THE WORKABILITY OF MONOPOLY IN THE OIL INDUSTRY

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THE WORKABILITY OF MONOPOLY IN THE OIL INDUSTRY

THESIS

Presented to the Graduate Council of the North Texas State College in Partial Fulfillment of the requirements

For the Degree of

MASTER OF ARTS

By

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Raymondville, Texas
August, 1949
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CHAPTER I

INTRODUCTION

"Unworkability" of Competition in the Oil Industry

Twenty-three years ago George Ward Stocking in his book, The Oil Industry and the Competitive System, stated his conviction that the theory and practice of competition in the production, refining, transporting, and marketing of petroleum and petroleum products were incompitable with the development of the industrial process. Today, with the increase in technological efficiency that has gone on in the petroleum industry since that time, the picture has certainly become more vivid. No longer do students of oil economics think in terms of the so-called "theory of competition" when they think of the oil industry. Instead, they think of the problem of monopoly which has come to occupy a very important position in our economic system. The petroleum industry, making up only a part of that entire picture, is looked upon with great confusion and much misunderstanding. From the very beginning of the production of petroleum in 1859, the oil industry has disproved the "natural law of competition" that has been rather widely accepted in the economic world since the development of Adam Smith's Wealth of Nations in 1776 as the most desirable
basis for economic activity. Instead of being the best means of production, competition in the oil industry has meant wast in the most appalling manner!

A glimpse at the early production practices will substantiate Stocking's condemnation of competition in the petroleum industry. As he stated it:

Competition, in either its narrow or broader significance, in the oil industry means waste—waste on a spectacular and magnificent scale. While our lawmakers have been concerned with the matter of prices and profits in a wasteful and improvident fashion, the development of transportation has been characterized by needless expenditure, and the refining industry has failed to take account of the full range of petroleum values. To the extent that the industry has been competitive, the situation from an engineering and industrial standpoint has been increasingly demoralized.¹

In order to understand why Stocking believed competition to be unworkable in the oil industry, it might be well to examine some of the problems which face that industry.

Petroleum Engineers R. A. Cattell and H. C. Fowler wrote several years ago that the scope of the problem of oil and gas production is not necessarily confined to technology and pointed out that these problems have been brought on because of our institutional patterns. In 1934, they wrote:

The problems of oil and gas production are not limited to technology. They cut across the fields of economics, law, politics, and human relations. Some legal precedents that had their origin in ideas of the occurrence of oil and gas prevalent a half century

ago and were based on economic situations greatly different from those of today have hampered the application of new scientific knowledge as it became available. Moreover, much thought concerning oil and gas production has been based on inaccurate conceptions of physical phenomena; and legislative bodies, courts, and the public have been insufficiently informed as to the natural laws upon which human action should be based.²

Our legal concept of the ownership of petroleum as established in the latter part of the nineteenth century has probably been responsible for many of the problems of waste in the production of petroleum. In 1889, the Supreme Court of Pennsylvania, in a case involving the ownership of petroleum, held that petroleum was a fugitive substance and could be likened to wild game, in that oil and gas become the property of the one capturing it.³ This guiding principle, based on our concept of law, caused each producer to resort to tactics that would allow him to obtain as much oil as possible in the shortest period of time. Therefore, speed of drilling became the greatest essential and technological process. The Court's interpretation obviously gave the owner of the oil-field land all the oil which he could reduce to his possession, whether or not all such oil originally underlay his particular tract. When a new field of production was discovered, every operator tried to develop his

property as rapidly as possible and produce it at maximum capacity so that he might obtain the greatest possible share of the total oil recoverable from a particular field. With such practices accepted, what could possibly result except vast economic waste? John M. Lovejoy, President of the Seaboard Oil Company of Delaware, recently wrote:

Early observations led to the conclusions that rapid development, close well spacing, and maximum producing rates resulted in maximum recovery. Now it is known that these conclusions were unsound and that such practices in the early years of the industry incurred gross economic waste and were detrimental to the maximum recovery of oil from the field as a whole.⁴

This early conception of acceptable practices in the oil industry, as many students of economic resources point out, led to cut-throat competition among the many oil producers, and this competition in turn created channels of vast economic waste.

Stocking writes:

Oil production under the competitive system is necessarily conducted on the principle of robbery, the aim of each producer being to drain the largest possible underground area in the shortest length of time, before the oil is secured by a competitor.⁵

This conclusion is not hard to understand when one reviews the nature of an oil pool in its earthly formation. The oil pool is a geologic unit, and as soon as the drill

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⁴Leonard M. Fanning, Our Oil Resources, p. 31.
⁵Stocking, op. cit., pp. 140-141.
bit punctures the rock formation, the oil, being of a migratory nature, and driven by the gas pressure, flows through the hole to the earth's surface.

As Stocking says:

In practice, the right of exploitation is delegated to an oil producing company upon a royalty basis, the owner of the land usually receiving $1/8$ of the oil produced, the balance going to the producing company. Obviously, however, the relationship between arbitrary lines on the surface and the underlying geologic unit (oil pool) is an artificial one. Since oil is migratory and will travel under ground, it is essentially no man's oil until it is brought to the surface. According to the current custom, it belongs to the company through whose well it issues, subject to agreement with the property owner.6

Under the competitive system of production, almost every operator has drilled the first well on a tract near the end of his lease with the idea that, if oil is found, he will have the opportunity to secure as large a portion of his nearest competitor's oil as possible.

The East Texas field which was discovered in 1930 might be used as an example of the competitive practices in the production of oil. In 1931, even though this field was not clearly defined, the area covered approximately 120,000 acres. There were then already some 1,500 separate lease-holders in this field. The number of individual operators was around three hundred. Only forty-five per cent of the proven area was in the hands of the large producing areas.

6Tbid., p. 141.
The largest individual operator in the East Texas field in 1931 was the Humble Oil and Refining Company; its holdings included about seventeen per cent of the proven area.\textsuperscript{7}

What could be expected from such a situation except an oil fight brought on as a result of a struggle between three hundred competing operators, each attempting to obtain his share of oil from 1,500 separate lease holders whose aim it was to capture as much oil as possible as soon as possible? Is it surprising that this entangled situation led to killings among operators as well as outright sabotage of the drilling facilities of competitors? Is it hard to understand why many barrels of oil were left in the ground and even set on fire merely because a competitor on the adjoining tract bombed his neighbor's flowing well just to "get even" with him for sinking his well first?

Many of our early oil fields of Texas were developed on townsites where lease holdings by various companies were very small. Often a single lease holding made up one city block. Other leases merely consisted of a residential lot, a school campus, or a churchyard. Such was true in the case of the field at Burkeburnette, Texas, townsite and also in the Northwest extension pool. Both of these fields were developed in 1919-1920.

\textsuperscript{7} "East Texas Draws Itself in Oil," \textit{Review of Reviews}, LXXXIV, August, 1931, 70-79.
After intensive operations began in the areas mentioned above, one of the large pipe-line companies warned oil producers that more drilling of wells would result in more oil being brought to the surface of the ground than could be moved out to refining installations by means of their pipe lines. The company further warned that continued drilling operations would produce more crude oil than could be handled by their storage facilities. In these two fields where competition had run wild, how were the operators to be restrained from bringing too much oil to the surface? Obviously, under the theory of private ownership and competition, there was no solution—except over-production and vast economic waste of crude petroleum! As a result of too much crude oil being brought to the surface, all available storage facilities were soon filled, and the oil was splattered over the ground and much of it was actually turned into the Red River!\

The oil producers operating in these fields under the rules of competition had drilled too many wells, as the Bureau of Mines later reported after a study had been made by Engineer Collom. Mr. Collom wrote:

By the end of June, 1920, there had been 1,251 wells drilled on a proven area of 2,440 acres, and the average of one well to every 1.8 acres. By September, 1920, a total of 2,136 producing wells and 26 dry holes had been drilled on these sites...\

\(^8\)Stocking, op. cit., p. 157.
One third of the number actually drilled should have been sufficient to economically drain the pools. One well to 5 acres would have been a normal program for oil men to have followed. . . . The two pools could have been developed economically with 630 wells, which would have been spaced close enough to drain, in a satisfactory manner, the land. These wells at $21,000 each would have cost $17,430,000 as compared to $13,407,000 for those actually drilled.9

Under such circumstances as these it is easy to recognize the many ramifications of waste growing out of such undertakings. It is not difficult to imagine the amount of man power, money, materials, and machines that were engaged in this great oil operation which was not needed at all and was really a detriment to the life of the fields. Because of the duplication of wells through which the gas escaped, the oil was left in the pool unrecoverable, where it will remain until our existing supply becomes so scarce that scientific means for recovering such oil will be devised.

In the old Woodbine Sand Field of the East Texas area, one well was drilled for each three acres of producing area. The Review of Reviews reported the exploitation:

Such a spacing would mean 40,000 wells for the new field. The overall ultimate recovery per well would be 50,000 barrels, on the basis of 2,000,000,000 barrels ultimate for the field and, if the prevailing price for oil, 20¢ per barrel, were maintained, the

total return for each well drilled would amount to $10,000. On the other hand, if efficient methods of exploitation were employed in the new field, not more than one well per ten acres, or 12,000 wells would be drilled. Recovery could be maintained at the same total figure and income would rise to about $33,000 per well, even on 20¢ oil.¹³

During the early years of the drilling of oil wells, many operators failed to realize the important role played by gas in the production process. Besides being very important as a fuel, it is the chief means by which petroleum is brought to the surface. Very early in the life of many of our Texas fields, the operators saw that, as the gas pressure of a field declined, the new oil wells came in with smaller productions. In many instances this gas pressure was merely blown off, leaving the oil in the ground because of the practice of drilling too many wells into one pool of oil. Several lease holders might hold title to the surface area of the same pool of oil under the earth. Under these circumstances, where too many wells were drilled into the same pool, the gas pressure was allowed to escape through the wells and very little of the reservoir of oil was captured.

It is not known definitely the amount of gas that was blown off at the well and allowed to escape in the air or be flared at the well, but various studies were undertaken

¹³Review of Reviews, op. cit., p. 79.
in the early years of the development of certain fields in the Mid-continent area. V. H. Manning, Bureau of Mines Petroleum Engineer, pointed out that in the Cushing field in Oklahoma during the year 1913, there was an average daily waste of not less than 300,000,000 cubic feet or more than 100,000,000,000 cubic feet, in the course of a year. This was the equivalent of about 5,500,000 tons of coal. According to Manning, this amount of gas which could have been preserved and used as fuel would have been sufficient to have supplied the entire city of New York during the year in which it was wasted.\textsuperscript{11}

As the Bureau of Mines reported:

\textit{All this gas was wasted in order to produce about 30,000 barrels of oil daily; in other words, at the prevailing price paid by domestic consumers for such fuel, gas worth about $75,000 a day was needlessly wasted to obtain a daily production value at less than $25,000 for prevailing oil prices.}\textsuperscript{12}

The evaporation of natural-gas gasoline into the air has been one of the greatest preventable losses in oil field history. As is the case with most oil field losses, the wastes can hardly be estimated, either by barrels or by money values.


\textsuperscript{12}\textit{Ibid.}, p. 141.
Several years after the development of the petroleum producing industry in Texas, our state Railroad Commission ordered its Oil and Gas Division to begin investigations into the possibilities of eliminating some of the waste of gas and of trying to determine the possibilities of extending the use of gas as a fuel for several of our larger cities. Beginning in June, 1919, and extending for a year, several tests were made in the Eastland county fields to try to determine the amount of gas being blown off and flared at the wells. This series of investigations covered more than sixty-seven wells in this area with a combined daily production of nearly 1,000,000,000 cubic feet of gas. The daily waste of gas per well ranged from about 1,000,000 to 100,000,000 cubic feet. According to the Commission tests made on twenty leases, there was a daily waste of 238,000,000 cubic feet. In terms of fuel this amounted to over 9,934 tons of coal and had at the prevailing consumers price a commercial value of $107,000 daily and at a field price a value of nearly $12,000 daily.\textsuperscript{13}

One separate well tested during this period was later considered one of the strongest gas wells ever discovered in the United States before 1920.

\textsuperscript{13}Stocking, op. cit., p. 75.
As Stocking related:

It showed a daily waste of 70,000,000 cubic feet when first tested and later increased to 100,000,000 cubic feet, and during the time it was uncontrolled, it wasted daily the fuel equivalent of over $36,000 at consumers' prices and over $4,000 at field prices. During 5 1/2 months it was estimated to have wasted 13,200,000,000 cubic feet of gas or the equivalent of fuel of approximately 550,000 tons of coal. It would have supplied over 132,000 families with fuel a year at a cost of over $5,940,000.14

During these early days of the petroleum industry, the development of new oil regions and pools was followed by the construction of numerous refineries near the center of the area of discovery. Many of these refineries possessed no means of supplying themselves with an abundant supply of crude. For example, of the 107 refineries in Oklahoma in 1919, fifty-four owned no tank cars, sixty owned no pipe lines, and forty-four owned neither tank cars nor pipe lines.15 Of course, under the rules of competition these small refinery operators were at a great disadvantage compared to the larger concerns which generally owned their own crude production and operated their own transportation facilities. Many times, these refineries were left without a supply of crude. The Oil Weekly describes such a situation during latter 1920.

Reports from North Texas in the early fall indicate that the production in that section was not sufficient

14 Ibid., p. 75.
15 Ibid., p. 261.
to keep the better refineries—large and small, running to capacity. In fact, some of the smaller plants had been temporarily closed. Dallas, Fort Worth, and Wichita Falls, with a possible daily refining capacity of 133,000 barrels of oil have been depending to a great extent on Burkeburnette production for their crude. And the 85,000 barrels daily (Burkeburnette production) was far from being enough even though every barrel found its way into refining stills. When you take into consideration the pipe-line runs, it becomes evident that possibly not more than 40,000 barrels of the already meagre 85,000 barrels of crude is refined locally.

