PETROLEUM HISTORY SOCIETY

ARCHIVES

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OPEC's impact on the world's petroleum industry

By Hans Maciej

Much has been said and written about this subject. Bookshelves are full of conference reports that have dealt with the rise and fall of this once seemingly all-powerful cartel. My dissertation today can only provide a rather limited vista of OPEC's history and the turbulent events surrounding this remarkable organization.

To put OPEC's birth into perspective, we need to remind ourselves of the post-WWII changes in the world oil industry that preceded it. By 1948 the majority of war-time economic controls had been dismantled. The war af-

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Luncheon Presentation
James H. Gray
Historian and best-selling author
on
The War of the Montreal Oil Pipeline: 1958-1961

Time: 12:00 noon
Date: Wednesday, January 25, 1989
Place: The Palliser Hotel
Cost: Society members, $15; non-members, $17.
RSVP: Rhonda Boorman 269-6721 by January 23

termath of reconstruction, massive foreign aid by the U.S., the breakup of colonial empires into many new and growing nations, the East-West conflicts, the spread of nationalism and industrialization, all taken together provided a watershed in the evolution of the world economy -- and the oil industry was right in the middle of it.

Two further mileposts: Firstly before World War II, the United States was the primary exporter of petroleum to the non-Communist world. Since 1948, U.S. exports have become insignificant. Secondly, the basis of pricing, known as "Gulf-plus", passed into history in 1948/49 when crude oil prices at delivery points in the Persian Gulf were sharply reduced to undersell Western Hemisphere crude in Eastern Hemisphere markets.

The number of competitors in the industry multiplied rapidly. The industry became much more heterogeneous in nature and the market role of the so-called Seven Sisters was significantly diminished.

Enter the Arab League. Since its foundation in 1945, it had entertained the idea of creating a petroleum association of Arab countries. Yet to be effective, the proponents recognized that such a grouping had to include the non-Arab large exporters, notably Iran and Venezuela. Independently, diplomatic contacts were established in Washington in 1947, between Venezuela and Iran for purposes of coordinating their oil policies. Venezuela recognized early in the game that it had to ally itself with the Mideast producers and oil missions exchanged visits in 1949 and 1951. The next milestone on the way to OPEC was the 1953 Iraqi-Saudi agreement involving formal cooperation at government level in the petroleum field.

Then organizational efforts slackened while the world economy entered into an energy consumption boom where oil was soon to replace coal as the leading source of energy. But in April 1959 the Economic Council of the Arab League decided to organize the first Arab Petroleum Congress in Cairo. It was a mammoth meeting -- everybody important in the petroleum world was there -- including Venezuela and Iran as observers. Two months earlier the international oil companies had unilaterally reduced prices without consultation with the governments of the producing countries. While 73 papers were delivered and generated lively discussions, the key exchanges took place in the lobbies and private suites. The result was a secret gentlemen's agreement which set out the principles for the creation of an organization of petroleum exporting countries.

It took another 18 months, and another unilateral price cut to see these countries set aside their political and ideological differences, meet harmoniously in Baghdad on September 10-14, 1960 and lay the foundation for the Organization of the Petroleum Exporting Countries, better known as OPEC. What was generally perceived as an impossible alignment, had become reality, OPEC was born. OPEC originally aimed "...to restore crude oil prices to the level which prevailed prior to August 9, 1960...". In the fiercely competitive buyers' market of the day, that was an ambitious objective, yet it was the only specific objective adopted by the founder members at their Baghdad conference. The other mission -- "...the unification of petroleum policies of member countries and the determination of the best means for safeguarding the interests of member countries individually and collectively" -- is really self-evident; it is inherent in the creation of any organization of this type.

Another objective written into the founding statutes was probably meant to assure outsiders that the creation of OPEC should not be perceived as a threat: "Due regard shall be given at all times to the interests of the producing nations and to the necessity of securing a steady income to the producing countries; and efficient, economic and regular supply of petroleum to consuming nations; and a fair return on their capital to those investing in the petroleum industry."

In the first decade of its existence, OPEC was essentially a spectator on the world oil scene. The organization's role was primarily to increase their share of a price that was slowly dropping.

