Temporary National Economic Committee on Public Res. 113*, 76th Cong., 2d Sess. (1939) 9767, 9943-45.

66. See *ibid.* Oil is customarily bought at the well by the refiner and he provides for its transportation to his plant.

67. The posted price is still determined by the value of the crude to the refiner less transportation cost, but that figure now approaches a coverage of well costs.

68. It has been recently estimated that the major oil companies control 92% of the crude pipe line mileage. See Black, *Oil Pipe Line Divorcement by Litigation and Legislation* (1940) 25 CORN. L. Q. 510, 512. See also POGUE, *op. cit. supra* note 1, at 32.

69. See *United States v. Reading Co.*, 253 U. S. 26, 48 (1920).

70. One estimate states that the ton-mile cost of transportation of crude by rail is 8.3 mills, by pipe line 3.2 mills, and by tanker 1.25 mills. See SHUMAN, *op. cit. supra* note 1, at 100. See also *Hearings before the Temporary National Economic Committee on Public Res. 113*, 76th Cong., 2d Sess. (1939) 7180. Although water transportation is cheapest, it is not available to all and usually requires a pipe line as intermediary. For the year 1937, 71% of the crude oil received at refineries in the United States arrived by pipe line, 26% by boat, and 3% by tank car and truck. See *Petroleum Rail Shippers' Ass'n v. Alton & So. Railroad*, 243 I. C. C. 589, 599 (1941).

71. See FEDERAL TRADE COMMISSION, PETROLEUM INDUSTRY: PRICES, PROFITS, AND COMPETITION (1928) 99.

72. See *Reduced Pine Line Rates and Gathering Charges*, 243 I. C. C. 115, 143 (1940).

pipe line because, even though pipe lines had been declared common carriers,⁷³ they either refused to carry ratably where their capacity was fully utilized or they charged prohibitive rates.⁷⁴ Common purchaser statutes, enacted in an endeavor to enforce ratable taking, were held invalid.⁷⁵ Proration was historically devised to accomplish the aim of the common purchaser statutes;⁷⁶ it has since been proved admirably fitted to achieve that end. By restricting and allocating output each refiner is today required to buy ratably from all wells if he is to secure his requisite supply.⁷⁷

Under the proration scheme, however, non-affiliates still rarely attempt to use pipeline facilities because of the exorbitant rates charged by pipeline companies. Although the rates of the interstate pipe lines are subject to regulation by the Interstate Commerce Commission,⁷⁸ there has in fact been no adequate supervision.⁷⁹ On the one hand, pipeline proceedings require an enormous expenditure of time and capital. On the other hand, the Interstate Commerce Commission has had its administrative capacity fully taxed by railroad problems.⁸⁰ Yet excessive rates subsidize the integrated

73. Interstate pipe lines were declared common carriers and subjected to the supervision of the Interstate Commerce Commission by the Hepburn Act. See 34 STAT. 584 (1906), 49 U. S. C. § 1 (1940); *The Pipe Line Cases*, 234 U. S. 548 (1914).

74. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 1415.

75. *Texoma Natural Gas Co. v. Railroad Commission of Texas*, 59 F. (2d) 750 (W. D. Tex. 1932); *cf. Thompson v. Consolidated Gas Utilities Corp.*, 300 U. S. 55 (1937).

76. One primary purpose of proration was to prevent the refiners from buying only from the wells in which they held interests. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 290 and H. R. 7372*, 76th Cong., 3d Sess. (1939) 1416.

77. Caution dictates one qualification. Proration has definitely succeeded in securing ratable taking from wells in a particular pool. *Champlin Refining Co. v. Railroad Commission of Oklahoma*, 286 U. S. 210 (1932). But its efficacy in requiring ratable taking from different pools is questioned by the decision in *Thompson v. Consolidated Gas Utilities Corp.*, 300 U. S. 55 (1937); but *cf. Railroad Commission of Texas v. Rowan & Nichols Oil Co.*, 310 U. S. 573 (1939), *amended*, 311 U. S. 614 (1940); *id.*, 311 U. S. 570 (1941); *Patterson v. Stanolind Oil & Gas Co.*, 305 U. S. 376 (1939). The *Patterson* and *Rowan and Nichols* cases suggest that no due process issue can be henceforth raised in this situation. Furthermore, *Bay Petroleum Corp. v. Corporation Commission of Kansas*, 36 F. Supp. 66 (D. Kan. 1940), demonstrates how easily the *Thompson* case can be avoided by simply tying ratable taking up with some waste preventive measure.