Several refineries are complete insofar as construction is concerned but they lack that stuff from which refined products are drawn. Few are operating to capacity. Contracts for crude usually call for premiums, of more or less magnitude.\(^{16}\)

In May, 1919, The Oil and Gas Journal recorded the same story of competitive waste and duplication due to overbuilding of refining plant facility:

It may be stated with considerable exactness that the 107 refineries in Oklahoma at the close of 1918 were actually using at the end of the year 35,000 to 40,000 barrels less crude than were the 69 refineries in Oklahoma in the summer of 1917. . . . The same mistake of overbuilding is being repeated in Texas. There were never so many refineries in distress in Oklahoma as now.\(^{17}\)

As in all other phases of the petroleum industry, the marketing phase, as a result of competitive practices, provided for a vast amount of duplication of machinery and services. The frequent location of competing service stations on all four corners of important street and highway

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\(^{17}\)"Refinery Distress in Oklahoma," The Oil and Gas Journal (May 21, 1919), p. 71.
intersections is sufficient evidence to substantiate this duplication and waste. More than twenty-five years ago L. V. Nicholas, president of the National Petroleum Marketing Association testified as follows:

I would say that the overequipment, the overdevelopment, and the overinstallation of equipment in the oil business is the greatest handicap that the business and public have today. It is almost incredible. I would venture the statement that with the curb pumps and filling stations installed in the United States at the present time, if there is not another tank put in or another pump put in, or another filling station put in, except for replacement, the industry would not be overloaded to take care of the demands from now on for ten years to come with an increase of ten per cent in volume each year or better.18

It seems evident, then, that competition among producers, refineries, jobbers, and retailers early in the development of the petroleum industry resulted in utter confusion, instability, and vast economic waste of human effort and resources.

Although the above-mentioned wastes seem tremendous, the early history of the oil industry will show that they are not unusual but have been the general practices that have been followed as a result of competitive capitalism. It is not hard to understand, then, why Stocking, writing in 1925, was fully convinced of the "unworkability" of competition in the oil industry when he wrote the following conclusion:

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18United States Senate Report, No. 1263, 1923, p. 573.
The scientific and economical development of oil production is opposed rather than promoted by the competitive system. There is a lack of adjustment between the geological occurrence of petroleum and the manner of its industrial exploitation, the inevitable result being waste and confusion.\(^{19}\)

Professor Stocking was not sure in his mind just what was needed to make the oil industry work properly. However, he said:

The fault is largely a matter of maladjustment between the physical facts of oil geology and the ownership basic of oil production. There is no changing the former. A solution seems to demand some modification of the latter. As with coal, so with oil, the public interest . . . raises fundamental questions of the relation of this industry to the nation and of the degree to which private rights must yield to public welfare.\(^{20}\)

It appears obvious from Stocking's conclusions that he had no "faith" in the competitive system under the circumstances the writer has attempted to relate briefly here.

In condemning competition as "unworkable" in the oil industry, did Stocking imply the "workability" of monopoly? Under our concept of a capitalistic economy, monopoly is the only alternative of competition.

Students of economics have been aware of the monopoly element present in the operation of the oil industry from its early history. Stocking has raised the issue of the "workability" of monopoly in the industry. In clearing up this problem it is necessary to analyze the following questions:

\(^{19}\)Stocking, op. cit., p. 118. \(^{20}\)Ibid., p. 310.
(1) Is monopoly, as it has emerged from the development of the petroleum industry, more "workable" than competition? (2) Has private monopoly proved efficient? (3) Has monopoly promoted the "general welfare" under its past and present development? (4) Is the international oil industry also regulated by the presence of monopolistic activities? (5) Has private monopoly in the oil industry promoted the best research possible in the scientific development of the use of petroleum and petroleum products?

Accepting the thesis of the "unworkability" of competition in the oil industry, it is necessary to turn to the development and present status of domestic or national monopoly in the industry in order to determine its workability.
CHAPTER II

EARLY MONOPOLY IN THE OIL INDUSTRY AS EVIDENCED

BY THE STANDARD OIL TRUST

Before analyzing the monopolistic development in the petroleum industry, it is necessary to examine the meaning of the term "monopoly." The layman is likely to think of monopoly as ownership or control of 100 per cent of a particular enterprise; however, quite the opposite situation may actually exist. Only a comparatively small percentage of ownership may be in the hands of the monopolists. As Kemnitzer states it:

Monopoly means the economic power to control competition. . . . It is the exercise of designs and utilization of implements to restrain trade and raise prices that constitutes monopoly. Percentage of ownership or control determines only the degree of ease with which monopolistic practices may be carried out.¹

The contemporary economist, John Maurice Clark, also defines monopoly as the alternative of perfect competition and states that it is a mere device for the determination of price. He says:

The principle of monopoly may be defined as unified or concerted discretionary control of

¹W. J. Kemnitzer, Rebirth of Monopoly, pp. 1-2.
price at which purchasers in general can obtain a commodity or service and of the supply which they can secure, or the control of price through supply, as distinct from the lack of such control which marks the ideal situation of perfect competition.\textsuperscript{2}

Much has been written regarding the development of monopoly in the petroleum industry under the capable hand of J. D. Rockefeller and his associates; therefore, this study will only briefly relate some of the more important developments of monopoly brought about by the Standard Oil Company.\textsuperscript{3}

Cleveland by 1869 stood foremost as the oil-refining center of the United States with twenty-six refineries. This city seemed to be geographically located for such enterprises; it was connected by rail and water with the Western market and was linked to the East by rail and water.

In 1862 John D. Rockefeller and his business associate, M. B. Clark, backed Samuel Andrews in the establishment of a small petroleum refinery in Cleveland. Later, he and Andrews united their interests more fully and created the Standard Oil Company of Ohio. At that time, it


\textsuperscript{3}For a complete analysis of the story of Standard Oil and J. D. Rockefeller see: Ida M. Tarbell, The History of the Standard Oil Company and John T. Flynn, God's Gold: The Story of Rockefeller and His Times.
is reported that only ten per cent of the refining business of the country was owned by the Rockefeller interests. A few years passed, and the leading refiners of the country realized the need of more favorable freight rates for the shipment of crude. Thus, the leading refiners of Philadelphia and Pittsburgh along with the Rockefeller interests organized the South Improvement Company for the purpose of approaching the railroads for more favorable freight rates. In secrecy the negotiations were consummated whereby the open freight rate on oil shipments was to be increased by a considerable amount; however, the South Improvement Company was to be allowed a substantial rebate on oil shipped by itself as well as its competitors. Upon learning of these "secret" plans, the producers in the oil region voiced strong opposition to such agreement between the refiners and the railroads. Finally the railroads withdrew their contracts with the South Improvement Company, and the whole situation was thrown open to Congressional investigation. During this time, the Standard Oil Company had managed to purchase twenty-one of the twenty-six independent refineries of Cleveland. In spite of the failure of the plan of the South Improvement Company with the railroads, Standard Oil Company secured its own secret freight discriminations, thus expanding its monopolistic accomplishments. Stocking paints the picture of the position of the Standard Oil
Company after thirteen years of operation as follows:

In 1875, the Standard Oil Company of Ohio increased its capital stock to $3,000,000. During the following four years the Standard secured control over most of the leading independent refineries of the country by effecting a secret exchange of its stock for the stock in the independent companies. In this manner it secured control over refineries located in Brooklyn, Philadelphia, Baltimore, and Parkersburg. Meanwhile, it had absorbed practically all the independent refineries in the Oil Creek region. So rapidly had the process of absorption and combination been progressing that from 1870 to 1879 the Standard control of refined petroleum products had increased from approximately ten per cent to the monopolistic figure of ninety per cent. 4

In the very beginning of the oil industry, crude was hauled from the wells to the river barges or railway loading points by wagons, but by 1866, pipelines had begun to replace the teamsters and horses. Standard, in expanding its refining enterprises, saw the relationship of pipelines to the refinery business. In 1873, J. A. Bostwick and Company built a pipeline across Clarion County, Pennsylvania, and immediately the Standard bought controlling stock in it and changed its name to American Transfer Company. In 1874 Standard purchased one-third of the ownership of the United Pipe Line Company. By consistent acquisition of pipelines Standard had by 1879 gained control of eighty per cent of the entire local pipeline service. 5

4Stocking, op. cit., pp. 15-16.
5Ibid., p. 17.
With the expansion of the monopoly position of Standard in the refining and transportation phase, the independent refineries realized that their survival depended upon an adequate crude supply. Thus, they combined finances for purposes of constructing the Tide Water Pipe Line Company as a feeder from the oil regions to the independent refineries around New York City.

Standard very successfully met this new threat of competition by seeing that railroad rates were drastically reduced. At the same time, Standard cut the pipeage charge of the United Pipe Line Company. Finally Standard acquired control of the independent refineries for which the Tide Water Pipe Line Company was a feeder and also constructed an inter-mountain line of its own.

In 1879 the Standard Oil Company of Ohio was reorganized into a new concern—The Standard Oil Trust. As has been pointed out by many students of economics, this was an arrangement for the purpose of centralizing more completely the control of the Standard's interest into the hands of John D. Rockefeller.

Thus, with monopolistic control over the transportation and refinery processes of the industry, the Standard Oil Trust began procedures to further tighten its control over the marketing phase of the industry. Just prior to the establishment of the Trust, the Standard Company divided
the United States into a number of large marketing divisions, each under the supervision and control of a Standard marketing subsidiary, which remained in force until the dissolution decree of 1911. Also the Standard organized a spy system through which it secured vital information regarding oil movements of all its competitors as well as its competitors' prices. This gave the Standard a good opportunity to wage "price-wars" etc., when such were deemed necessary to advance its ever expanding monopoly.

At the time of the organization of the Trust, the Standard Oil Company transported eighty per cent of the crude product, and refined about ninety per cent. It was the chief purchaser of crude petroleum and, under the prevailing circumstances, the company definitely maintained a monopoly control over the entire petroleum industry of this time. It seems to the writer that it can hardly be disputed that the Standard was a controlling factor in fixing the price of all crude petroleum during the early years of the oil industry.

The Standard Oil Company continued to expand its economic control over the petroleum industry. Meantime, the American public, in general, was day by day, becoming

7Stocking, op. cit., p. 21.
more dissatisfied with the continuously rising prices and the increasing trend toward concentration and combination of the enterprises of the American economy.

The State of Ohio began attempts at prosecution of the Standard Oil Trust. However, the Trust took the easy road out by turning to the use of the New Jersey corporation law which had been enacted a few years earlier. In 1899, the Standard Oil Company of New Jersey increased its capital stock from $10,000,000 to $110,000,000 and thereby absorbed the smaller Standard companies. The outstanding trust certificates of the other subsidiaries were exchanged for shares in the New Jersey holding company. Of course, economically speaking, the monopoly control of Standard Oil still remained intact. As a result of this Rockefeller manipulation, the Ohio State Attorney General was forced to drop the litigation.

The Republican administration in 1903 created the Bureau of Corporations as a branch of the Department of Commerce and Labor. This Bureau was to serve as an investigatory body. After the Bureau's extended investigation of the activities of the Standard Oil Company, prosecution proceedings were begun by the Department of Justice against the Company in the United States Circuit Court for alleged violation of the Sherman Anti-Trust Act. Finally, in 1909, after all the years of court proceedings, the Standard
Company was found guilty of monopolistic price fixing. Standard finally persuaded the Supreme Court of the United States to review the decision of the lower court; however, the decision was upheld. The court found the Standard Oil Company of New Jersey, along with thirty-six of its domestic subsidiaries and one foreign subsidiary, guilty of "forming a combination for purposes of restraining trade in inter-state commerce." The court further stated that the stock of these thirty-seven corporations was acquired and held illegally. The Standard of New Jersey was enjoined from voting the stock of the subsidiary companies; likewise, the subsidiary companies were restrained from paying dividends to the parent organization. Dissolution was supposed to be effected by a distribution, on a pro-rata basis, to the shareholders of the parent company "the shares to which they are equitably entitled in stocks of the defendant corporations that are parties to the combination." Therefore, it is rather obvious that the dissolution decree was merely a reshuffling of the ownership that had prevailed previously. As Stocking pointed out:

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9Ibid.
It should be clearly borne in mind that the "dissolution" of the Standard Oil Company of New Jersey did not involve a change in ownership of the constituent concerns. The dissolution in its essence was merely a change in the form of ownership. Prior to the dissolution, the several components of the Standard group were owned directly by the Standard Oil Company of New Jersey, and hence were indirectly under the ownership and control of the stockholders of this organization. By the terms of the decree, the stock of the component companies was transferred to the stockholders of the parent organization who now assumed direct control of the constituents. Ownership and control ultimately remained in the hands of the same group which formerly exercised it. With a community of ownership and interest existing among the segregated Standard units, obviously a genuinely competitive situation was not immediately established.10

Investigations by various individuals as well as government officials have proved that the Standard companies, since 1911, have continued to work hand in hand. It will be recalled that under the Standard of New Jersey, the area of the United States had been divided up into eleven marketing districts. One or more subsidiary companies had maintained the marketing facilities for the group within each of the areas. This monopolistic tool was still available to the Standard group which, after 1911, certainly did not fail to make use of it. It seems that, as a result of these marketing subsidiaries, the Standard group was quite able to determine the price of petroleum products throughout the country. The Federal Trade Commission reported in 1915, that:

10Stocking, op. cit., pp. 53-54.
The various Standard companies, with relatively unimportant exceptions, in announcing their tank-wagon price of gasoline in any locality, practically fix the price that prevails. As a rule, and throughout most of the country, the prices announced by Standard concerns as the ones at which they will sell their products are carefully watched and followed more or less closely by the so-called independents.\textsuperscript{11}

The Senate Committee on Manufactures reported in 1922 that the dominating control of the Standard companies still prevailed:

The controlling factor in fixing the retail price of gasoline and other petroleum products is the dominance by the Standard Oil Companies of the retail market for those products throughout the United States and particularly of gasoline and kerosene.\textsuperscript{12}

Thus we see that the Standard group has continued to work together for purposes of controlling the supply and setting the price of the various products of petroleum.

Today, the Standard group, as well as other large companies controlled by the financial interests of the country, have developed into twenty major oil companies whose large financial accumulations and identical policies carried on by group associations, make it easy for them to control the petroleum industry as they see fit.


CHAPTER III

DOMESTIC MONOPOLY IN THE PETROLEUM INDUSTRY TODAY

With the rise and development of the automobile and motor truck transportation of today, gasoline has come to be the most important product refined from crude petroleum, whereas in the days of the monopoly of the Standard Oil Trust kerosene occupied that position. Modern refinery technology, characterized by mass production, makes it possible to recover practically all of the gasoline from the crude. One of the main characteristics of the petroleum industry is that of full integration. All major oil companies today carry on operations in the production, transportation, refining, and marketing phases directly through their own immediate companies or else they own and control subsidiaries for such purposes. Therefore, mass production in refining, vast networks of crude-oil and gasoline pipelines, and oceangoing tankers owned individually and jointly by the majors, afford them the means whereby they are presently able to dominate the supply of and prices of all petroleum products.