OPEC had mundane problems such as where to locate headquarters. It had to be in a neutral country to avoid undesirable political influences. Geneva, Switzerland was chosen, but OPEC did not stay there long. The Swiss authorities refused to grant OPEC the usual privileges and immunities accorded to international bodies. The Swiss government regarded the organization as a self-serving group with no international interests.

And so OPEC started looking around for another home which eventually was found in Vienna. The Austrian government formally signed a Host Agreement in June 1965 which provided assurance of the sort of status previously rejected by Switzerland. OPEC has been established as a permanent intergovernmental organization with international status in accordance with Article 102 of the UN Charter. The legally authorized representative of the organization is the Secretary General. The Secretarial staff are international civil servants.

It took the combination of several factors, not least of which was the emergence of a sellers' market, to make OPEC a major player in the world oil scene. In the end it was Libya's success in getting higher prices and other big concessions from the oil companies that unified the organization: Libya's actions virtually embarrassed OPEC into action, subsequently leading to the Teheran, Tripoli and Geneva agreements that changed the structure of the world oil industry. It was these agreements that gave OPEC Collective bargaining power which was formally recognized not only by the oil companies, but by large energy establishments in the industrialized countries, if not by governments.

In 1970/71, OPEC learned to their delight that when they tackled the more rewarding task of raising

(cont'd pg. 6)

Dry Hole

By Aubrey Kerr

To today's oilman, a dry hole is something to be avoided like the plague, mainly because of its effect on an already strained corporate budget. But in the early and middle 40's, abandonments of wildcats were routine. And by the time the decision was made by Imperial Oil to take one final run at the western Canada sedimentary basin, there were many nay-sayers as to its oil potential.

Under these circumstances, Vern Hunter could and did easily take on the sobriquet: "Dry Hole". After all, he had drilled and abandoned fourteen deep tests in Saskatchewan from 1942 to 1945. When he and his crew moved their rig to Leduc in the fall of 1946, nearly everyone had a feeling of "just another hole to be punched in the ground". Ironically, Vern's folkloric moniker was to stick with him despite the fact that he was to "push tools" on only one more well (Imperial Leduc No. 3) after the landmark No. 1 of February 1947.

Hunter was born on the family homestead east of Nanton in 1906. His father was an ordained minister, later a customs officer. He received his early education in Blairmore, then Calgary. Colonel Pearkes got him a job as office boy with Royalite under a Mr. Draper in the Calgary office.

It wasn't long before he moved out to Turner Valley doing the same thing and it was just a matter of years before he started working on the rigs: those were the days when if you didn't show up for work or you got hurt on the job, there was another chap waiting out at the end of the walk to take your place.

Imperial Oil's drilling program in southern Saskatchewan evaluated geophysical features revealed in their exploration program. Vern was sent out to push tools and it was there that he met some of his greatest challenges in fighting anhydrite and salt. Ironically, these two villains had also created the huge structures which had stemmed from salt solution and collapse in early Paleozoic beds.

It was at this time that the Cooperative Commonwealth Federation (CCF) as the governing party in Saskatchewan started to flex its muscles. There were several cases of expropriation in which the erstwhile owners of certain businesses were given only a few hours to accept the terms under which their properties would he seized. Imperial decided to forestall any such action. Vern hired trucks to move their drilling equipment by night back into the "promised land" (then Social Credit) safe from socialist evil-doers. This was not to be the last contact that Vern would have with the CCF but more of that later.

Vern's Wilson rig was put to work in the Provost field at the height of a gas well drilling program designed to block out sufficient gas for a Fischer-Tropsch synthetic gasoline plant (no oil in Alberta, remember?).

Then in the fall of 1946, Vern got his marching orders to go to Leduc. The crew members stated they knew for certain there would be no oil there because it was too close to Edmonton.

February 13, 1947, the day that Imperial Leduc No. 1 was "brought in", was not only the turning point in Vern's career but it also marked the entry of Canada into the world of significant producers. The author was assigned to the follow-up well (No. 2) one and a half miles to the southwest which had been located to evaluate the gas-bearing sands of the Cretaceous down-dip. When the puny Franks rig hit the D-3 reef early in May 1947 (drillstem test flowed in seven minutes), the die was cast. Leduc would become a real major producing area and Vern was to be Imperial's first field superintendent. This decision was made by Walker Taylor over the strong objections of Standard of New Jersey officials who felt that only one of their hands should occupy that position.

