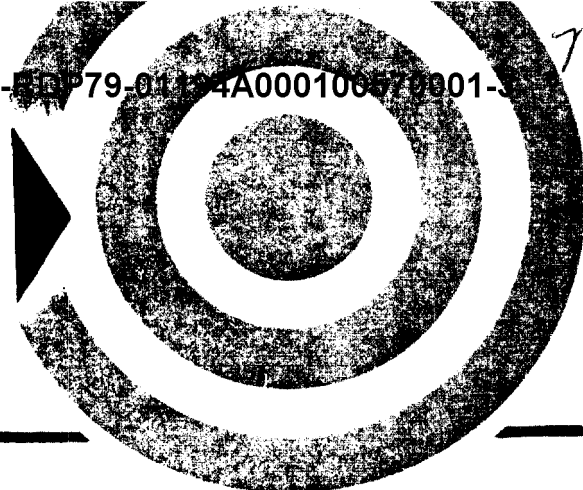


Master

FEATURES



"WORLD OIL COOPERATION OR INTERNATIONAL CHAOS," by Walter J. Levy, Foreign Affairs, July 1974.

"NATION'S CHIEF ENVIRONMENTAL ADVISER OFFERS A LONG-RANGE PLAN FOR ENERGY," by Russell W. Peterson, Smithsonian, July 1974.

"OIL, TRADE AND THE DOLLAR," by Lawrence A. Mayer, Fortune, June 1974.

The three attached articles offer insights into the energy crisis and important aspects of it relating to the U.S. The Levy piece appeals for worldwide cooperation among oil producers and consumers, a theme we push vigorously. We recommend locally appropriate dissemination of the theme including replay of article.

The Peterson article by the chairman of the President's Council on Environmental Quality describes the optimistic Half and Half Plan developed by the CEQ which assumes that energy savings in this country of 0.7 % per year are feasible, and hence calls its projection the Half and Half Plan -- half conservation and half growth through exploitation of additional sources of energy.

The Mayer survey of U.S. and other major consuming nations in the first phase of the oil crisis finds the U.S. relatively better off than most, and reflects that the strength of the free world economic system has been demonstrated by its ability to withstand what Levy calls the "supply shock" of the October 1973 embargo and the overall cutback in Arab oil production."

The Peterson and Mayer articles are intended for background use.

This issuance contains articles from domestic and foreign publications selected for field operational use. Recipients are cautioned that most of this material is copyrighted. For republication in areas where copyright infringement may cause problems payment of copyright fees not to exceed \$50.00 is authorized per previous instructions. The attachment is unclassified when detached.

29 July 1974

WORLD OIL COÖPERATION OR INTERNATIONAL CHAOS

CPYRGHT

By Walter J. Levy

RARELY, if ever, in postwar history has the world been confronted with problems as serious as those caused by recent changes in the supply and price conditions of the world oil trade. To put these changes into proper perspective, they must be evaluated not only in economic and financial terms but also in the framework of their political and strategic implications.

I need not dwell here on the overwhelming importance of oil for the energy requirements of every country in the world; nor do I plan to elaborate on the fact that—except for the United States, the Soviet Union and a small number of countries that are, or will become, self-sufficient—most of the nations of the world will, at least for the foreseeable future, depend almost entirely on imports from a handful of oil-exporting countries, with an overwhelming concentration of oil production and reserves in the Persian Gulf area of the Middle East. Among those countries in the Gulf, Saudi Arabia is predominant in terms of reserves, production, and most important, in the potential to provide significant expansion of supplies. Inevitably, producing decisions by Middle East governments, especially Saudi Arabia, will play a pivotal role in future world oil availability and pricing.

Over the last three years or so, oil-producing countries have in fact taken over complete control of the oil industry in their countries. They have coördinated their efforts through the Organization of Petroleum Exporting Countries (OPEC) which was established in 1960. Since 1970, producing governments have imposed in rapid succession changes in previous agreements that had been negotiated and renegotiated with their concession-holding companies, predominantly affiliates of the Anglo-American international oil companies. These changes were arrived at under the threat that if the oil companies would not acquiesce, the producing countries would legislate such changes unilaterally or expropriate the concessions. In October 1973 the last vestige of negotiations was abandoned and producing governments unilaterally set posted prices on their oil.