In order to determine the existence of monopoly in the domestic petroleum industry, it is necessary to examine the
structure, as well as the working relationships, of the twenty largest major oil companies.

At the end of December, 1947, the twenty major companies had combined total assets of approximately 13,100,000,000 dollars and ranged in size from approximately 116,000,000 dollars to 2,996,000,000 dollars. These figures show the great increase in the total assets of the twenty major companies as contrasted with their total assets of pre-World War II days. For instance, at the close of 1939, the twenty major companies had combined assets of 9,000,000,000 dollars, ranging in size from 62 to 2,035 million dollars. Table 1 gives the correct corporate names of the twenty major oil companies and their total assets at the end of the year 1947.

Also shown in the table is the state in which the company is incorporated as well as the year of incorporation. Many of these companies represent a remaining segment of the original Standard Oil Trust that was ordered dissolved in 1911 by the Supreme Court of the United States. Several of the Standard Companies were reorganized and reincorporated since that time.

---

<table>
<thead>
<tr>
<th>Name of Company</th>
<th>Total Assets Dec. 31, 1947</th>
<th>State of Incorporation</th>
<th>Year of Incorporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Oil Co. (N.J.)</td>
<td>$2,995,989,693</td>
<td>New Jersey</td>
<td>1882</td>
</tr>
<tr>
<td>Socony-Vacuum Oil Co. Inc.</td>
<td>1,261,974,200</td>
<td>New York</td>
<td>1882</td>
</tr>
<tr>
<td>Standard Oil Co. (Ind.)</td>
<td>1,268,103,846</td>
<td>Indiana</td>
<td>1889</td>
</tr>
<tr>
<td>The Texas Corporation</td>
<td>1,116,165,665</td>
<td>Delaware</td>
<td>1926</td>
</tr>
<tr>
<td>Cities Service Co.</td>
<td>899,585,227</td>
<td>Delaware</td>
<td>1910</td>
</tr>
<tr>
<td>Standard Oil Co. (Calif.)</td>
<td>876,185,264</td>
<td>Delaware</td>
<td>1926</td>
</tr>
<tr>
<td>Gulf Oil Corporation</td>
<td>929,168,890</td>
<td>Pennsylvania</td>
<td>1922</td>
</tr>
<tr>
<td>Sinclair Oil Corporation</td>
<td>591,280,180</td>
<td>New York</td>
<td>1919</td>
</tr>
<tr>
<td>Shell Union Oil Corporation</td>
<td>533,911,822</td>
<td>Delaware</td>
<td>1922</td>
</tr>
<tr>
<td>Phillips Petroleum Co.</td>
<td>439,239,341</td>
<td>Delaware</td>
<td>1917</td>
</tr>
<tr>
<td>The Atlantic Refining Co.</td>
<td>329,644,730</td>
<td>Pennsylvania</td>
<td>1870</td>
</tr>
<tr>
<td>Union Oil Company of California</td>
<td>271,827,491</td>
<td>California</td>
<td>1890</td>
</tr>
<tr>
<td>Tide Water Associated Oil Co.</td>
<td>262,801,000</td>
<td>Delaware</td>
<td>1926</td>
</tr>
<tr>
<td>The Pure Oil Company</td>
<td>244,540,177</td>
<td>Ohio</td>
<td>1914</td>
</tr>
<tr>
<td>Sun Oil Company</td>
<td>242,302,954</td>
<td>New Jersey</td>
<td>1901</td>
</tr>
<tr>
<td>Continental Oil Company</td>
<td>209,224,434</td>
<td>Delaware</td>
<td>1920</td>
</tr>
<tr>
<td>The Standard Oil Company of Ohio</td>
<td>188,866,085</td>
<td>Ohio</td>
<td>1870</td>
</tr>
<tr>
<td>The Ohio Oil Co.</td>
<td>163,773,023</td>
<td>Ohio</td>
<td>1887</td>
</tr>
<tr>
<td>Skelly Oil Company</td>
<td>128,997,797</td>
<td>Delaware</td>
<td>1919</td>
</tr>
<tr>
<td>Mid-Continent Petroleum Corp.</td>
<td>115,647,714</td>
<td>Delaware</td>
<td>1917</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$13,971,269,182</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Moody's Manuel of Investments, 1948 (as reported to Securities and Exchange Commission as of December 31, 1947.)
These twenty companies represent more than sixty per cent of the entire investment of the petroleum industry, but as we shall examine later, the degree of control exercised by this group is very much higher than this percentage of investment indicates. These twenty corporations own and control, through stock ownership, 405 subsidiary companies operating in the United States alone. There are also thirty-five subsidiary companies which are jointly owned by the major group. The twenty companies also own and control several subsidiary concerns which operate in foreign oil enterprises. Four of the largest major oil companies are holding companies only, whereas the other sixteen are holding companies as well as operating companies. It is commonly known that the officers of these various companies control the voting stock of their respective enterprises by means of the proxy, etc. According to hearings before the Temporary National Economic Committee, during the stockholders meetings held by seventeen of the majors during 1938, the officers of the various concerns voted approximately 99.3 per cent of the stocks voted.

2Temporary National Economic Committee, Control of the Petroleum Industry by Major Oil Companies, Monograph No. 39, p. 3.


4Temporary National Economic Committee, No. 39, op.cit.

The twenty major oil companies have grown considerably during the last three decades and have greatly expanded their petroleum enterprises. Table 2 shows their percentage of control of the various activities of the industry for the year 1940.

TABLE 2

PERCENTAGE OF OWNERSHIP OR CONTROL OF THE AMERICAN PETROLEUM INDUSTRY BY MAJOR OIL COMPANIES AS OF 1940*

<table>
<thead>
<tr>
<th>Branch</th>
<th>Number of Companies</th>
<th>Percentage</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total investment</td>
<td>20</td>
<td>60.0</td>
<td>1939</td>
</tr>
<tr>
<td>Producing Oil Wells</td>
<td>20</td>
<td>23.7</td>
<td>1937</td>
</tr>
<tr>
<td>Crude Oil Production</td>
<td>20</td>
<td>52.5</td>
<td>1937</td>
</tr>
<tr>
<td>Crude Oil Gathering Pipeline Mileage</td>
<td>14</td>
<td>89.0</td>
<td>1938</td>
</tr>
<tr>
<td>Investment in Pipe Lines</td>
<td>15</td>
<td>77.4</td>
<td>1938</td>
</tr>
<tr>
<td>Pipe Line Operating Income</td>
<td>15</td>
<td>86.4</td>
<td>1938</td>
</tr>
<tr>
<td>Deadweight Tonage of Tankers</td>
<td>15</td>
<td>87.2</td>
<td>1938</td>
</tr>
<tr>
<td>Stocks of Refined Crude Oil</td>
<td>20</td>
<td>96.5</td>
<td>1937</td>
</tr>
<tr>
<td>Daily Crude Oil Capacity</td>
<td>20</td>
<td>75.6</td>
<td>1938</td>
</tr>
<tr>
<td>Daily Cracking Capacity</td>
<td>20</td>
<td>75.6</td>
<td>1938</td>
</tr>
<tr>
<td>Crude Oil Runs to Stills</td>
<td>20</td>
<td>82.6</td>
<td>1937</td>
</tr>
<tr>
<td>Production of Gasoline</td>
<td>20</td>
<td>83.3</td>
<td>1937</td>
</tr>
<tr>
<td>Stocks of finished Gasoline</td>
<td>20</td>
<td>90.0</td>
<td>1937</td>
</tr>
<tr>
<td>Gasoline Pipe Line Mileage</td>
<td>16</td>
<td>96.1</td>
<td>1939</td>
</tr>
<tr>
<td>Domestic Sales of Gasoline</td>
<td>18</td>
<td>80.0</td>
<td>1938</td>
</tr>
</tbody>
</table>

*Temporary National Economic Committee, Control of the Petroleum Industry by Major Oil Companies, Monograph No. 39, p. 5.
Production by the Majors

The major oil companies today have managed to acquire control over a majority of the petroleum reserves of the United States. As the Temporary National Economic Committee reported it in 1940:

The committee on petroleum reserves of the American Petroleum Institute estimated the proven crude oil reserves of the United States to be 17.3 billion barrels as of January 1, 1939. Sixteen major oil companies reported 8.9 billion barrels of proven crude oil reserves, or 51.4 per cent of the total as of January 1, 1939. The other 6 companies have 20 per cent of the acreage and if their crude oil reserves were estimated by using the same ratio of acreage and reserves for the other 16 majors, the total reserves of the major group would be at least 70 per cent of the total reserves.6

Prior to 1926, the major oil companies purchased and imported as much foreign oil as was possible. During these years, the fact was accepted that the supply of petroleum was definitely limited. The majors stored much of the crude supply in order to secure for themselves a continued supply for their refineries and marketing outlets. About 1927 domestic discoveries of petroleum became so abundant that the majors realized that there was danger in sight for them. Many of the discoveries during this period were made near the center of great marketing areas, and this gave the independents, who were without pipe line facilities, a chance to expand their refining and marketing operations

6Ibid., p. 10.
and offer some competition to the major group. The major companies realized that building enough storage facilities to handle increasing crude supplies was impossible. Besides, their foreign oil importations would not be profitable with expanding domestic reserves. Upon becoming aware of their predicament, the majors found themselves in the same situation that the Standard Oil Trust had faced with the independents of the oil region of Pennsylvania. Likewise, the majors' only alternative was to destroy this threat of competition by eliminating the independents' position. This they successfully did.

The majors undertook to wage a campaign for the purpose of convincing the American public that over-production was causing much instability within the petroleum industry. They argued that "overproduction" must be curtailed in order to eliminate "waste" of petroleum resources. The majors invented "conservation" and later "proration" as new tools for maintaining their monopoly position over the industry.

True conservation has been defined as the avoidance of waste in the recovery or use of petroleum; however, the majors have merely used the term to refer to stabilization of the industry for their own benefit. They have only been concerned about conservation when market demand for petroleum

7M. W. Watkins, *Oil: Stabilization or Conservation*, p. 34.
Products has been more than the supply which they have been able to control.

It is evident that the East Texas field was an excellent example of the major's campaign to stabilize the industry and at the same time maintain their monopoly control over it. In this region, the majors were dangerously threatened by the role of the independent producer and refiner who owned and controlled a considerable majority of the area. The majors found themselves without adequate storage facilities, and, therefore, they were unable to buy all surplus oil from the independents and keep it off the market. The National Resources Committee reported that there were certainly cases of physical waste in the East Texas area, but that proposals for proration were mere economic tools of the majors to control the supply of crude. To further secure their position, the majors initiated the refinery price squeeze. Under the existing proration law of Texas, the independents found that they could not obtain a sufficient amount of crude petroleum from their own wells to fully maintain their existing refining capacity; therefore, they were forced to buy crude on the open market in competition with the posted prices paid by the majors.

8National Resources Committee, Energy Resources and National Policy, pp. 200-201.
Such tactics finally eliminated the independent refiner in the East Texas fields.

As to proration, Roy C. Cook, writing for the Temporary National Economic Committee gave a clear economic meaning of the term. He wrote:

In the strict sense of the word proration means the distribution between the units of a lease, field, or State of a total permitted production. That is, proration is concerned solely with allocation of a total amount of allowable production.  

Cook continued by pointing out the great disadvantage that the independent operator faces under proration:

Proration works a hardship on the nonintegrated operator and works to the advantage of the majors who have many sources of crude oil. When the output of wells is restricted, the cost per well is increased and a longer time is required to amortize his investment. Usually the small operator has a very limited amount of capital and is often forced into bankruptcy since he can operate his wells only in a limited way. The major interests then have an opportunity to buy these properties at special prices. As these independent producers are unable to supply their own refineries or independent refiners this activity is put at a distinct disadvantage. Under this system the operator having a limited number of wells is progressively subjected to lower "allowables."  

Therefore, we may say that proration and conservation are really trade-restraining and price-fixing devices that have been used successfully by the majors. As Kemmitzer summarizes the situation:

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10 Ibid.
The claims for proration are conservation of resources and stabilization of prices. There is doubt that either the fixing of production directly or the fixing of prices indirectly increases the ultimate yield of utilization of crude petroleum and its products. There is no doubt, however, that production control is trade-restraining and price-fixing and that the manner in which it is conducted plays into the hands of special interests to such a degree that competition is jeopardized and monopoly favored. The conduct of the major oil interests since the inauguration of the present proration program in 1927, and the results of their virtual control of the industry during the depression from 1931 to date, seem to bear out these conclusions.11

Majors' Control Over Crude and Gasoline Pipe Lines

Pipe lines and tankers, owned or controlled by the major oil companies have made it possible for them to maintain an adequate source of crude supply. Pipe line and tanker transportation offer a great advantage over rail transportation, and no oil company has ever grown to be important without the ownership or use of pipe line facilities. Joseph Pogue, outstanding oil company executive, reported in 1939 that the comparative costs of transportation of petroleum per ton-mile are approximately 8.3 mills by rail, 3.2 mills by pipe line, and 1.25 mills by tanker.12

For many years, the Federal Trade Commission has proclaimed that the inexpensiveness of pipe line transportation enables the major oil companies to carefully select their refinery locations (usually near seaports). In contrast, the independents have been forced to maintain refineries near centers

11Kemnitzer, op. cit., p. 118.
12Joseph Pogue, Economics of the Petroleum Industry, p. 35.
of production because of the absence of pipe line facilities. For this reason, we may say that pipe lines constitute a natural monopoly within the petroleum industry.

As of December 31, 1945 there were 116,514 miles of crude pipe lines in the United States. Of this number approximately 65,000 miles were trunk lines and 50,000 were gathering lines.\textsuperscript{13} Of the total crude pipe line mileage in 1938 the major companies had 49,371 miles, or 85.4 per cent, of trunk lines and 30,234 miles, or 57.4 per cent, of gathering lines. According to the Interstate Commerce Commission, in 1938, fourteen major oil companies owned 89 per cent of the crude oil trunk line mileage and 96.1 per cent of the mileage of gasoline pipe lines. Eight of the twenty major companies jointly owned the Great Lakes Pipe Line Company extending from Tulsa, Oklahoma to Chicago, Illinois, or 2,134 miles in length, which represents 25 per cent of all gasoline lines. It is the best example of collective ownership of transportation facilities by major companies.\textsuperscript{14}

For several years prior to 1906, many investigations had been conducted to determine the relation of pipe line transportation to the other branches of the petroleum industry. With the passage of the Hepburn Act in 1906 and the declaration by the Supreme Court of the constitutionality of this law in 1914, pipe lines were declared common carriers.