In an August 1983 taped interview with Vern, he recalled the early days and the temporary Leduc building (see photo). no photo

It was a nice little building, it served the purpose but the outside toilet, oh God! I remember the head of Imperial's Medical Department from Toronto wanting to see our 'inside' facilities. I said, "Go outside", so he went out and oh my God, he was from Toronto and I don't think he had ever seen one. Certainly he had never smelled one. He was astounded and hurt to think that Imperial would subject their employees to such terrible conditions.

After we were moved out to Devon, (Imperial Oil's townsite built on 160 acres), the Public Relations Department decided that they would invite lady reporters from Vancouver to visit so one of the PR guys had a car and I had my car and we brought five girls each out from Edmonton to look around the Leduc field. They wanted to see rigs, they wanted to see it all. So we took them to a rig and it was cold and the wind was blowing and the outside crapper there was half covered with drifted snow and this one gal said, "Mr. Hunter, where is the bathroom?" I said, "We are going back to the office pretty quick and we got inside facilities there". She said, "No, when you got to go, you got to go." So I said, "OK, right out there, follow that path." She went out there and she came back pretty soon and she said, "I knew I was going to see a lot of weird and wonderful sights in this oilfield, but I never expected to see the pyramids!"

Redwater in 1948 created further needs for expansion and the superintendent, George Bannantine, a veteran of Romania and other foreign areas, was moved to Calgary in 1950. Vern took his place.

Dry Hole *(cont'd from p. 3)*

After Redwater, Vern spent some time in Calgary but as with all field men, he cared little for paper pushing in head office. He was therefore very glad for a move to Regina where he was division manager, a position he held through the boom times. It was in his capacity as chairman of the Saskatchewan Division, that he represented the Canadian Petroleum Association in its negotiations with the CCF. The main adversary was epitomized in the person of T.C. (Tommy) Douglas. Some clever bureaucrat had pointed out that there was oil under the road allowances so why not tax that? Vern had heard that this additional burden was going to be imposed on industry. When he met with Tommy to discuss the legislation, the Premier told him, "it's already at the printers".

Vern's next move was to Edmonton where he was division manager. It was during his tenure there that he had the responsibility for the start-up of Cold Lake which in 1963 was then just a pilot research project.

In 1967, he retired but ever active and restless, he formed V.H. Hunter and Associates.

Hunter's career was of another era, the boom days of Leduc, Redwater and southeast Saskatchewan. Hard-nosed, yet fair, and with a keen insight into human nature, Vern was one of the last true pioneers with his own aura of importance. From "Front Page Challenge" to innumerable interviews, especially around February 13th, a lot of mythology had built up around him. As he told me in August 1983, "I was said to be responsible for staking the discovery and was even given the credit for bankrolling the well!"

A hotel in Nisku phoned Vern one day to ask his permission to use his name "Dry Hole Hunter" for their lounge. He answered characteristically: "OK, if you give me an invite to the opening ceremonies". Unfortunately, the hotel changed hands in the interim but the title stayed. Those readers who wish to slake their thirst between Calgary and Edmonton can lift one for Vern. He'd like that!

V.H. Hunter: 1906 - 1985

Editorial

President's Report

Building on last year's successes

As we begin another year, all of us are being asked to renew our commitment to the preservation of petroleum industry history in Canada by renewing our memberships in the Society. We are a very small organization, so every member is critical to our success.

Membership in the society has grown steadily over the past year. We now have 24 institutional members and 95 individual members, compared to 15 institutional and 67 individual members a year ago. This increase can be attributed to the newsletter, which has an expanding readership beyond society members, and the noon luncheon meetings, which have been well attended by members and non-members alike.

Recently, your board set up five committees to carry out the society's increasingly extensive business -- membership, programme, publications, communications and oral history. Each committee has an interim chairman whose responsibility it is to staff his or her committee, appoint a longer-term chairman where appropriate, and initiate committee programs and activities. We want to involve as many society members as possible, and are therefore eagerly recruiting committee members.