In the exercise of this power, Middle East producing countries have raised their government oil revenues from taxes and royalties from about 90 cents per barrel in 1970 to about \$3.00 per barrel by October 1973 and then to \$7.00 per barrel by January 1974. In addition, as a result of the participation agreements between the producing countries and the oil companies, the governments earn additional income from the sale of their newly acquired oil. Its amount, of course, depends on the percent of government ownership and the price they charge for their oil. Agreements had been concluded, as recently as late 1972, under which producing countries acquired a 25 percent participation in the

oil-producing operations and were also committed to sell most of their participation oil to the oil companies at agreed-upon prices; now producing countries are demanding that these arrangements be changed in their favor. Only a few arrangements have yet been concluded, but most of the producing countries will probably insist on at least the equivalent of 60 percent participation and a price for the sale of their oil corresponding to about 93 percent of the posted price—both changes most likely to be imposed with retroactive effect as of January 1, 1974. On such a basis, the government income from the total oil-producing operations in key countries would average about \$9.25 per barrel.¹

Meanwhile, the oil income of the Middle East producing countries has increased from \$4 billion in 1970 to \$9 billion in 1972, and to a presently estimated \$60 billion in 1974. The oil revenues of all OPEC countries are increasing from \$15 billion in 1972 to nearly \$100 billion in 1974. Allowing for all their own foreign exchange requirements, OPEC producing countries will still have available surplus revenues on the order of \$60 billion this year alone. And there remains a clear and present danger that under conditions as they exist now, the supply of oil from individual producing countries or a group of them to individual importing countries or a group of them might—as in October 1973—at a time unknown, again be curtailed or completely cut off for a variety of economic, political, strategic, or other reasons.

The quick pace at which the producing countries have effected this radical shift in the balance of power is perhaps the most dangerous aspect of the current situation. Whatever the merits of their case (of which more later), the world faces frightening repercussions on account of the suddenness with which oil costs of importing countries and oil revenues of producing countries have been inflated. There just has been no time for mature consideration by the societies that have to deal with this new exercise of oil and financial power, be they recipients or dependents, producers or consumers.

The security of international oil supply operations is further affected by regional conflicts in the producing areas of the Middle East—in particular the still unresolved issues posed by the Israeli-Arab confrontation. There are other potentially dangerous and divisive possibilities, as reflected in Iran's policy of establishing herself as the major strategic power in the Persian Gulf and the Indian Ocean. This could, in due course, aggravate what is already a latent conflict between Iran and some of the Arab countries—not only Iraq, where the hostilities are acute, but perhaps even Saudi Arabia. There are also disputes between Iraq and Kuwait, unresolved boundary issues between Saudi Arabia and Abu Dhabi, and internal conflicts such as the Kurdish problem in Iraq. Further problems are posed by inherently unstable governments in many of these areas and by uncertain and unpredictable rules for the succession to power.

Moreover, within the Persian Gulf area there are varying economic and strategic relationships between some of the producing countries and Western powers on the one hand, and the Soviet Union and even Communist China—on the other. Moscow

is deeply involved in Middle East affairs and with the strategic and national policies of some countries, particularly Iraq and Syria. As the producing countries increasingly assert their oil and money power, they are also likely to become increasingly involved as hostage or pawn in any major power struggle.

How can the nations of the world handle this new situation? What is the role of the international oil companies? Above all, how can the producing and importing nations avoid a confrontation or simply a series of reciprocal actions that must tend more and more toward economic chaos and grave political danger? Is there a way to reconcile the various national interests and to achieve constructive overall cooperation?

The first key fact that must now be recognized is that the position of the international oil companies has changed completely over the past few years. Up to about 1969 the major concession-holding companies still could determine levels of production, investments, exports and prices. Moreover, they still possessed substantial bargaining leverage in their negotiations with producing countries, largely by virtue of the surplus producing capacity that obtained in the Middle East, and even in the United States into the latter sixties.

All this has now gone. The producing countries have taken over from the companies the power to set production levels, to designate or embargo export destinations, to direct investments and to set prices. The oil-producing affiliates of the international oil companies have become completely subservient to the directives issued by the oil-producing countries. Nothing perhaps reflects the present state of affairs more dramatically than the fact that American- and Dutch-owned oil companies had no choice last fall but to become the instruments for carrying out the embargo on oil shipments to their own home countries.