\textsuperscript{13} Interstate Commerce Commission, \textit{Statistics of Oil Pipe Line Companies}, No. 3955, p. \textsuperscript{4}.

The major companies, in order to maintain their control over pipe line facilities, have designed several methods of circumscribing the federal law. For instance, the majors have maintained their use and control of the lines by adopting shipping requirements, i.e., minimum tenders, high tariff rates, control over storage facilities, and also control over the crude prices through price leadership in the producing areas. To illustrate, in 1933 the trunk lines of the Standard group running from the mid-continent area to the Eastern section of the United States required minimum shipments of from 25,000 to 100,000 barrels. The Federal Trade Commission described the position of the independents regarding their accessibility to the majors' pipe lines as follows:

The tariffs filed with the Interstate Commerce Commission under this act by the Standard lines required a minimum quantity for shipment so large as to preclude the use of these lines by independent refiners in most cases. As a consequence, they continued to serve only Standard refineries.\[^{15}\]

It is not difficult to see the position of the independent shipper under such circumstances. He must either construct expensive storage facilities at the pipe line terminals or else he must increase his refinery capacity in order to handle more crude. Of course, these procedures would mean additional use of financial resources by the independent that

\[^{15}\text{Federal Trade Commission, Petroleum Industry, Prices, and Competition, p. 73.}\]
is already operating on a small financial outlay; therefore, the independent has been unable to cope with this situation.

The Interstate Commerce Commission has had complaints brought before it by the independents regarding the question of excessive tender requirements. This has been only an occasional occurrence, however. In 1922 the Interstate Commerce Commission ordered the Prairie Pipe Line Company to reduce its tender requirements from 100,000 barrels to 10,000 barrels. 16 One oil economist says that few complaints have been filed by the independents, probably because of their fear of the majors who might adopt discriminatory reprisals. 17 Another reason for the absence of complaints may be due to the vast expense and delay growing out of such complaints. Under such conditions, the only alternative for the independent producer is to sell his crude to the major at the major's posted price.

The major oil companies also maintain excessive tariff rates for use of their pipe lines. In 1934 the Interstate Commerce Commission made a study of the tender requirements as well as the tariff charges of the majors in extending their lines to the independent companies for use. Finally, the


17Watkins, op. cit., p. 56.
Commission ordered a straight 10,000 barrel maximum tender requirement. However, the independents still face the tariff rate price that the majors wish to charge them for the use of the pipe lines. Many times the major company charges different rates to different shippers; often excessive tariff rates are charged against the independent shipper. For example:

Standard Oil Company (Indiana) owns the Stanoline Pipe Line Company which extends from the fields of Oklahoma and Texas to the parent company's mass-production refinery at Whiting, Indiana, a distance of over 500 miles. During 1938, the Stanoline Pipe Line Company transported 34,485,625,000 barrel-miles of crude oil at a cost of $11,050,478, which included all operating expenses, State and Federal taxes, and fixed and contingent expenses. This is an average cost of only 0.032 cent per barrel-mile. An examination of the company's tariffs filed with the Interstate Commerce Commission discloses that the rate from Oklahoma to Whiting, Indiana, was $0.069 per barrel-mile based on 500 miles. This shows unquestionably that the cost is less than half the tariff rate which must be paid by independents if they do ship over the pipe line.18

During their entire fight to prevent the federal government from declaring the pipe lines common carriers, the majors have argued that pipe lines are mere "plant facilities" and are necessarily a part of their refining process. Why cannot the independents argue that also? At any rate the majors still maintain a monopoly position over the pipe line transportation facilities of the petroleum industry.

18 Temporary National Economic Committee, Control of the Petroleum Industry by Major Oil Companies, No. 39, pp. 22-23.
The Majors' Control of Tanker Transportation

It has already been mentioned that tankers furnish a lower cost than other types of transportation. In fact, about one-half as much as the cost of pipe line transportation. As to the domestic petroleum industry, tankers are used to transport crude from the Pacific and Gulf coastal areas to refineries belonging to the majors located on the Atlantic seaboard. Statistics show that in 1930 fifteen major oil companies owned 87.2 of the dead-weight tonnage of oil tankers.\(^{19}\) A very small per cent of the remaining 12.8 per cent is owned by the independent oil companies, but almost all of this remaining per cent is owned by independent oil transporting companies who are not connected with the petroleum industry.

During the late 1930's, the major companies formed a tanker pool for purposes of maintaining stability for their monopoly over the oil business. The plan was designed to provide available tanker shipments for the participating major companies, and, at the same time, it provided for excessive high tariff rates for those outside of the pool arrangement. Thus, it was a plan enacted for the purpose of depriving the independents of the use of tanker transportation facilities.

\(^{19}\)Ibid., p. 26.
From this analysis of the transportation of crude oil, it is plain that the major oil companies maintain a monopoly control over this phase of the industry because they own more than 85 per cent of the trunk crude oil pipe lines and 87 per cent of the oil tankers. Because of high tender requirements and excessive tariff rates, the independents are deprived of use of the pipe line and tanker transporting facilities, and the independent's only alternative is to produce and market petroleum products where he can do so without these facilities. Due to the majors' control over the transporting facilities, they can control their supply of crude at whatever price they wish to pay the independent producer for it. Therefore, the majors' monopoly position over transportation today makes their position as secure and solid as that enjoyed by Rockefeller and the Standard Trust more than a half century ago.

The Majors' Control of Refineries

Crude petroleum has no essential use except through its being processed into various products by means of the refining processes. Therefore, control of refineries and refining processes implies control over production of crude as well as refined products. Whoever is able to gain control of the refining process is in a position to exercise monopoly influence over the entire petroleum industry. After a brief examination of this phase of the industry, it can be seen
that the major oil companies occupy this controlling position.

Refining technology has been highly developed so that today practically all of the gasoline from the crude is recoverable whereas, in 1926, the average recovery was 26.06 per cent of the total. The cracking process and other refining techniques have largely been developed by the majors, who are able to employ expert chemists and physicists to do research. These developments have been adopted for purposes of obtaining more efficient operations among large size refining units.

During the years 1926 to 1930 the leading oil companies were engaged in purchasing independent refineries along the Atlantic seaboard. Today there are no independent refineries in this section of the United States. By 1940 the majors had also purchased all but sixteen independent refineries along the Gulf coast section.\(^{20}\)

On January 1, 1926, the major oil companies held 65.5 per cent of the crude oil refining capacity and in 1938, 75.6 per cent.\(^{21}\)

Patent control of refining processes is one of the strong monopolistic elements in the hands of the majors. If the independents secure use of the patented processes held by the majors, the independents are required to pay

\(^{20}\)Ibid., p. 30.
very heavy leasing fees for such processes. The majors have developed a system of group-ownership of the various patented processes. Almost all of the majors have joint ownership in oil patent companies or are affiliated with such companies. This ownership or affiliation has been brought out recently by testimony presented before the Temporary National Economic Committee:

DR. LUBIN: (Economist, Bureau of Labor Statistics). Is the license fee charged to all people alike?

Dr. Wilson: (President, Pan American Petroleum and Transport Company). Generally there is a sliding scale with the size of the operation or the total amount processed. It starts out on the same basis. Of course, there are special arrangements whereby some companies which have patents turn in those patents and get a credit on their royalty rate. There are a great many special deals of that sort, because there are comparatively few companies in the industry who have done research on cracking that don't have some developments that are of importance.

DR. LUBIN: But all people, all refineries, pay exactly the same rate, and where there are differences it is based upon volume?

DR. WILSON: No. Some refiners have free licenses because they exchange cross-licensing agreements, so different companies which have got a substantial amount of patents will get free licenses under some other companies. There is quite a bit of exchange among the industry of that character.

DR. LUBIN: Is there a patent pool in the industry?

DR. WILSON: No single patent pool.

DR. LUBIN: Is it just a bargaining between different companies?

DR. WILSON: On each different type of process there are different arrangements. It is very seldom that one company gets all of the patents that bear on some one process they want to operate. One man gets certain
features, and another man gets certain features, and they find out that to operate successfully they must make an agreement. They get together and do it.\textsuperscript{22}

The majors have designed and executed various means of eliminating the independent refiner when such is necessary for maintaining their monopoly position. Many times the majors have paid high prices for crude in areas where independents have operated refineries merely for the purpose of cutting off the independent's supply of crude. After cutting off the independent's supply of crude, the majors have purchased the independent's refineries and thus eliminated any sort of competition. During the operation of the East Texas field, a total of 155 refineries have been built. Not more than seventy-four have ever been operating at any one time. At the end of 1939 only three independent refineries were operating there.\textsuperscript{23} This shows the economic power of the major oil companies to "squeeze" out the independent by fixing the price of crude.

Colonel Earnest Q. Thompson, who has for many years been a member of the Texas Railroad Commission and, therefore, familiar with the oil industry in Texas, a few years ago stated before the Temporary National Economic Committee that the major oil companies control the price of crude in the state:

\textsuperscript{22}Hearings before the Temporary National Economic Committee, Part 15, \textit{Petroleum Industry}, pp. 5326-5329.

\textsuperscript{23}\textit{Minerals Yearbook}, 1940, p. 41.
THE CHAIRMAN: Is it then your experience that big companies do fix the price of crude oil in the State of Texas?

MR. THOMPSON: I am sure they fix the price, rather they fix the price at which they will buy oil, and if they fix the price higher than someone else, the person who is paying a lower amount will lose his connections to them, because the sellers always go to the highest price. If someone cuts, they quit him and go to those who haven't cut.

THE CHAIRMAN: The inference from the letter... was that the price of this crude was unjustly fixed by easterners to the disadvantage of Texas. That was your opinion when you wrote the letter?

MR. THOMPSON: Well, Humble is owned by the Standard of New Jersey.

THE CHAIRMAN: That was your opinion when you wrote the letter?

MR. THOMPSON: IT is still my opinion.

THE CHAIRMAN: That is what I wanted to know. It is still your opinion?

MR. THOMPSON: Yes.24

Due to the technology in refining which is continuously being modified and improved, refining has been concentrated in the larger plants which are controlled by the majors. Due to the majors' ownership of pipe lines and tankers, these refineries have been constructed where they could be operated most economically, whereas, the independents are forced to operate refineries at the source of their crude. If an oil area is abandoned, the independent refiner finds himself

without the facilities for supplying himself with crude and is eliminated. There are plenty of facts to indicate that the majors have pursued policies to prevent the independent from obtaining adequate crude supplies even when such are available in the locality. This accomplishment has resulted from the majors' use of the "refinery price squeeze"\(^{25}\) and by their control over pipe lines. Thus, control over refining technology is another tool used by the major oil companies to maintain their monopoly position in the industry.

The Majors' Control Over Marketing

Since the major oil companies maintain monopoly control over the production of crude and its price, and over the transportation and refining facilities this entrenched position makes it very easy for them to extend their control into the marketing outlets. As in the other phases of the industry, the majors continue their use of the price-setting device in the marketing industry.

Today the major oil companies operate over the entire area of the United States. There are from five to sixteen majors operating in different states, and the average number is eleven. In each state, the leading major company accounts for about twenty-three per cent of the volume of domestic sales.\(^{26}\)

\(^{25}\)See page 32, "Production by the Majors."

\(^{26}\)Temporary National Economic Committee, No. 39, Petroleum Industry, p. 41.
In recent years the majors have gained complete control over the jobbers of the country which total more than 8,000. The majors dictate the price at which jobbers will sell gasoline and other petroleum products to the station operators. A recent lawsuit in the Supreme Court of the United States against fourteen major oil companies and forty-four company officials shows that the majors have worked collectively in the Mid-west area to control the jobber's margin of profit and his source of petroleum supplies.²⁷ It was also proven that these companies had jointly set uniform price quotations in the leading trade journals of the country, and have used various "basing point" techniques to discriminate against independent jobbers.

During recent years the majors have developed the use of tank wagon trucks to serve their retail outlets and, thus have increased the size of the delivery area and at the same time eliminated the necessity for many of their former bulk station plants and jobbers.

The majors have developed and successfully used basing point systems similar to those used by the steel companies. This is another device used by the majors to squeeze out the independent jobber and force him to deal exclusively in products of their own. It is designed to make his cost of shipping petroleum products much more expensive than the cost to

the major companies themselves. One of these basing point systems is called the "Tulsa plus" plan. The reason that it has been applied to Tulsa is because of the importance of this locality as a crude producing center and market for the major companies. The independent refiners do operate in this area, but the majors transport most of their crude from this area to eastern refineries. Since the independent refineries of this area have supplied a spot market here, the majors do buy some gasoline from the independents and ship it through the Great Lakes Pipe Line Company which is a jointly owned gasoline line held by the leading majors. However, the jobbers buying from the majors in the eastern area are required to pay the price of shipment that would be charged by rail from Tulsa. For example:

The Great Lakes Pipe Line Company serves eight majors exclusively and moves gasoline to Kansas, Nebraska, Iowa, Illinois, Indiana, and Minnesota. Other companies marketing in this area have crude oil moved to the market and refined there. Thus Shell has a crude oil line extending from the Tulsa area to its refinery at Wood River, Ill., and a gasoline line from there to Ohio; Standard Oil Co. (Indiana) runs its crude oil from the Tulsa area to its huge refinery at Whiting, Indiana. The price the jobber and dealer have to pay is freight rate. These companies have a definite transportation advantage which the independents must pay. If, for example, an independent does ship gasoline over the Great Lakes pipe line, the tariff would be the same as the all-rail rate. The independent jobber cannot stand this competitive advantage of the majors and has been gradually going out of business... The all-rail rate from Tulsa to Chicago is 2.64 cents per gallon; the cost is less than half of that which gives more than
one cent competitive advantage on each gallon. Gasoline moving only a few miles would have the 2.64 cents per gallon added to it as a part of the retail price.\(^{28}\)

The prices set along the Atlantic seaboard terminals by the majors to their jobbers are also based on the quotations of the small independent refiners along the Gulf coastal area; therefore, the jobber in the East would pay the price as quoted by the independent refiner on the Gulf coast plus all of the transportation charges that rail transportation would entail. When one considers that the majors ship by pipe line and tanker to the Eastern seaboard at much less expense than the independent refiner who is required to pay for rail transportation, it can readily be realized that the majors make an excessive profit margin from such charges to their Eastern jobbers. Of course, this excessive profit is being ultimately paid for by the consumer of petroleum products in the form of extremely high prices.