78. See note 73 *supra*.

79. The same is true of intrastate pipelines. See Comment (1940) 35 ILL. L. REV. 175, 191.

80. The difficulties involved are suggested by a recent pipe-line rate case which the Interstate Commerce Commission had under consideration for more than five years before it decided to reduce rates and minimum tender requirements. *Reduced Pipe Line Rates and Gathering Charges*, 243 I. C. C. 115 (1940). Often where rates have been patently exorbitant no complaints have been registered with the Interstate Commerce Commission for the reason that no small producer has sufficient resources to continue the prosecution. See *id.* at 138.

refiner at the expense of independent refiners. If an independent refiner buys oil at the field, as is customary, he must pay pipeline rates; his competitor, the integrated refiner, ultimately pays only transportation costs, receiving a rebate of the difference between these costs and the pipe line rates through intercorporate settlements. It is also a common practice for pipeline companies to require a minimum tender of crude from each shipper as a condition precedent to acceptance of any oil for transportation.⁸¹ By these devices the monopoly on the demand side of the crude oil market has been perpetuated.⁸²

Existence of monopolistic restraints in the demand for oil does not, however, justify the unreasonable stabilization of prices achieved by proration. Designed to protect the highest cost producer, the level at which price is pegged is prima facie uneconomical. Conservation arguments advanced in its support contain on analysis more shadow than substance. Restriction of production and price stabilization is not needed to keep stripper wells in operation. Nor does the possibility of eliminating slight storage losses justify such measures. Maximum utilization of reservoir energy is not promoted by any of the proration formulas now in use, and any increase in use value is entirely speculative. But both federal and state courts have been persuaded by the pseudo-conservation arguments.⁸³ With no clear conception of the objects and methods of conservation, they have visualized only one set of alternatives, proration or unregulated production; upon an elaborate display of conflicting technical evidence, they have concluded that proration is a reasonable method of control by comparison with unregulated production. But regardless of the relative advantages or demerits of unregulated production and of proration, both methods are unreasonable from an economic as well as a conservation standpoint. The courts, however, lack the constitutional power to remedy the situation. The duty then falls upon the legislature to adopt a program of scientific control.

81. See *id.* at 133; *Petroleum Rail Shippers Ass'n v. Alton & So. Railroad*, 243 I. C. C. 589, 656 (1941).

82. Unwittingly proration has strengthened the demand monopoly. Refiners' profits are protected by restricting supply to consumptive demand for refined products. See *Amazon Petroleum Corp. v. Railroad Commission of Texas*, 5 F. Supp. 633, 637, n. 1 (E. D. Tex. 1934); *Bay Petroleum Corp. v. Corporation Commission of Kansas*, 36 F. Supp. 66, 72 (D. Kan. 1940) (dissent). The temptation to refiners to compete, caused by an oversupply of crude, is removed. Control of the gasoline marketing price structure is aided by restricting production of crude to purchasers' nominations.

83. For examples, see *Champlin Refining Co. v. Railroad Commission of Oklahoma*, 286 U. S. 210 (1932); *Bay Petroleum Corp. v. Corporation Commission of Kansas*, 36 F. Supp. 66 (D. Kan. 1940); *Danciger Oil & Refining Co. v. Railroad Commission of Texas*, 49 S. W. (2d) 837 (Tex. Civ. App. 1932), *rev'd on other grounds*, 122 Tex. 243, 56 S. W. (2d) 1075 (1933); *Sterling Refining Co. v. Walker*, 165 Okla. 45, 25 Pac. (2d) 312 (1933).