If you want to get more involved in the activities of the society through committee work, please give me a call: 288-9089 (home) or 290-2840 (work). It takes active, enthusiastic members to take a volunteer organization like ours on to greater successes.

W.R.S. McLellan,

New Members:

David Barss
Doreen McArthur
John Miller
Richard Siegfried

Books

Of Men and Oil Wells

Book Review by Peter McKenzie-Brown

Aubrey Kerr, **Corridors of Time**; S.A. Kerr, Calgary, 1988; 350 pages.

In 1986, Aubrey Kerr published **Atlantic #3: 1948**, the story of one of the world's most famous blowouts and the well that helped make the name Alberta synonymous with oil around the world. With that book, Kerr established himself firmly as the industry's folk historian: Laden with facts and details and the operating man's knowledge of how the industry works, his writings reflect a rough-hewn appreciation of the people and the events that have helped create one of Canada's great industries.

Now retired, Kerr's career spanned several critical periods in petroleum history. A geologist by training, Kerr began working for Imperial in 1942, and was wildcatting for that company when the great Leduc discovery was drilled; he was directly involved in development drilling of the Leduc-Redwater field. He managed Home Oil's geology department throughout the 1950s (a yeasty period in that company's corporate life), and worked for the National Energy Board from its inception through the mid-1970s. Thus, his working life put him in key positions from which to observe key events in the industry's growth.

A collection of essays on the industry's history, **Corridors of Time** provides a stage for Kerr's observations. Most of the pieces originated in the **Journal of Canadian Petroleum Technology** in a regular column Kerr wrote for many years. For the book, each has been rewritten and greatly expanded.

The book does not (nor is it meant to) offer a coherent, definitive history of the Canadian oil industry. Rather, it takes particular historical episodes and describes the players, the issues and the events which played roles in their development.

There is a wealth of new material in this book. For example, a chapter entitled "P.I.P.: 1904-1925" describes a federal "bounty" of $0.525 per barrel paid on Canadian oil. Originally designed to protect Ontario producers, this was the first government handout to the industry. However, in my view it is stretching the point quite a bit to characterize it, as Kerr does, as "the first PIP program."

Many of the arguments surrounding the bounty's demise have a familiar ring for just about anyone who has seen other incentive programs killed over the years. Also of interest in the rather dark suggestion by a Petrolia area MP that "If the bounties were continued until the West began to produce oil and then cut off, there would be just ground for complaint of discrimination in favour of the oil producers of the East." In fact, none of the oil from Turner Valley was eligible for federal payments (because its gravity was too high), so the bounty in origin and in practice was almost exclusively an incentive for eastern producers.

Just as Kerr describes the crude oil bounty as the first PIP program, his chapter on Wartime Oils is titled "The First Petro-Can." Although the comparison is not particularly meaningful, the information on Wartime Oils is excellent. Set up (at U.S. instigation) to finance oil exploration and development in western Canada in support of the war effort, Wartime funded 22 wells to the tune of $4 million before being wound up in 1945.

From my reading of this chapter it appears that -- apart from a gross overriding royalty -- Ottawa did not retain an equity interest in the wells it funded. That being the case, the comparison with Petro-Canada makes little sense. There were earlier instances of direct government involvement in the industry, notably in the oil sands. In fact, in another chapter Kerr himself discusses wells which the Geological Survey of Canada drilled for the federal government in the late 19th century.

The characterization of Wartime Oils as the first Petro-Canada also led to some puzzlement on my part: As he wraps up the chapter, Kerr wonders how much it would have affected the industry's history if the Wartime incentives had been continued into the post-war era:

Just imagine that all Crown provincial lands were sequestered by Wartime...What could another $4 million loan have accomplished on the plains? Could all of the main pools in the Redwater/Homeglen-Rimbey reef chain have been drilled and discovered?...Compare that minuscule outlay with what Petro-Canada has paid to buy back tiny percentages of the foreign-owned oil industry -- not only in terms of reserves but also production!

As Kerr the historian should know, this kind of speculation is as productive as wondering what kind of political alliances there would be in Europe if Karl Marx had not been born. It adds very little to the book.