The Ethyl Gasoline Corporation, which is owned 50 per cent by the Standard Oil Company (New Jersey) and the other 50 per cent jointly by General Motors Corporation and E. I. duPont de Nemours Company,\(^{29}\) does not make patented anti-knock fluid available to independent jobbers or refiners unless they maintain prices as outlined by the Ethyl Corporation.

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\(^{28}\) Temporary National Economic Committee, No. 39, Petroleum Industry, p. 144.

One of the main requirements of the Ethyl Corporation is that all gasoline blended with this compound must sell for two cents per gallon more than other gasoline. It has been reported that the cost of this blending process is 0.37 cent per gallon. Of course, this patented process serves as a market control over retail prices of gasoline.

Today, the majors who were once a part of the old Standard Oil Trust, still post gasoline prices weekly to their service station dealers and to their jobbers. One of the major companies serves as a price leader over a certain number of states and posts the prices for that area. Obviously, this divisional arrangement and price announcement causes the independents to "fall in line" to prevent any major discrimination which might follow.

Within recent years, almost all of the major oil companies have adopted the "Iowa plan" for marketing through their service stations. This plan was first adopted by the Standard Oil Company of Indiana in 1935. During this time, the various state legislatures were passing chain-store tax legislation, and this type of legislation was becoming a heavy burden to the majors who at that time owned a vast network of service stations. Under this plan company-owned and operated stations are sold or leased to an independent.

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dealer, who often is the former station manager. Generally, under this program, the company merely accepts a note of payment from the dealer usually at a much reduced rate. The lessee is charged a tank wagon price for the products and is also told at what price he can retail the products. Therefore, his margin of profit is determined by the majors' dictation of price.

The majors have placed many other restrictions on the company dealer, thus completely controlling his retail sales. For instance, the dealer must handle 100 per cent company products. Besides not being able to handle products of other companies, the dealer is generally told the kind of batteries, tires, and other automotive accessories that he must handle. William S. Farish, former President of the Standard Oil Company (New Jersey) which maintains 25,000 retail station outlets, frankly admitted recently in testimony before the Temporary Economic Committee that his company maintains a policy of dictating to station lessees the products that they are to sell:

THE CHAIRMAN: I think that is a very frank answer, Mr. Farish, and it goes to the very heart of the control of retailing. That is exactly the complaint that the retailers made—that is if they exercised their independent judgment to sell products other than those furnished by the lesser company their leases would be in danger, and you tell us that is the fact.

MR. FARISH: I think that is the fact, certainly. If you will permit me, I don't see anything wrong with that, morally wrong with that.31

It seems evident that the major oil companies have used devices to eliminate the independent jobbers and have pressured them into becoming exclusive dealers by means of the basing point system and the gasoline price squeeze. Even though under the "Iowa Plan" the majors no longer own the service stations, they have dictated to the owners in such manners as has been related in order to control their market monopoly. The Committee on Small Business, United States House of Representaives, 1948, seems to present a good view of the majors' control today over the marketing phase of the petroleum industry as well as the other three divisions:

Oil and oil-products retailers testified that the major oil-producing companies are today integrated to the extent that every function in the industry, including prospecting, refining, and retailing of oil and oil products, is controlled by the major companies. They testified further, that the retail price of gasoline, lubricating oils and distillates, is dictated by the majors, and that the sale of tires, batteries, and accessories in filling stations is controlled and determined by them also. It was shown that lessees of producer-company-owned stations have no freedom in the choice of the products or accessories sold, or in the conduct of their business in the major controlled or leased stations.32

CHAPTER IV

INTERNATIONAL MONOPOLY IN THE PETROLEUM INDUSTRY

Early Petroleum Developments Abroad

Even though Rumania had produced some petroleum prior to the discovery of the Drake well near Titusville, Pennsylvania, in 1859, the United States has led the way in developing the large scale output of petroleum. This has been done by virtue of the fact that until comparatively recent years, almost all of the world's known supply of petroleum reserves were located within the boundaries of the United States. Both Canada and Russia began producing some petroleum soon after the development of the industry in this country; however, both have been slow in developing their known petroleum deposits.

Oil was not produced in any South American country in any quantity until the beginning of the twentieth century, while Japan began to produce some oil in 1875. Germany produced some oil a very few years later, and Asiatic production (outside of Japan) became important only after the beginning of the twentieth century.

In 1861 the United States produced 99 per cent of the world's petroleum; in 1901 about 41 per cent, and since that time, the United States has produced on an average more than 60 per cent of the world's petroleum production per year.
Prior to World War I, American companies produced petroleum in two foreign countries—Rumania and Mexico. Immediately following the first World War, fears of an impending domestic shortage of oil spurred the United States Government to encourage American companies abroad. Responding immediately, the leading American oil interests sent geologists scouting over the terrain of the world for signs of oil deposits.

By the year 1919, forty-nine companies held concessions in Colombia. At the end of 1922, American companies accounted for one half of all foreign oil production. Later with domestic floods of oil production (in Oklahoma, Texas, and California), American companies abroad lost interest in their foreign ventures due to the so-called "over-supply" at home. Between 1930 and 1940 many American oil companies began to increase their operations abroad as a result of the feeling of a decreasing supply in the continental fields.

In 1933 and 1934 American oil companies secured large concessions in Arabia. This area proved valuable as a source of petroleum for the Allies during World War II. Since 1943 the United States Government has pursued a policy of strong government support to American oil interests abroad. As a result of this government support, as well as the vast capital

outlays of the major American oil companies, the petroleum interests of the United States have come to occupy the most important position in the international petroleum industry. In this study a picture will be presented of the control and ownership of the foreign oil industry by a very few American, British, and Dutch companies. It is necessary to examine the working arrangements in the various oil operations abroad to determine to what extent these companies have a monopoly control over the oil industry.

At the present time the world's proved reserves of petroleum are estimated at more than seventy billion barrels. The greater amount of the world's oil supply is distributed among the following major regions of the world: the Middle East (Iraq, Iran, Saudi Arabia, and Egypt), 45 per cent; the United States, 30 per cent; the U. S. S. R., 8 per cent; the Caribbean area (chiefly Venezuela and Colombia), 13 per cent. This concentration of known reserves of petroleum leaves only 4 per cent of the world's known supply distributed among all of the remaining countries of the world. The majority of this remaining 4 per cent of the world's known reserves is located in the Netherlands East Indies. Therefore, all of the remaining countries of the world are dependent upon these five areas for their supply

2R. F. Mikosell, and H. B. Chenery, Arabian Oil, p. 15.
3Ibid., p. 15.
of petroleum and petroleum products. It is evident that the companies that can control these areas are able to control both the world's supply of petroleum and also the price that purchasers will be required to pay for the petroleum products.

In all countries except the United States the petroleum industry is carried on by state owned enterprises or by a few large privately owned American, British, or Dutch companies. There are several South American countries that produce and market petroleum through state owned companies; however, most of this oil is produced for domestic consumption with very little being exported. The U. S. S. R. and Mexico (before the expropriation decree of 1938) played important roles as petroleum exporters. At the present time Rumania is the only country which exports petroleum from nationalized industries.¹

As is the case in domestic oil production in the United States, a very few large integrated petroleum companies control the petroleum reserves of the world. To be specific, seven private companies control 80 per cent of the petroleum reserves outside of the United States.² These same companies own more than one third of the known reserves of the United States. All of these companies are completely integrated and

¹Ibid., p. 21. ²Ibid.
participate in all stages of the petroleum industry. Table 3 will show the production and reserves of these seven largest oil companies producing abroad.

Table 3

PRODUCTION AND RESERVES OF THE SEVEN LARGEST OIL COMPANIES PRODUCING ABROAD *

<table>
<thead>
<tr>
<th>Company</th>
<th>1939 (Foreign) Production Million Bbls.</th>
<th>Reserves (1947)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Foreign) Production Million Bbls.</td>
<td>Reserves (1947)</td>
<td></td>
</tr>
<tr>
<td>Anglo-Iranian</td>
<td>85</td>
<td>0</td>
<td>9.2</td>
</tr>
<tr>
<td>Standard Oil N.J.</td>
<td>163</td>
<td>2.7</td>
<td>5.8</td>
</tr>
<tr>
<td>Dutch-Shell</td>
<td>150</td>
<td>.8</td>
<td>6.6</td>
</tr>
<tr>
<td>Gulf</td>
<td>12</td>
<td>1.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Texas Company</td>
<td>8</td>
<td>1.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Standard of Calif.</td>
<td>6</td>
<td>1.4</td>
<td>1.2</td>
</tr>
<tr>
<td>Socony-Vacuum</td>
<td>14</td>
<td>1.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>8.7</td>
<td>28.5</td>
</tr>
</tbody>
</table>

As shown in Table 4, the foreign oil reserves and production are about evenly divided between American and British-Dutch companies.

Until about 1928, the European market had been supplied through vigorous competition among these various companies; however, with the development and expansion of the Dutch-Shell interests during this period, much rivalry grew up between Dutch-Shell interests and the Standard Oil Company (New Jersey) for the control of the European markets. Finally, the Dutch-Shell interests and Standard (New Jersey) reached an agreement not to encroach on each other's markets, and this mutual agreement became known as the "As Is" agreement. According to various sources, since that time, competition for control of the European markets has not been evident.6

During the world depression of the nineteen thirties, the representatives of the various petroleum companies of the world which owned 80 per cent of the world's petroleum producing capacity, met in Paris to form a world-wide marketing agreement. Their purpose was to restrict production and by doing so maintain a stipulated price, the maintenance of which would stabilize the international oil industry. Russia was not represented at this meeting and other countries which were represented later broke their agreement by producing more than their allotted portion.

As has already been mentioned, the international petroleum industry is concentrated in the hands of a few companies with

6P. H. Frankel, Essentials of Petroleum, p. 93.
extensive corporate control. These firms, particularly in the Middle East area, have entered into agreements among themselves for the distribution of the output of petroleum for the markets of Europe and the entire Eastern hemisphere.

The Middle East Area

Although American oil companies in the Middle East area did not begin operations on a sizable scale until the late nineteen thirties, about 42 per cent of the reserves of this area are now controlled by American interests. The two British-Dutch companies, Anglo-Iranian and Shell, control the other 58 per cent of the Middle East area.\(^7\)

In 1927 a subsidiary of the Gulf Oil Corporation, the Eastern Gulf Oil Company, secured an option on the Bahrein Island (Arabian) concession which had been previously secured by the Eastern and General Syndicate Limited (British). However, because of previous agreements with the Iraq Petroleum Company (American-British), Gulf had to submit its option to the Iraq company for its approval. Finally, the Iraq Petroleum Company disapproved of Gulf's option; therefore, Gulf was forced to sell its option to some interested firm. Standard Oil Company of California, purchased this and was able to secure approval of the Iraq company after many attempted negotiations in which the United States government

\(^7\)Mikesell and Chenery, *op. cit.*, p. 27.
participated. As a result Standard Oil Company of California organized the Bahrein Petroleum Company (a Canadian subsidiary) to develop Bahrein Island, its first concession. After many negotiations with King Ibn Saud, the California-Arabian Oil Company (which had been organized by the Standard of California to seek further concessions in Arabia) was able to secure more concessions which gave it virtual control over more than 140,000 square miles. This area is the largest concession in the world and about one-sixth the area of the United States.8

In 1944, the California Arabian Standard Oil Company was renamed the Arabian American Oil Company. The Texas Company had previously secured one half of the stock ownership of the company as a result of negotiations in 1936. Shortly after beginning operations in Saudi Arabia, the Arabian American Oil Company received a bank loan from financial interests of the United States amounting to $102,000,000. This loan was later guaranteed by the Standard Oil Company (New Jersey) and the Socony-Vacuum Oil Corporation and still later paid by them in return for stock ownership in the Arabian American Oil Company. Therefore, at the present time Standard Oil Company (New Jersey) owns 30 per cent of the stock, and the Socony-Vacuum Company owns 10 per cent of the stock of the Arabian American Oil Company.9

8Tbid., p. 53.
Although legally the Bahrein Petroleum Company is a separate company, it now operates in cooperation with the Arabian American Oil Company. As previously mentioned, the Standard Oil Company of California was originally the sole owner of the Bahrein Petroleum Company. By 1936 production on the Bahrein Island concession had reached the point where marketing facilities were needed. The Standard Oil Company of California realized the many ramifications to this marketing problem. Not only would it have been expensive for Standard Oil Company of California to establish marketing outlets throughout Africa and Europe, but there were other reasons for the company's hesitancy in starting such an undertaking. The Texas Company already had marketing outlets throughout Asia and Africa which it had been supplying from shipments from the Continental United States. Of course, the Texas Company was desirous of securing more producing areas in the Middle East; therefore, it was of substantial advantage to both companies to reach an agreement. After a series of negotiations, the two companies agreed that each should have an equal share in all adventures in this section.\(^\text{10}\) As a result, a new company, the California Texas Oil Company Limited, (Caltex) was organized as a subsidiary of the Bahrein Petroleum Company to

\(^{10}\text{Tbid., p. 175.}\)
carry on the marketing activities for the Texas Corporation and Standard of California. Standard of California was given half interest in the market areas that the Texas Company already had in Europe and the Middle East. As a result of this merger of interests, the Texas Corporation and Standard of California market Arabian oil throughout Europe, Africa, and the Middle and Far East areas.

At the present time, the various interests in the Middle East area are beginning the construction of two more pipe lines across Arabia to their refining installations around the Mediterranean sea on the Palestine side. According to one source the completion of these additional pipe lines will raise the pipe line delivery capacity of the Middle East fields to the Mediterranean from 90,000 barrels daily to approximately 1,700,000 barrels daily.\(^1\)

This is considered to be the estimated demand for Western Europe through 1953. These pipe lines are to be jointly used by all American, Dutch, and British companies operating in the Middle East area and will certainly afford these concerns more complete control over the petroleum resources of this area. Table 4 shows the leading companies operating in the Middle East and the stock ownership and interlocking relationship of the various American, British, and Dutch interests there.