UNIT OPERATION AND CONSERVATION

Unit operation of oil fields has long been advocated in the United States as a proven method for promoting both conservation and economic stabilization in petroleum production.⁸⁴ Unit operation refers to the process of developing and operating a pool in the interest of maximum ultimate recovery through the medium of a single management and control. Since most oil fields in the country are divided among a multitude of private ownerships, as a practical matter of administration unit operation requires a prior merging or unitization of these diverse interests into a common ownership. By one method of unitization, holders of tracts exchange their claims for undivided interests in the entire field. Each owner then shares the expenses and benefits of production according to his assigned proportion of the underlying oil. Although the problem encountered by a state conservation agency in distributing a fair share of the state's allowable production to each well owner is not obviated by unit operation, advancing technical knowledge can be expected to secure an accurate measurement of the volume of an oil pool underlying individual tracts,⁸⁵ on which an equitable distribution of the benefits and burdens of unit operation may be based.

The full advantages of unit operation, once launched, can only be comprehended in the light of an accurate definition of conservation. Conservation is directed toward better economy through superior efficiency.⁸⁶ Efficiency denotes the ratio of energy output to energy input; economy the ratio of money output to money input. Waste, which is the antithesis of conservation, results when efficiency can be increased without reducing economy. To illustrate by the simplest case of a closely drilled pool operated at a proper oil-gas rate as compared with a flush rate under the rule of capture: Energy input and money input are constant. When the pool is exploited at a proper oil-gas rate, energy output is greater than that resulting from production at a flush rate since ultimate recovery is increased. With efficiency of operation thus raised, money output becomes greater and economy is advanced.⁸⁷ Comparing proration and unit operation as alternative conservation methods for pools being exploited under the rule of capture: Because of a disregard for the optimal rates of production of a specified field and of wells in the specified field, energy output under proration would

84. See German, *Compulsory Unit Operation of Oil Pools* (1932) 20 CALIF. L. REV. 111; MID-CONTINENT OIL & GAS ASS'N, HANDBOOK ON UNITIZATION OF OIL POOLS (1930).

85. See *Brown v. Humble Oil & Refining Co.*, 126 Tex. 296, 306, 83 S. W. (2d) 935, 940 (1935), *rehearing*, 87 S. W. (2d) 1069 (Tex. 1935).

86. See WATKINS, *op. cit. supra* note 1, at 31; NATIONAL RESOURCES COMMITTEE, *op. cit. supra* note 1, at 186.

87. Unit operation may postpone enjoyment of oil output to some extent, but the value of the ultimate recovery is increased many times over the discounted value of the postponed production.

not necessarily be increased. Economy, it is true, might be advanced under a proration system—but only by the artificial pegging of the price level without reference to the efficiency of production. If the price of crude fell below the costs of operating the wells in a particular pool, proration agencies would resolve the problem by restricting the permissible production of all other wells in the state until price rose to cover the costs of operating the wells in the least favorably situated pool. Conversely, proration would fail entirely to provide for the situation where a shortage of supply developed, and the price of crude soared. Judged by present policy, production would be expanded without reference to maximum utilization of the reservoir energy of a pool. On the other hand, under unit operation pools would always be operated at the maximum efficiency consistent with the best possible economy in production. If a shortage of crude should develop, purchasers who offered the highest price would receive the available supply under the theory that competitive price would insure the best distribution of resources. By the easy expedient of an excess profits tax, producers could be prevented from reaping unearned rewards. Conversely, if price fell below the costs of operating a particular pool under unit operation, that pool would be forced to shut down temporarily or permanently.⁸⁸ Unit operation in effect would reinstate the automatic operation of the laws of supply and demand. Competition would operate among pools rather than among wells or among states, and only the most efficient and economical pools would survive.

To this there is one qualification. A condition of free competition on the demand side has been implicitly assumed. Under the present control of pipe lines by refiners, discrimination in transportation cost would cause aberrations in the economy ratio which might operate to keep the high-cost producer in existence and remove his otherwise low-cost competitor. Some progress in weakening the demand monopoly was made by a recent consent judgment of a federal district court against most of the major oil companies and pipeline carriers, enjoining the payment of exorbitant rebates by carriers to stockholding shipper-owners under the guise of dividends.⁸⁹ But dividends to the extent of 7% on the valuation of a carrier's property were permitted. A substantial discrimination in transportation cost is thus still possible, albeit in the form of a return on invested capital. Hence if a program of unit operations were adopted in the immediate future, full realization of its benefits could only be assured by the complete divorcement of pipelines from refineries.⁹⁰ In view of the stickiness of posted prices perhaps a second step might also be required if divorcement of the pipelines failed

88. Unit operation eliminates the rule of capture and thus permits discontinuance of production when price fails to cover operating cost.