In any case, this volume covers a wide range of topics to do with Canada's petroleum industry, and from it

The Publisher

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the reader can develop a real sense of the sweep of the industry's past hundred years. There is a pattern to the organization and the content of the chapters which, although each deals with a discrete subject, gives continuity to the whole. The only anomaly is a chapter on the discovery of the Prudhoe Bay oil field: While it is the longest and in some ways the best piece in the book, it doesn't quite seem to fit.

What I saw as a weakness in **Corridors of Time** was that the big issues Kerr was really writing about tended to be subordinated to the minutiae of characters and processes. An example is the chapter entitled "Western Provinces vs. the Feds", which could have been made to deal with such sweeping questions in Canadian history as nation-building, political rights and the conservation of resources and wealth. Instead it reads almost like a popular review of who sued whom for what.

Another concern I have about Kerr's writing is that it is written by an oilmen in such a way that the reader almost needs oil field experience to understand it. As an example, here is a passage from a fairly technical chapter on the spectacular Royalite # 4 blowout:

...Each string would have its own flanged packing gland resting on the larger string in the form of a casing bowl. None were cemented to surface so that, if necessary, a shallower gas sand could be produced through the annulus and a braidenhead....

From the historian's point of view, it is useful to have this information recorded. From the standpoint of the general interest reader, however, it makes for confusing and sometimes incomprehensible reading. In fairness to Kerr, however, it should be noted that this book includes one of the best oil industry glossaries around.

Despite its stylistic drawbacks, **Corridors of Time** is a valuable contribution to petroleum industry history. It is also a good and interesting read for almost anyone who works in the oil patch.

Exhibits

Rocks, Rigs and Roughnecks

By David Finch

First it shudders, groans and moans and then you cringe from the smell of rotten eggs. Next you duck at the chatter overhead. And finally you hang on for fear of falling in and freezing to death.

What is it? It's a year-long temporary exhibit at Victoria's Royal British Columbia Museum. Called **Rocks, Rigs and Roughnecks: British Columbia's Oil and Gas Story**, the show includes displays covering 465 square metres of floor space which recreate the facts and the fantasies of oil and gas development in British Columbia.

A quick stroll takes you past a working cable tool rig. Other introductory displays show how geologists think oil and gas were formed and trapped. Next, we see how kerosene transformed life a hundred years ago and paved the way for petroleum to become the dominant form of energy in modern society. Surveying and geophysical exhibits surrounding a full sized helicopter help explain the search for the stuff. Then exhibits demonstrate how raw crude is produced and shipped through pipelines to the refinery. Displays explaining such challenges as offshore drilling, proper care for the environment and the tricky economics of the entire process complete the show.

At one level, this petroleum show can teach anyone about the oil and gas industry. The fundamentals are covered, although just barely. But it is a temporary exhibit in a small display area: some people have more floor space in their homes than is available in this entire show.

Rocks, Rigs and Roughnecks has a uniquely British Columbia slant. It includes displays on cable tool drilling in the Flathead Valley of southeastern British Columbia. The recreated gas station is Barkley's Super Service at 502 Columbia in New Westminster -- complete right down to the dead flies in the window. The helicopter belongs to B.C.'s exploration efforts, and the show explains how geophysicists applied their unique skills to the search for petroleum in Canada's westernmost province.

The exhibit also illustrates how laying pipe from Peace River region in northeastern B.C. to the Lower Mainland was not a task for cowards. And it tells how the rigs which drill off Newfoundland are descended from the Sedco 135 F, completed in Victoria in 1967 and used to drill in the wild waters to the west. In short, this exhibit is an excellent introduction to the petroleum industry, but it highlights B.C.'s unique petroleum story.

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prices, there would be no resistance from the consuming country governments. They had also learned that by invoking the magic phrase of "changing circumstances" all agreements and commitments can be dissolved momentarily and they did not hesitate to put that into practice.

In October 1973, the OPEC Ministerial Committee met with oil company representatives to try to extract further concessions and price increases. An important factor in the bargaining and very opportune to OPEC was the outbreak of the Arab-Israeli war on October 6 with its accompanying oil embargoes. Dissatisfied with the companies' counter-offers, the Ministers of the six Gulf countries met separately on October 16 and decided to fix new crude oil prices unilaterally. The posted price of the Saudi 34°API marker crude was set at $5.119 per barrel.