\(^{11}\)Mikesell and Chenery, op. cit., p. 67.
**TABLE 4.**

**MIDDLE EAST OIL COMPANIES**

<table>
<thead>
<tr>
<th>Concession</th>
<th>Ownership</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Iraq Petroleum Company</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term: 75 yrs. from Mar. 14, 1925</td>
<td>Royal Dutch-Shell</td>
<td>23.75</td>
</tr>
<tr>
<td>Area: Baghdad and Mosul (east of Tigris River) Iraq, Qatar, Oman, Dhoutar, Asir, Hejaz, Palestine, Syria, Lebanon, Trans-Jordan (Iraq &amp; Qatar - 140,000 sq. mi.)</td>
<td>Anglo-Iranian Co.</td>
<td>23.75</td>
</tr>
<tr>
<td></td>
<td>CIE Francaise Des Petroles</td>
<td>23.75</td>
</tr>
<tr>
<td></td>
<td>Standard Oil (N.J.)</td>
<td>11.875</td>
</tr>
<tr>
<td></td>
<td>Socony-Vacuum Co.</td>
<td>11.875</td>
</tr>
<tr>
<td></td>
<td>C.I. Gulbenkian</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concession</th>
<th>Ownership</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anglo-Iranian Oil Company</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term: 60 yrs. from Dec. 31, 1933</td>
<td>British Gov't.</td>
<td>56.00</td>
</tr>
<tr>
<td>Area: Iran: 100,000 sq. mi.</td>
<td>Burmah Oil Co.</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
<td>Other (Individual)</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concession</th>
<th>Ownership</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Khanaqin Petroleum Company</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term: 60 yrs. from Dec. 31, 1933</td>
<td>Anglo-Iranian Oil Company</td>
<td>100.00</td>
</tr>
<tr>
<td>Area: Khanaqin Territory (Iraq)</td>
<td><strong>Total</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concession</th>
<th>Ownership</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kuwait Oil Company, Ltd.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term: 75 yrs. from Dec. 23, 1934</td>
<td>Anglo-Iranian Oil Gulf Exploration</td>
<td>50.00</td>
</tr>
<tr>
<td>Area: All of Kuwait</td>
<td><strong>Total</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concession</th>
<th>Ownership</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arabian American Oil Company</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term: Original Area: 66 yrs. from July 15, 1933</td>
<td>Standard Oil Co. of California</td>
<td>30.00</td>
</tr>
<tr>
<td>Additional Area: 66 yrs. from July 21, 1939</td>
<td>The Texas Co.</td>
<td>30.00</td>
</tr>
<tr>
<td>Approximately 440,000 sq. mi. Saudi Arabia</td>
<td>Standard Oil, N.J.</td>
<td>30.00</td>
</tr>
<tr>
<td></td>
<td>Socony-Vacuum Co.</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

The practice adopted by the oil companies operating in foreign countries of securing concession contracts to cover all of the territory of a country favorable to oil discovery has, obviously, caused the great bulk of the world's known oil supply to be monopolized by a few large concerns. This practice has had a tendency to completely eliminate all competition for concessions. In the Middle East fields this practice has been established and maintained by the American, British, and Dutch companies, as indicated by Table 4. There it is a common practice for nationals of two or more countries to form a new concessionaire company and to divide the stock among themselves on a relatively equal basis. In some instances where a company from one country holds all of the concession rights, as is the case in Iran (complete territory of Iran held by the Anglo-Iranian Oil Company), arrangements are usually made for

<table>
<thead>
<tr>
<th>Concession</th>
<th>Ownership</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term: 55 yrs, from June 19, 1940</td>
<td>Standard Oil Co. California</td>
<td>50.</td>
</tr>
<tr>
<td>Area: All of Bahrein Is. and territorial waters</td>
<td>The Texas Company</td>
<td>50.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100.00</td>
</tr>
</tbody>
</table>
the sharing of products between British and American interests through means of output sharing agreements and joint ownership and use of pipe lines.\textsuperscript{12}

It is quite evident that all Middle East oil production and marketing is held by means of a tight oligopoly and that the economic conditions necessary for competition simply do not exist. It is rather obvious that the pricing structure that is maintained in this area is not competition as contemplated by Adam Smith. According to \textit{Fortune}:

\begin{quote}
\ldots\text{ in the Middle East, as in most foreign oil fields, it is a question of accepting imperfect competition among big companies, or getting no production at all.}\textsuperscript{13}
\end{quote}

A recent Congressional investigation of petroleum prices charged the United States Navy by the Arabian American Oil Company during World War II will reveal the United States government's charges of the excessive prices that have been paid producers of this area. During April 1948, the United States Senate Special Committee Investigating the National Defense Program concluded its summary of the investigation by accusing the Arabian American Oil Company of excessive price charges. The most important conclusions of the Committee are quoted as follows:

1. The United States Government extended direct and indirect lend-lease and other assistance to the

\textsuperscript{12}Mikesell and Chenery, \textit{op. cit.}, p. 98.

Saudi Arabian Government in excess of $99,000,000 of which only approximately $27,000,000 is likely to be recovered.

2. These advances of direct and indirect lend-lease and other assistance to the Saudi Arabian Government were initiated for the most part by the Arabian American Oil Company, its affiliates, and parent companies, for two reasons: First, in 1941, to relieve themselves of the onerous burden of supplying large funds to meet the budgetary requirements of Saudi Arabia; and second, 1943, direct United States lend-lease was requested by the company to eliminate the danger of its concessions and earnings falling under the financial control of the United Kingdom.

3. To induce the grant of aid to the Saudi Arabian government, the Arabian American Oil Company, offered to sell to the United States under a proposal to the President dated April 16, 1941, at prices based on fuel oil at 40 cents per barrel. Under another proposal made February 3, 1943, as a further inducement to the United States to extend direct lend-lease to Saudi Arabia, the company offered to set aside reserves and to sell its petroleum products "At prices well under world prices" or at "cost plus a nominal profit."

4. When the United States Government needed oil because of its war demands, notwithstanding these prior proposals, the companies offered the Navy fuel oil at $1.05 a barrel on a take-it-or-leave-it basis. The Navy was forced to buy oil on these terms. The committee is of the opinion that the oil companies were under a moral if not a legal obligation to disclose to the naval procurement officers their previous proposals for the sale of oil submitted to the President. The oil companies exploited the government by exacting high prices for their products despite the high expenditures and assistance granted to Saudi Arabia at the companies' behest to protect and preserve the companies' concessions.

5. The committee is of the opinion that in paying $1.05 a barrel, the United States Government was overcharged between 30 and 38 million dollars on sales made to the Navy by Aramco and its affiliates,
between January 1, 1942, and June 30, 1947, by payment of prices higher than those the oil companies had a right to insist on in the light of their previous dealings with the United States.

6. The committee believes that the Navy Department wholly failed to exercise its wartime procurement authority in not obtaining production cost figures for the Arabian oil fields and in awarding contracts to Aramco and its affiliates at prices which the Navy representatives admitted were excessive.

7. The committee is of the opinion that if the statement contained in the official Navy justification for the purchase of oil at $1.05 a barrel is true, that the oil companies represented to the Navy that they had doubled their royalty payment from 21 to 42 cents a barrel, then the government clearly was defrauded because the royalty payments were not doubled.¹⁴

Senator Joseph C. O'Mahoney has continuously charged that the petroleum companies, operating in the Middle East area and supplying petroleum to the nations of Europe under the European Recovery Program, have charged excessive prices through an international basing point system.¹⁵ The Senator, who recently wrote letters to the Economic Cooperation Administration as well as to the leading officials of the major oil companies, says that prices being paid by the Economic Cooperation Administration are based on United States Gulf Coast prices plus transportation to the eastern end of the

¹⁴United States Senate Special Committee Investigating the National Defense Program, Additional Report of the Special Committee Investigating the National Defense Program, April, 1948, p. 32.

Mediterranean; this adds 100 per cent to the prices that the United States Government is paying for petroleum to be delivered in Europe.

All of the companies operating in the Middle East have flatly denied the charges. Eugene Holman, President of Standard Oil Company (New Jersey) made the following reply to Senator O'Mahoney's charge:

Our announced f.o.b. prices for crude oil supplies at the Eastern Mediterranean or Persian Gulf are equivalent to the Caribbean prices for crude plus freight at published U. S. Maritime Commission rates from the Caribbean to Western Europe less freight on the same basis from either the Eastern Mediterranean or the Persian Gulf depending on the supply point to Western Europe.16

It is interesting to note that Caribbean prices are equal to United States Gulf Coast prices;17 therefore, it seems evident that there is evidence of excessive price setting by the petroleum oligopoly which controls the production of oil in the Middle East area as well as the market for Europe and the entire Eastern Hemisphere.

The advantage that petroleum companies have in this area cannot be questioned when viewed in the light of comparative production costs for the leading petroleum areas of the world. During recent years lifting costs have advanced rapidly in the fields of the United States. In the

16 Ibid., p. 56.

17 Mikesell and Chenery, op. cit., p. 140.
same period costs in the fields of South America have advanced with equal rapidity. According to Fortune, if allowance is made for depreciation and depletion, it is estimated that average costs per barrel in West Texas are between $1.00 and $1.25, with the addition of another twenty cents for delivery charges to the Gulf Coast area.\textsuperscript{18} Venezuelan costs are around fifty cents for delivery to tidewater plus another twenty-five cents for royalty charges. On the other hand, in the Arabian area production costs run only around twenty cents plus another royalty charge of twenty cents. Thus, the total costs in Arabia are approximately forty cents per barrel. This advantage in the form of low production costs enjoyed by the producers certainly presents the questions of prices and profits which, from all indications are based on the relatively high costs of the American producer.

Since the war, many British sources have suggested that the relative low costs of petroleum production in the Middle East should be passed on to the European consumer in the form of lower prices. The oil companies' answer is that this savings can only come about when petroleum is produced in the area in quantity, so that this area can become a basing point for the entire pricing structure of Europe.\textsuperscript{19} This seems to be a rather naive reply when one

\textsuperscript{19}Ibid.
considers that the daily production for the Middle East during 1947 was more than 90,000 barrels and since that time has increased considerably due to the extension of refining facilities since the end of the war.

Thus it appears that the production, refining, and marketing of petroleum and petroleum products in the Middle East area present a first hand view of the international oil monopoly as it exists today.

The Petroleum Industry in Latin America

Mexico.—Prior to the expropriation decree of March 18, 1938, American petroleum companies had been producing most of the petroleum in the Republic of Mexico and owned more than 80 per cent of the production facilities and concessions. At the beginning of 1938, 2,125,000,000 barrels of oil had been produced, and the proved reserves remaining amounted to more than 680,000,000 barrels. Since this expropriation decree, oil production in Mexico has been carried on by means of state ownership and control. As the Mexican Republic has not been marketing petroleum on the international market to any great extent, this country will not be included in this present study.

Colombia.--Prior to 1943, the Colombian petroleum industry was completely owned and controlled by American companies; however, in very recent years the Royal Dutch-Shell interests have been granted some concession rights in the country and are now producing actively.

At the end of 1943, 310,900,000 barrels of crude had been produced in Colombia and reserves were estimated at more than 200,000,000 barrels of which 90 per cent are owned by American interests, mainly Standard of New Jersey subsidiaries and Gulf subsidiaries.21

Venezuela.--The first commercial oil well in Venezuela was drilled in the Mene Grande field in 1913 by the Caribbean Petroleum Company which was owned by American interests. In 1915, the Royal Dutch-Shell interests acquired control of the Venezuelan Oil Concessions Ltd. This acquisition gave it control over 3,000 square miles in the districts of Maracaibo and Bolivar. After the early twenties when the Venezuelan government passed legislation providing for "open door" concession rights, American oil companies began seeking concessions there. The Standard Oil Company of New Jersey, through the use of its subsidiaries, became a leader in petroleum production there. With the development of the Maracaibo district and the Lake Paz district, American owned

21 Ibid., p. 336.
production in Venezuela has risen rapidly totaling in both amount and percentage ownership, 64.6 per cent in 1943.\textsuperscript{22} Proved reserves at the end of 1943 have been estimated to be 5,900,000,000 barrels of which American companies have concession rights to 74 per cent.\textsuperscript{23}

At the end of 1948, all of Venezuela's total oil production of 1,400,000 barrels daily was divided among thirteen companies representing American, British, and Dutch interests. These same companies also owned 8,000,000,000 barrels of the country's estimated petroleum reserves. Ninety-four per cent of the production is carried on by the three largest interests which have the following percentages of the total production: Creole, 45 per cent; the Royal Dutch-Shell group of three companies, 32 per cent; and the Gulf subsidiary, Méne Grande Oil Company, 17 per cent.\textsuperscript{24}

The Creole Petroleum Corporation, which is 93 per cent owned by the Standard Oil Company (New Jersey), produced one-half of Jersey's consolidated net income during 1948 even though the Creole concern accounts for only one-sixth of the company's assets.\textsuperscript{25} It is reported that Creole produced 230,000,000 barrels of petroleum during 1948, and this

oil was sold at an average profit of eighty-seven cents per barrel.\textsuperscript{26} This record makes the Creole Petroleum Company the world's number one oil producer at the present time.

In 1932 Standard Oil Company of New Jersey bought all of the foreign oil properties of the Standard of Indiana for approximately 135,000,000 dollars. This purchase included the Lago Petroleum Company, which was producing in the Maracaibo area, and the Lago Oil and Transport Company, which has a large refinery at Aruba. During the 1930 decade Standard production in Venezuela passed the production of the Royal Dutch-She'll interests, and since that time Creole has become the South American leader in petroleum production.

At this time only about 10 per cent of the total crude produced by Creole in Venezuela is actually refined in the country; however, it is expected to increase when refineries now under construction are completed.\textsuperscript{27} Presently, almost 90 per cent of the oil is transported to the Netherlands West Indies island at Aruba where Lago Oil and Transport Company operates a refinery with a daily capacity of 350,000 barrels. Obviously, this joint operation between

\textsuperscript{26}Ibid., p. 180.

\textsuperscript{27}Creole refining facilities are being built at Paraguana.
the two subsidiaries (Creole and Lago) is so arranged by Standard (New Jersey) that it provides considerable processing profits to Lago and at the same time allows Creole the full utilization of the Aruba refinery as an outlet for its crude. Thus, the holding company (Standard of New Jersey) derives more profit from the two subsidiary operations rather than combining them into one company. About 80 percent of Creoles' production finally is marked with the "Esso" label where it is marketed in either South America, Central America, North America, Europe, or Africa by Standard Oil Company (New Jersey) whose dominant position in the international petroleum industry has already been reviewed.