89. *United States v. Atlantic Refining Co.*, 10 U. S. L. WEEK 2403 (U. S. Dist. Ct. D. C. 1941).

90. For available methods of pipe-line divorcement, see Black, *loc. cit. supra* note 68.

to increase competition among refiners: a governmental agency might be established to fix maximum and minimum prices for crude oil.

As to the immediate and practical problem of how unitization can best be effectuated, it would seem that Congress must enact the necessary legislation. It is generally conceded that such interference by the Federal Government in activities conducted within the states would be valid under the interstate commerce clause, the war power, or the taxing power.⁹¹ Certainly the states cannot be expected to adopt the requisite uniform legislation in view of their diverse competitive interests.⁹²

The most persistent objection to unit operation has been voiced by the small producers, who fear that the major oil companies would control policy under such a program. Adequate administrative provision should be made to protect the independents. But the trend of judicial decisions indicates that there could be no successful claim of a deprivation of property under the due process clause of the Fifth Amendment of the United States Constitution. Although a property right in underground oil was recognized in *Ohio Oil Company v. Indiana*,⁹³ it has been held subject to two definite restrictions in the case of state regulations tested under the due process clause of the Fourteenth Amendment: (1) those designed to eliminate waste; and (2) those designed to protect correlative rights.⁹⁴ Unit operation envisages both sets of limitations. Moreover the Supreme Court of the United States in the recent cases of *Railroad Commission of Texas v. Rowan & Nichols Oil Company*⁹⁵ and *Patterson v. Stanolind Oil & Gas Company*⁹⁶ implied that no due process question was presented by state regulations of crude production.⁹⁷ In effect the Court overruled the cases of *Champlin Refining Company v. Corporation Commission of Oklahoma*⁹⁸ and *Thompson*

91. See Ford, *supra* note 1, at 1212. The probable validity of federal regulation of oil production under the commerce clause is strongly suggested by *United States v. Rock Royal Co-operative, Inc.*, 307 U. S. 533 (1939). In that case Congress was held to have the power to regulate the price of milk sold by a local dairy farmer in aid of a general plan to protect interstate commerce from the burdens of low prices arising from excessive surpluses.

92. See NATIONAL RESOURCES COMMITTEE, *op. cit. supra* note 1, at 215.

93. 177 U. S. 190 (1900).

94. *Lindsley v. Natural Carbonic Gas Co.*, 220 U. S. 61 (1911); *Walls v. Midland Carbon Co.*, 254 U. S. 300 (1920); *Bandini Petroleum Co. v. Superior Court*, 284 U. S. 8 (1931); *Champlin Refining Co. v. Corporation Commission of Oklahoma*, 286 U. S. 210 (1932).

95. 310 U. S. 573 (1939), *amended*, 311 U. S. 614 (1940).

96. 305 U. S. 376 (1939).

97. See Note (1942) 51 YALE L. J. 680. Compare Summers, *Does the Regulation of Oil Production Require the Denial of Due Process and the Equal Protection of the Laws?* (1940) 19 TEX. L. REV. 1, *The Rowan & Nichols Cases* (1941) 13 MISS. L. J. 417, with Davis, *Judicial Emasculation of Administrative Action and Oil Proration: Another View* (1940) 19 TEX. L. REV. 29.

98. 286 U. S. 210 (1932).

*v. Consolidated Gas Company*⁹⁹ insofar as they recognized property rights in underground oil which would be protected by the due process clause against policing regulations designed neither to prevent waste nor to insure correlative rights.

To date the only serious attempt at federal regulation is represented by the Cole Bill.¹⁰⁰ It is specifically directed only to the elimination of physical waste and does not purport to cover the problem of economic waste from overproduction; nor does it contain provisions adequate to cope with that problem. Two devices are proposed for the elimination of avoidable physical waste (as defined in the bill): (1) voluntary cooperation among producers with the approval of the federal administrator of the act;¹⁰¹ and (2) recommendations by the federal administrator to the state conservation commissions, followed up by effective enforcement orders in case the recommendations are not adopted.¹⁰² Although the former provision does contain the seed of voluntary unitization, the bill as a whole does not answer the urgent need of the nation for enforced conservation of its crude oil resources.