During the rest of 1973 prices continued to rise due to sustained production cut-backs, embargoes and panic buying. In the scramble for supplies, spot prices rose to more than
$20 per barrel. For example the National Iranian Oil Co. offered 500 000 b/d for six months through auction-type bidding; prices as high as $17.34 per barrel were offered by independent buyers. These developments created a temptation which OPEC could not resist. Following another failed meeting between OPEC Ministers and oil companies, the Ministerial Committee of the Gulf member countries raised the price to $11.651 per barrel effective January 1, 1974. The first OPEC oil price shock was complete. The principal objective of the member countries operating within the framework of OPEC was suddenly realized well beyond the wildest expectations of the organization's members.

When OPEC assumed full control over prices, the organization linked other basic policy changes to it -- for example, a speed-up in the process of equity participation in the international oil companies' operations in OPEC areas. These policy changes and arrangements formalized the most dramatic shift in bargaining power in the history of the petroleum industry -- and perhaps in the history of world trade itself. These events also marked the beginning of a worldwide process of income redistribution on a scale never witnessed before.

At this point, I want to back-track a bit to clarify a popular confusion about the role of OPEC and the Organization of Arab Oil Exporting Countries in the 1973 oil embargo. The members of OAPEC include, apart from the seven Arab OPEC countries, Egypt, Syria and Bahrain.

OPEC insists that the use of oil as a political weapon was never discussed in the organization, but that the oil embargo instituted on Nov. 4, 1973 was a decision by the Ministers of OAPEC. This group decided that each country would reduce oil production by 25 per cent in November and by another 5 per cent in December. The cutback would be targeted at the U.S., the Netherlands, and other nations deemed friendly to Israel.

The Arab "embargo" turned out to be a political failure and had to be called off without its objectives being accomplished. But it was a stunning economic success because it set the stage for the subsequent 126 per cent price increase which came as a present on Christmas Eve 1973.

In the interest of time I am going to skip over some important events in the 1975-78 period except to point out that we had relative price tranquillity during those years.

Again it was unexpected geopolitical events that set the stage for the second price shock.

Civil disorders in Iran in the fall of 1978 led to the shut-down of Iranian oilfields. This exerted so much pressure on the agreed upon pricing structure that spot prices rose to about $23 per barrel by the end of February 1979. The advent of the revolution and the Iran-Iraq war reduced non-communist oil supplies by about 20 per cent. Even when Saudi Arabia and other producers increased production to help make up the shortfall, spot prices continued to rise as anxious buyers with open cheque books offered $40 a barrel and more.

This price shock was not initiated by OPEC. The organization's members were fortuitous beneficiaries of the actions of others. As oil buyers, companies and governments of consuming countries panicked over possible supply shortages and disruptions, there was all-out competition for available supplies. This frenzied buying drove prices furiously upward. The fact that consuming countries for stock-building purposes were buying more oil than they needed was not immediately apparent or understood. But the market illusion it created led OPEC's members to believe they were once again in the driver's seat, and the world at large joined in that perception.

After a brief lag, OPEC took rigid advantage of this perceived market power, again ignoring market fundamentals and market consequences. The members were determined to enshrine the fortuitous price rises as a sacred benchmark from which OPEC through its control would move prices ever higher, never lower. Whether mistaken judgment or arrogance, this position helped sow the seeds of the 1986 oil price collapse.

OPEC seriously misjudged the long-term consequences of their approach. Although the contrary evidence was already clear, OPEC's mirage concept was that demand for oil would continue to rise even at those high prices and that future demand increases would accrue to its members. Eventually the policy of defiance and rigidity backfired and OPEC had to pay the price. The 1986 price collapse brought home the message that the marketplace will eventually exert itself. And this is what caused the third price shock.

The events since the price collapse are still fresh in our minds. Thus there is no need to review them in detail. Let me instead summarize where I believe we are at now.

The brief flirtation with a totally free market environment, and the subsequent collapse of oil prices was not

OPEC *(Cont'd from p. 2)*

to the liking of any of the market participants. That included the Saudis which had obviously miscalculated all the consequences when they flooded the market in 1986.