Thus it is evident that the petroleum activities of South America are also controlled by the British, American, and Dutch-Shell companies that control the Middle East area. Since these companies are known to work out marketing arrangements among themselves over the areas of the world, it is evident that the picture of the South American oil industry merely represents a partial view of the entire international petroleum monopoly.

International Patent Control in the Industry

The leading petroleum companies of the world, like most international business organizations, have been able to organize and protect their own domestic marketing areas
and also share world markets by agreement. This has been
done successfully through the use of special privileges
resulting from patent and cartel arrangements. Agreements
have been reached by various companies for the pooling or
exchanging of patent rights and technical knowledge. Often
an arrangement has been worked out whereby a patentee com-
pany, operating in one area of the world, may grant its
patent or process rights to another company operating in
another area of the world. This is usually done in exchange
for some similar exclusive right or patent in the licensor’s
territory. Usually each of the parties concerned agrees to
confine its operations to certain fields of activity. In-
cluded in such agreements are provisions to sell at specified
prices and limitations as to output of production.

During the decade, 1920-1930, as has been mentioned
earlier, there arose, among oil companies, alarm about the
possibilities of an early exhaustion of American petroleum
reserves. During these years, Standard Oil Company (New
Jersey), which already had become the world’s leading
petroleum producer, became very interested in the spectacu-
lar technological advances which I. G. Farbenindustrie of
Germany had made in the production of synthetic gasoline
from coal by means of the hydrogenation process. Obviously,
Standard Oil Company (New Jersey) realized that with the vast
amount of existing coal supplies in Europe, the I. G. Farben-
owned hydrogenation process was a serious threat to its own European petroleum markets. Standard realized that its gasoline production from natural sources could be produced in competition with synthetic gasoline because of the tremendous expense involved in the hydrogenation process, but Standard also realized that its competitive position could be wiped out by the adoption of tariff laws if the European countries so desired. In view of an anticipated petroleum shortage, the handwriting on the wall was plain to Standard. It must get its hands on the hydrogenation process, too.

Quickly recognizing the advantages of an alliance with I. G. Farben, Standard Oil Company (New Jersey) approached Farben for the purpose of obtaining the hydrogenation process. On November 9, 1929, I. G. Farben and Standard concluded four agreements to establish their joint undertakings in the chemical and synthetic petroleum ventures.28

The rights to the hydrogenation process in all countries of the world except Germany were transferred to a company owned jointly by Standard and I. G. Farben. The share that each of the two companies was to have in the German market for oil products was fixed by the agreement. Arrangements were provided whereby the two parties were to adjust any differences that might arise in the future as a result of

their joint ventures. Finally, provision was made for I. G. Farben to purchase 546,000 shares of Standard Oil Company (New Jersey) stock valued at more than $30,000,000.\textsuperscript{29}

On September 13, 1930, I. G. Farben and Standard Oil Company (New Jersey) concluded another supplementary agreement to the original one of 1929. This agreement immediately became known as the Joint American Study Company (Jasco) Agreement.\textsuperscript{30} In effect, the Jasco agreement was a qualification clause for the joint development of chemical processes provided for in the earlier agreement. It covered only "new chemical processes" which employ as a "starting material crude petroleum, natural bitumen, or natural gas or products made therefrom." The Jasco company was to make experiments for each of the parties, and when either party developed a new process, it was to offer the other party an option on rights to the process through Jasco, the joint-owned experiment plant and licensing agency. The stock ownership in Jasco was equally divided between the two parties, but the royalties were to be divided as follows: 62.5 per cent for the originator of a process and 37.5 per cent for the other party.\textsuperscript{31}

\textsuperscript{29}Ibid., p. 93. \textsuperscript{30}Ibid., p. 94.

\textsuperscript{31}Ibid., p. 95.
As a result of this I. G. Farben—Standard Oil (New Jersey) tie, these two international concerns have continuously held a monopoly of, and exclusive rights over, the hydrogenation process for converting coal into synthetic gasoline.

As Wendell Berge, Assistant Attorney General of the United States, recently wrote so appropriately:

Competition between I. G. Farben and Standard Oil (New Jersey) was eliminated, and the technology of chemistry and petroleum was made part of their feudal preserve. The economic effect was the maintenance of monopoly.\textsuperscript{32}

In October, 1939, a month after the recent war had already begun, a representative of Standard Oil (New Jersey) was in Europe attempting to devise ways of maintaining the petroleum patent arrangements of the Standard--I.G. cartel. Finally, an agreement was reached in Holland. Frank Howard of Standard (New Jersey) related the war agreement in the following terms:

\ldots we did our best to work out complete plans for a modus vivendi which would operate through the term of the war, whether or not the United States came in. All arrangements could not be completed, but it is hoped that enough has been done to permit closing the most important uncompleted points by cable.\textsuperscript{33}

\textsuperscript{32}Wendell Berge, \textit{Cartels}, p. 211.

\textsuperscript{33}Richard Sasuly, \textit{I. G. Farben}, pp. 149-150.
According to one source, the basis of the war agreement was a separation of the control of the patents formerly held by Standard (New Jersey) and I. G. More than 2,000 patents were turned over to the Standard (New Jersey) and most of them included oil patents on which Standard (New Jersey) already held 80 per cent of the royalty and ownership. Of course the patents involving the manufacture of synthetic rubber were turned over to I. G., and this has been found to be the reason that the United States, when we entered World War II, had not accumulated sufficient research and technical knowledge to manufacture synthetic rubber in the quantity needed.

It might also be stated that I. G. Farben was to receive 20 per cent of all the revenues derived from the use of the patents which were turned over to the Standard Oil Company (New Jersey).

The Standard Oil Company (New Jersey) took its own good time with the United States' State Department at the beginning of World War II, and, proved that its monopolistic position in the economic world was stronger than the United States Government. Secretary of State, Cordell Hull, in 1941, requested Standard Oil Company (New Jersey) to cut off business relations with the Fascists in South America.

\[34\text{Ibid.}, \ p. \ 150. \quad 35\text{Ibid.} \quad 36\text{Ibid.}, \ p. \ 151.\]
In spite of this request, Standard continued to supply the Fascist Italian Airline, Ala Littoria, for six months from its petroleum marketing subsidiary in Brazil, the Standard Oil Company of Brazil. The Condor airlines of Nazi Germany were also supplied aviation fuels by Standard long after the beginning of the war in Europe.

It seems apparent that Standard Oil Company (New Jersey) must have felt obligated to the German state as a result of the joint pooling of patent arrangements which had grown up between the two international monopolists. As the Truman Committee said:

... it would be unfair to view the individual actions, except as part of a general picture of big business playing the game according to the rules as the Standard construed them. ... 37

As to the international petroleum industry then, it appears that a tight oligopoly is maintained throughout the petroleum industry by means of controlling the crude from the time it comes out of the well until the petroleum products are sold to the consuming public.

With 42 per cent of the reserves of the Middle East area distributed to the control of the Standard Oil Company (New Jersey), Socony-Vacuum Company, Gulf Oil Corporation, Standard Oil Company of California, and the Texas Company,

the American position of control cannot be questioned. With the remaining 58 per cent of the reserves of that area in the hands of the British Government and the Dutch interests, the fact that monopoly exists there cannot be questioned.

In South America the picture remains the same. In Colombia 90 per cent of the petroleum reserves are controlled by Standard (New Jersey) subsidiaries and Gulf, and the remaining 10 per cent are owned largely by the Royal Dutch-Shell interests.

In Venezuela 94 per cent of all the oil reserves are owned by Standard (New Jersey), Gulf, and the Royal Dutch-Shell interests.

The Standard Oil Company (New Jersey) is the dominating force in international patent control.

Thus, throughout the oil world today a monopolistic setup prevails with no real competition among the producing companies.
CHAPTER V

WORKABILITY OF MONOPOLY IN THE PETROLEUM INDUSTRY

Although, Stocking, more than twenty-five years ago condemned competition as unworkable in the oil industry, today he has, by implication, revived his belief in the workability of the automatic forces of competition. He recently wrote that:

... it is beyond dispute that the long-run balance of forces in a competitive economy gives it a strength and a capacity for growth that, on the record, no alternative system of industrial control yet tried has exhibited. Through the instrumentality of a competitive market, resources tend to be allocated, productive processes organized, and income distributed in such a way as to yield consumers the maximum benefits possible under the current state of the industrial arts and with available natural resources.¹

From this writing, it is plain that Stocking has recently ignored his earlier denunciation of the competitive system in regard to the petroleum industry and now faces a dilemma. Even though he states that monopoly and cartelization are the antithesis of free market forces, he wants to return to the so-called "natural" laws of competition in the regulation of the economic system. He states:

Between World War I and II producers everywhere sought to escape the risks and uncertainties of competition. They were no longer content to rely on

¹George W. Stocking and Myron W. Watkins, Cartels or Competition, pp. 147-148.
self-help in a competitive struggle with business rivals. To ease the rigors of free competition and promote group welfare they turned with increasing frequency to cartel arrangements. . . . Private producers and public policy makers alike became less and less willing to rely on the spontaneous forces of free markets to determine business and national economic destinies. In a quest for collective security, they increasingly restricted the freedom of individual enterprise.2

Today, almost all economists present arguments in an attempt to prove that competition is still the most efficient means of operating the petroleum industry. In spite of the wastes that have grown up as a result of competitive practices in the history of the industry, the orthodox economists believe that a revival of competitive practices would eliminate wastes. Rostow voices this opinion by writing:

. . . . that a more competitive form of organization would be economically and socially desirable, and that a reorganization of the industry in the interest of competition would not involve giving up the economies of the large scale of production, other technological advantages, but should on the contrary result in the elimination of important wastes associated with excessive size and monopoly.3

By advocating a return to competitive practices in the operation of the petroleum industry, Stocking and Rostow are implying that monopolistic practices are inefficient. Do they mean that unitization, or monopoly development of an oil pool, is less efficient than competitive

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2'Tbid., p. 68.

3Eugene V. Rostow, A National Policy for the Oil Industry, p. xiii.
drilling practices? Do they mean that the major oil companies that control the industry have not been efficient in developing research and technology for the purpose of obtaining full use of the petroleum resource? Are these economists saying that the independents have the necessary financial outlays for carrying on extensive research programs? Do they mean to imply that modern refining technology could be carried on more efficiently under competition than under monopoly? In view of the nature of petroleum deposits in the earth and of the chemical composition of petroleum, are Stocking and Rostow urging that petroleum science and technology is more compatible with the competitive system than the monopoly system?

In order to study carefully the implications that Stocking and Rostow have submitted, it is necessary to examine the workability of monopolistic practices in the petroleum industry.

Today, all major oil companies realize the necessity of adopting and using scientific methods in the exploration and production of petroleum deposits. The science of physics is used, and very sensitive instruments have been developed by the major producing companies which indicate the structure of the earth far below the surface. As a result of these discoveries, the large oil companies employ many experts in the fields of geology, physics, and chemistry in order to
scientifically discover and produce petroleum. When a pool is discovered under scientific conditions, the oil companies are able to accurately determine the size and structure of the pool; therefore, they are able to utilize the most modern and technical methods in developing the oil field. That is to say, when the field is in the hands of only one company, then, the full use of oil science and technology can be employed in developing the field as a unit as nature made it. Where there are many companies operating in the same field, this unit accomplishment has been utterly impossible because of the rules of competition that have already been discussed in this analysis.  

Upon realizing the importance of unitized development of oil pools, the major oil companies, in recent years, have been instrumental in adopting unitization plans for the development of oil fields. This procedure has been made possible because of the presence of monopoly over a particular area as evidenced by one or a few companies operating in a cooperative manner.

Unit operation of an oil field merely facilitates the application of the present knowledge of engineering and production practices. Thus, it appears that unit operation  

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4See Chapter I for waste due to competitive drilling practices.  
5National Resources Committee, Energy Resources and National Policy, p. 219.
or monopolistic operation of a field is more efficient than competitive practices because it makes possible the proper spacing of wells in relation to the size, contour, and geologic structure of the oil pool. It also enables the producing companies to conserve natural gas and this results in the maximum recovery of the oil deposits. The unit-operated field makes lower production costs possible by elimination of excessive drilling and by using reservoir gas for lifting the oil to the earth's surface instead of going to the added expense of pumping the oil or flooding of the sands. Further economies in unit operations are brought about by the avoidance of excessive capital investment in duplication of surface plant equipment such as derricks, roads, water supply, etc. Thus, enormous savings result from the monopoly development of an oil field as compared to the competitive development.

Fraser and Doriot give a good example of waste resulting from competitive operation of a field which could have been eliminated by means of scientific unitization of the area. They recently wrote:

It was estimated in May, 1930, that if the Oklahoma City field could have been fully unitized, development costing $3,000,000 could have produced as much income to date as the $32,500,000 now in completed wells, to say nothing of the $37,500,000 in the course of being spent. ⁶

⁶C. E. Fraser, and G. F. Doriot, Analyzing Our Industries, p. 417.
Under unit operation of oil fields it is possible to restrict petroleum production by scientific means which are not injurious to the field, whereas, proration on a well basis often has proved very harmful to the efficient recovery of the total reservoir of petroleum. Unit operation quotas can be allocated among pools, and the allowed amount from the pool can be determined from the standpoint of efficiency.\(^7\) Under unitization there is no need for restriction of any well's production because the drilling of excessive wells prevalent under competition is eliminated.

Property owners are compensated more accurately under unit operation of a field than under competitive operation because royalty payments can be based on accurate determination of the size, formation, and structure of the particular pool. With the lower cost recovery methods and with a greater recovery of the oil deposits, it appears obvious that the royalty owner benefits more fully when monopoly operation of the field is practiced.

As a result of unitized development in many oil pools today there may be only one well for forty acres, or spacing may even be as wide as one well to every eighty or 160 acres. It has been learned that the location of wells is just as important as the number of wells. For instance, in certain

\(^7\)National Resources Committee, *op. cit.*, p. 220.
fields where a reservoir is not found to be a continuous sand, wells must be sunk to tap each separate part of the pool. Therefore, the presence of peculiar sand formations sometimes calls for more or fewer wells. Such economy of production due to the proper spacing of wells is another advantage of unitization over competitive production not taken into consideration by Stocking and Rostow.