THE WAR EFFORT

Immediate action is rendered imperative by the current war emergency. The necessity of securing the greatest possible recovery of oil from the fields of the United States becomes daily more evident as the defense requirements for airplanes, tanks, and trucks increase by leaps and bounds¹⁰³ at the same time that fields in other parts of the world are being isolated¹⁰⁴ or destroyed.¹⁰⁵ Proration to date has proved itself inadequate as a method for maximizing recovery. Designed solely to prevent overproduction, it would be even less effectual to prevent a wasteful exploitation of oil fields in the situation of a rampant demand.¹⁰⁶ Relieved of the nemesis of overproduction, states and producers would no longer be motivated to adhere

99. 300 U. S. 55 (1937).

100. For text of the Cole Bill, see H. R. 7372, 76th Cong., 1st Sess. (1939).

101. *Id.* at §7.

102. *Id.* at §6.

103. It is estimated that the requirements of the fighting forces of the United States for 1942 will be double those of 1941. No figures are available for the oil products to be shipped to other nations under lend-lease arrangements. See N. Y. Times, Jan. 2, 1942, p. 41, col. 1.

104. The increasing loss of tankers by enemy torpedoes must rapidly give rise to a shortage of shipping facilities. For estimates of losses and of new constructions, see (1942) 40 OIL AND GAS JOURNAL, No. 38, p. 106.

105. Rich oil fields in the Far East were recently dynamited by the British and the Dutch. See N. Y. Times, Dec. 18, 1941, p. 1, col. 5; *id.* Jan. 12, 1942, p. 1, col. 8; *id.* Jan. 14, 1942, p. 1, cols. 5 and 6. At present there is a grave danger that the entire Far East oil reserve will be captured by war enemies of the United States. See N. Y. Times, Feb. 16, 1942, p. 1, col. 7.

106. See Ely, *supra* note 1, at 1240.

to specified quotas. The rest of the industry would be ready for an increase in production. Three new pipelines have been built within the last year¹⁰⁷ and refiners are increasingly impatient to utilize large excess capacities.¹⁰⁸ The possibility exists that production would again be carried on under the stimulus of the rule of capture in direct violation of conservation practices.

Unregulated production could probably supply both private and governmental needs in the short run without stint — but at the expense of ultimate maximum recovery of oil. The country, however, can hardly count on an early termination of the war. In the interest of national defense, therefore, if not in the interest of conservation, the Federal Government must enforce a long-run policy in oil production. The time is most auspicious for an exercise of its war powers¹⁰⁹ to initiate a program of unit operation of oil fields. Not only would the ultimate recovery of oil be maximized by such a program¹¹⁰ but through unitization the producers themselves would be protected against the certainty of a competitive overexpansion¹¹¹ during the war and the possibility of an ensuing deflation after the stimulus of defense demands subsides.

107. See N. Y. Times, Jan. 2, 1942, p. 41, col. 2.

108. See STOCKING, *op. cit. supra* note 1, at 263.

109. Professor Pound, of the Harvard Law School, and Professor Bates, of the University of Michigan Law School, have both expressed the opinion that the war powers of the President and Congress may be exercised to conserve oil and gas. See *Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce on H. R. 441*, 73d Cong., Recess (1934) 1557-74.

110. Immediately available production might be reduced, but any curtailing effect on the defense effort could be avoided by a rationing of the private consumption of refined products.

111. It is true that the drilling of new wells will be curtailed because of governmental priorities on essential materials. Producers have already been forbidden to drill new wells without the authorization of the Director of Priorities, except, and this is significant on the need for unit operation of oil fields, where the wells are required for a specified drilling pattern. See (1941) 10 U. S. L. WEEK 2397; (1942) 10 U. S. L. WEEK 2448. But even with this limitation, competitive overexpansion can still develop through a more intense exploitation of existing wells.