There is consensus that the only practical way of bringing some degree of stability to prices, given the present huge surplus producing capacity, is supply management. And it is perhaps ironic that after many years of OPEC bashing, we are looking to that same group to assume the role of market regulator, at least in the short term. Willingly or not, OPEC must play that role since it was they who forged the vertical disintegration of the world oil industry; it comes with the territory.

OPEC policy strategy must aim to create a more durable equilibrium between potential supplies and demand growth at realistic price levels. Certainly from the Saudi perspective as well as some of the other Gulf producers, the price must allow for demand to grow. The 1986 experiment has opened the door for some growth and OPEC is hoping that its members will soon realize a market of 20 million barrels a day plus. But since total productive capacity will remain above this level well into the 1990s, downward pressure on prices will be constantly with us.

In my opinion, two basic ingredients are critical to a successful supply management plan. Firstly, the quotas must be flexible, i.e., they must adjust to seasonal changes in the market. This suggests quarterly quotas. Secondly, even with fixed quotas, there must be room for price flexibility. The basket price concept was a move in that direction, but it was not enough. To give the member countries marketing flexibility, all crude prices must be allowed to move within a range. The alternative, as we have seen, is quota cheating. I think these are the issues the Ministerial Council is wrestling with in Vienna at the Present time. We all hope they find the right formula.

Where does all this leave OPEC as an organization? Will it survive? Will the organization develop more sophisticated ways of operating? Chances are that, having survived nearly three decades of tumult, OPEC will remain a fixture in the world oil picture. For better or for worse, the organization will change and adapt to new circumstances. It may lose members and gain new ones as time passes and as new market challenges have to be met. OPEC is now much less isolated: Efforts by certain OPEC countries to forge vertical re-integration are a harbinger of future cooperation between producers and consumers. This is perhaps the best sign for greater stability in world oil trade.

Rocks, Rigs *(Cont'd from p. 6)*

A surprise awaits the visitor around almost every corner. Four laser-disc videos continuously explain geology, helicopters, life in the oil patch and refining. And they work extremely well. So does the groaning rig and the "scratch and sniff" display which illustrates the smell of sour gas. And there's more: Bang one rock against another in the geophysics display and you can watch waves on the oscilloscope screen jump. This show is colourful, interesting and keeps you entertained.

Thousands of visitors flock through western Canada's most popular museum every day. For the $5.00 admission price you can see this temporary show as well as the permanent exhibits. And the lapel pin -- for some the most important part of any event -- features a flashy gold, red and black design and only costs $1.95.

The show came together, from design stage to opening day, in much less than a year. It was completed on time and on budget, an impressive task considering that the museum had almost no oil and gas collection from which to draw materials.

Admittedly, this review is somewhat biased: I arranged the loan of materials from various companies and museums in Alberta. And as a keen observer and recorder of oil and gas history for almost a decade, I looked forward expectantly to such a show. But discounted for bias, the show is a success on its own merits. It will help bring the petroleum story to people who have forgotten -- or never even knew -- how much they rely on this important industry.

Despite its limitations, **Rocks, Rigs and Roughnecks** is a remarkable history of oil and gas development in British Columbia. You can hear, smell, feel and live a little bit of the history of one of the modern world's great industries.

Sponsors of the show include the Canadian Petroleum Association, the Independent Petroleum Association of Canada and fourteen oil and gas companies. In addition, the Royal British Columbia Museum, the B.C. Ministry of Energy, Mines and Petroleum Resources, the B.C. Ministry of Municipal Affairs, Recreation and Culture and the Friends of the Royal British Columbia Museum put money, time and talent into the show.

How best to sum up this exhibit? In the accompanying booklet is a quote from an Imperial Oil publication, dated 1917. "What is Gasoline?" it asks. "Gasoline is a clear, nervous liquid which is composed of speed, noise and trouble in equal parts. It is made of kerosene reduced to a more violent stage, and is supplied to the restless portion of mankind by the Imperial Oil Company." To find and appreciate such a splendid passage says a lot about the people who put on this tremendous exhibition.

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