Only after all of the known geo-physical methods are assimilated into an oil map of the entire area, is it possible to obtain the necessary knowledge about a particular field for the efficient development of it. Such an undertaking requires a staff of experts in related scientific fields who must work collectively for months, or even years, in gathering all the necessary data. Since this sort of petroleum exploration is very expensive and requires a vast financial outlay, it is only possible for it to be carried on by concerns that are able to acquire great amounts of financial capital. Since the field must be scientifically studied as a geologic unit, why should it not be developed as a geologic unit? It seems that the most logical answer is the unitization plan—monopoly control of production as opposed to competitive production.

The Dutch, British, and American interests that operate in the Middle East area have proved the economic value of unitized production methods. In Iraq, Kuwait, Iran, and
Saudi Arabia, where single companies have managed to obtain concessions covering the entire area of each country, the efficiency of such production methods cannot be questioned. In these areas the wells are scientifically and economically spaced, being based on the arrangement of the oil formations. The greatest possible recovery from the reservoirs is the efficient result. Under these monopolistic conditions, much of the waste which results from competitive production of petroleum has been eliminated.\(^8\) The unit practice of development is also used in Venezuela and Colombia where oil concessions are large as the result of monopolistic lease holdings. These large holdings make low production costs possible by permitting proper spacing of wells. There are no offset wells along small lease boundaries such as has been the case in most fields developed in the United States under competitive arrangements. Where the unit system of production prevails, one does not see such a vast forest of closely spaced wells as were seen at Ranger, Burkburnette, Kilgore, Spindle Top, Long Beach, and practically all of East Texas.

In recent years, the petroleum scientists, working in the research laboratories of the major oil companies, have made rapid strides in developing further uses for natural gas. These scientists have discovered that certain hydro-
carbons in the composition of natural gas are very important components to crude petroleum in the manufacture of high octane gasoline.\textsuperscript{9} Lately it has been demonstrated that natural gas alone can be synthesized into gasoline by the Fischer-Tropsch process.\textsuperscript{10} Obviously, both of these discoveries require the full utilization of methods of producing and conserving natural gas as developed by the major oil companies.

At present, two natural gas conversion plants are under construction. One is being built in Brownville, Texas, and the other one in the State of Oklahoma. Since these plants will be very expensive to construct and operate, small independent petroleum producers simply will not be able to participate in constructing and operating them. This type of synthesis plant requires a tremendous amount of natural gas, and, thus it would be necessary for the concern that operates the plant to have access to a sufficient supply of natural gas. Such a supply can easily be made possible through unit operation of crude producing fields. According to estimates, a hydrocarbon synthesis plant erected in the United States, which could produce


\textsuperscript{10}\textit{Ibid.}, p. 17.
10,000 barrels per day of liquid products from the hydrocarbons of natural gas, will cost less than a plant designed to make the same amount of liquids from coal. Such a plant will still cost more than twice as much as a completely modern refinery capable of producing the same products from crude petroleum.\textsuperscript{11} Thus, it is evident that small petroleum producers would not be able to operate such plants because they could not obtain the necessary amount of natural gas supply to operate the plant at capacity. Neither do they possess the financial means to construct such facilities.

At present the most important method of extracting the important fractions (butane, propane, and pentane) from the natural gas, and at the same time conserving the gas as a supplier of reservoir energy for lifting the crude, is known as the recycling process. This development is the result of scientific study and experimentation carried on by the major oil companies. In carrying out this extraction, natural gas is tapped from the high-pressure wells, the desired fractions removed, and the remaining gas pumped back into the ground. By sending the natural gas back into the ground, the underground gas pressure is maintained, and the crude recovery is high.

The recycling process requires two sets of wells—production wells from the gas-bearing strata and injection wells to pump the stripped gas back into the reservoir. According to oil scientists, the success of recycling depends upon the proper placement of both injection and gas bearing wells plus a complete and accurate estimate of the size, shape, and structure of the fields underground reservoir of both petroleum and natural gas. As Scientific American states it, recycling is only successful when the entire field is included in the operation:

Since an effective recycling operation must take in an entire gas field, it frequently requires close cooperation among companies who own various parts of the field. In fact, if recycling operations are not run as a unit, they will fail as a unit. In sinking production and injection wells, property lines must be forgotten.\(^{12}\)

Since the geologic structure of petroleum and natural gas reservoirs is so arranged as to necessitate the development of the entire field as one unit, it is evident that in this respect monopoly control of production is more efficient than competitive practices have been or could be.

Since crude petroleum is nothing more than a group of hydrocarbon compounds mixed together, and is not useful except as a result of refining technology whereby these various fractions are broken down, synthesized, and separated.

\(^{12}\text{Ibid.}, \text{pp. 16-17.}\)
by means of heat processes, one must examine the nature of refining technology in order to analyze carefully the workability of monopolistic practices in the oil industry. Today, the science of petroleum refining has become so developed that none of the components of oil remain unused. This full utilization of the petroleum resource has resulted from continuous research programs carried on by the major oil companies.

The early competitive process of petroleum refining was known as "topping" or "skimming". This procedure consisted in distilling off from crude oil, by means of heating processes, the more easily evaporated fractions of crude such as gasoline and kerosene. The remaining substances were disposed of as fuel or, many times, were allowed to run into creeks or rivers where such residue was actually a nuisance. As a result of this imperfect method of refining, a great portion of crude petroleum remained unused and was mere waste. Duplication of effort was characteristic of the industry because the process was non-continuous. That is to say, the crude was placed in single tanks where it was heated to a certain temperature until evaporation took place to obtain the desired product. Each process required reheating each time evaporation was desired. This process has been characteristic of the small independent refiner because such procedures have required relatively
small financial investments. Under competitive capitalism anyone has been able to operate a refinery as he sees fit regardless of the tremendous amount of waste that has ensued. On the other hand, monopoly operation of the gigantic refineries has produced technology which makes possible the full utilization of all of the hydrocarbons of crude petroleum.

Because of the progressive development of refining technology by the major oil companies, the size of the refinery has been increasing for a number of years. At the present time, the largest refinery in the world is operated by the Anglo-Iranian Oil Company at Abadan near the head of the Persian Gulf. This gigantic plant has a capacity of 300,000 barrels of crude per day, and requires more water than the city of London.  

As a result of continuous scientific study by the major oil companies, the straight-run process was developed some years ago. This process requires tremendous plant outlays and equipment because the crude in one straight-run heating process passes through a series of tanks each maintaining a different temperature sufficient to evaporate a particular set of the crude's hydrocarbons.

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13Erich W. Zimmerman, World Resources and Industries, p. 510.

14Brooks, op. cit., p. 103.
In addition to this straight-run process, a cracking process has been perfected so that it is possible to split up larger (heavier) molecules into smaller (lighter) ones. This process rests on the scientific fact that the hydrocarbon molecules break up when high temperatures are applied and as a result are converted into components of varying characteristics. According to one source, these plants are so expensive that the costs are from three to five hundred dollars a barrel of daily refining capacity for a modern cracking plant. \(^{15}\) It is quite obvious that independent refiners who operate under small financial outlays and consequently do not refine in such great capacities, could not build and operate such a plant.

In 1937, after years of scientific study and development by the major oil companies, the cracking process was developed more fully by the addition of catalytic cracking. A catalyst is any substance foreign to petroleum hydrocarbons which, when injected into them, causes certain chemical reactions without being affected itself. \(^{16}\) By means of this process, the hydrocarbon molecules are broken down and use is made of catalysts (such as aluminum, silicon, nickel, manganese, or iron) for purposes of injecting hydrogen into these new created molecules. \(^{17}\)

\(^{17}\) Max Ball, *This Fascinating Oil Business*, p. 206.
Therefore, chemical synthesis takes place as all of the petroleum molecules are built up by means of the addition of hydrogen from non-petroleum sources. This means that petroleum products leaving the modern refinery contain substances the crude did not contain when it entered the refinery still.

All modern refining technology is the result of continuous research and development which has been carried on in the expensive laboratories of the major oil companies. The independent companies have contributed very little to the development of the science of petroleum production and refining because of their lack of financial capital. They have had the same opportunity to carry on research programs and to discover new patented processes as the majors have, but they simply have not been financially able to do this research.

In spite of these evidences of the efficiency of monopoly in the petroleum industry, Rostow contends that modern refining practices could be carried on more efficiently under the rules of competition. He writes:

There is no reason in the technology of refining for concluding that the bigness of the big oil companies is the inevitable price we must pay for using modern methods of manufacture. On the contrary, there is every reason to believe that from the point of view of efficiency in operations—cost per unit—smaller firms would be able to operate on a competitive basis
if the control of the majors over access to raw materials
on the one hand, and to markets on the other were elimi-
nates. 13

Thus, Rostow believes that competition in the production
and refining of petroleum is more efficient than unitized
production and modern refining technology as both have been
developed by the major oil companies. It seems quite evident
that this argument is in contrast to the facts brought out
by the above comparison of the efficiency of competitive
practices and monopolistic practices.

It is evident that the large refinery, embodying all
of the present refining technology, has definite advantages
over the smaller plants. The major oil companies that own
and control the large refining plants also own and control
a very large percentage of the crude supplies. The majors
are able to transport the crude to their refineries in an
inexpensive manner because of their control and ownership
of pipe lines and tankers, and, therefore, are always as-
 sured of an adequate supply of crude. The independents have
not been able to purchase tankers or construct pipe lines
because of the tremendous initial outlay of financial capital
which is necessary for such undertakings.

At the refinery installations of the major oil com-
panies, the manufacture of petroleum by-products is carried

13Rostow, op. cit., p. 69.
on and is continuously improved. The equipment for the recovery of these formerly wasted products and the technology necessary for the conversion of these into useful by-products is extremely expensive and can only be operated at large refineries successfully.\(^{19}\)

Improved refining methods have increased the size of refineries tremendously. Scientific development has, likewise, necessitated the combination of small and separate plants. The result has been the reduction of wastes of the petroleum resources through perfection of greater use for petroleum and petroleum by-products along with the reduction of the costs of plant operations. This has been made possible as a result of the application of science and technology to the nature of petroleum deposits as well as its chemical contents. Is it possible that technology and science are applied more fully to the nature of petroleum under monopolistic conditions than is possible under a competitive system?

Since the unitization or monopolistic practice of developing an oil pool is known to be necessary in the efficient recovery of crude petroleum, is it not reasonable to question Stocking's and Rostow's argument of the necessity of returning to the operation of the competitive forces? Modern refining technology, which makes possible the full

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\(^{19}\)National Resources Committee, *op. cit.*, p. 161.
use of the petroleum resource, necessitates large plants with vast networks of pipeline and tanker transportation facilities. Since this is the case, is it possible for competition to operate efficiently in this field of economic activity? It appears that there are certain factors in the nature of petroleum deposits and of the chemical composition of petroleum that necessitates large scale operations. Thus, is it not possible that the petroleum resource, and its full utilization might be brought about more efficiently through monopolistic practices rather than competitive practices?

At the very least, the greater efficiency of competition over monopoly cannot be considered as proved yet. The information presented in this analysis seems to leave the issue open to question. If the facts revealed in this study do not definitely cause one to be convinced that monopoly is more workable than competition in the petroleum industry, they certainly tend to make one doubt the desirability of a return to the automatic forces of competition. At least, one must conclude that the facts indicate the necessity for further objective study into the validity of the anti-monopolistic argument advanced by Stocking and Rostow.
CHAPTER VI

SUMMARY AND CONCLUSIONS

The most important developments in the history of the petroleum industry and its present status today may be summarized as follows:

The early competitive practices in the production, transportation, refining, and marketing of petroleum were characterized by waste, instability, and confusion.

John D. Rockefeller and his associates, who organized the Standard Oil Trust, were able to gain a monopoly position in the oil industry because of their acquisition of control over train and pipe line transportation and over refineries.

The decree of the United States Supreme Court, in 1911, ordering the dissolution of the Standard Oil Trust was ineffective because it did not destroy the economic position of the Trust; instead, it merely rearranged the stock ownership.

Since 1911, the Standard group, along with other financial interests have emerged into twenty major oil companies which dominate the petroleum industry of the United States. The monopoly position of these companies...
has been attained and held by means of their ownership and control of the greater percentage of petroleum reserves, pipe line and tanker transportation, refining facilities, and the marketing of petroleum and petroleum products which has necessitated tremendous financial outlays.

In the Middle East area 42 per cent of the petroleum reserve is almost completely owned and controlled by American interests consisting of the Standard group and the Texas Company. Fifty-eight per cent of these reserves is owned and controlled by the British Government and the Royal Dutch-Shell interests. In South America (Colombia and Venezuela) approximately 90 per cent of the petroleum reserves and petroleum production is owned and controlled by the Standard Oil Company (New Jersey) and the Gulf Oil Corporation. The remaining 10 per cent is in the hands of the British Government and the Royal Dutch-Shell interest. The American interests work in close collaboration with the British and Royal Dutch-Shell interests in allocating world markets and maintaining monopoly prices.

The Standard Oil Company (New Jersey) has dominantly controlled international patents through its relations with the I. G. Farbenindustrie of Germany. This I. G.—Standard relationship is generally considered to have been a hindrance to war efforts of the United States and the allies in World War II.
In contrast to the argument of Stocking and Rostow for a return to competitive practices in the operation of the oil industry, there are definite reasons for advocating that monopolistic practices have resulted in more efficiency than competitive forces have. This is evidenced by the efficiency of the major's unitization plans for the scientific development of oil pools; by the major's development of the recycling process for purposes of conserving natural gas; by the major's development of natural gas synthesis plants; and by the major's development of modern refining technology to the stage where none of the components of crude petroleum remain unused.

Conclusions

In view of the evidence examined in this study of the operation of the monopoly system in the petroleum industry, it appears that there are sufficient reasons for questioning the views of Stocking and Rostow in their traditional argument regarding the efficient workability of the competitive system. Thus, it is suggested that more study be directed toward this problem in order to further determine the workability of monopoly in the petroleum industry.

Even though orthodox economists are still arguing in terms of traditional anti-monopolistic economics, the economic world, dominated as it is by a dynamic technology, cannot
remain static. Consequently, all economic problems appear to be in need of constant definition and redefinition, the problem of monopoly being no exception to this need. Is it not possible that our conventional theory that monopolistic practices are always in opposition to public interest needs to be reexamined and reconsidered?

Stocking, more than twenty-five years ago, in condemning the competitive system in the operation of the petroleum industry had valid evidence to substantiate his writings. Today, in reversing his stand and reviving an argument in behalf of the renewal of the automatic forces of competition, Stocking has made no objective attempt to justify his move. Therefore, the issue of competition vs. monopoly in the operation of the oil industry remains in dire need of objective study.
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