Thus, the companies no longer possess any real leverage. About the only role that is, in effect, left to them in established producing areas is that of a contractor providing technical services, getting in return some privileged access to oil—at costs and prices determined by producing governments. The extent of even this “privilege” and the time over which it will be available are subject to unilateral cancellation at any moment, as were all preceding arrangements.

At the same time that they have been deprived of effective control over their producing operations, the role of the international oil companies in consuming countries has come under increasing fire, fueled also by the recent sudden increase in company profits. During the emergency, consuming governments largely abdicated any effective role; the companies thus had to make far-ranging decisions as to allocation of supplies, pricing, treatment of nonintegrated companies, and many other issues. It was the companies that kept sufficient supplies moving to all countries; now, after the event, some of their decisions are being challenged by consuming governments. It is extremely doubtful whether the companies still possess the necessary flexibility to cope with another similar crisis.

If the role of the major international oil companies in established producing areas is diminished, it is nonetheless important to understand what their remaining position is. The technical services they can provide are extensive, and vital to continuing development of the producing countries' resources as well as to efficient producing operations. Moreover, none of the producing countries is prepared to handle alone the disposition of the huge volumes of production they control; the downstream facilities of the majors provide assured outlets for the mainstream of their production, while remaining quantities of crude can be sold directly or used to support refining and petrochemical production in their own countries or in joint ventures abroad.

Because of their size, scope, technical competence and financial strength, coupled with their important positions in the production and development of oil, gas, coal, shale, tar sands, and atomic resources in areas politically secure, the international oil companies are bound to play a major—if not the major—role in expanding dependable additional sources of energy supplies. Even though their foreign crude oil resource base is subject to progressive erosion, the major internationals will accordingly continue to provide for the importing countries over the years ahead the most flexible sources of energy supply.

However, the international oil companies are no longer able to assure the continuity or price of regular supplies to oil-importing countries. And while they can hope to maintain continued preferred access to substantial production in support of their affiliates' crude requirements, even that is uncertain and contingent on the producing countries' self-interest in extending such offtake rights.

Downstream investment in refining, marketing, and transport thus tends to become extremely risky, because the viability of such investment is predicated on secure supplies. Meanwhile, as a logical part of their own development program, producing countries are using their control over crude availability to spur refining and petrochemical investment in their own countries and to acquire tanker fleets—all of which will in due course add to consuming countries' foreign exchange import costs and adversely affect the flexibility and security of their supplies.

In the circumstances, oil-importing countries can no longer expect the companies to fulfill their earlier most important role, as an effective intermediary between the interests of producing and consuming countries. Nor can the international oil companies function, as in the past, effectively to preclude direct dealings between importing and producing countries relating to oil supplies, prices, etc., which may easily lead to political confrontations. To the extent that the companies maintain their operations in producing countries, they in fact reflect the producing governments' economic, political, and strategic policies. To be able to hold on to whatever tenuous residual rights or preferences the producing countries might still be willing to extend, the companies will have no choice but to acquiesce in virtually any kind of conditions imposed or exacted.

All this points to a far greater involvement by consuming-

country governments in oil industry operations than heretofore. One major objective will be greater "transparency" in oil company policies. Oil-importing countries cannot be in the dark with respect to negotiations in producing areas, when the decisions vitally affect the security and price of their essential oil supplies. They will want to know more about investment plans and policies in their own countries. And with transparency will inevitably come progressively more government interposition throughout internal oil economies.

But here, too, the international oil companies will have a continuing role to play. Producing countries will become increasingly involved downstream, as direct crude sellers and through investment. Consuming countries will become increasingly involved upstream, through various exploration and crude arrangements. Within this emerging fragmentation of world oil trade, the integrated facilities of the companies could provide an important, perhaps the major, core of efficient operations.

In sum, whatever arrangements on supply, financing, and pricing the oil companies may still be able to conclude formally with producing countries, in practice and underlying reality such arrangements cannot be ignored by the importing countries but are bound to be decisively affected by their policies. Moreover, with the vital concern the importing countries have not only for price but for availability of oil, it now appears inevitable that their governments will also in due course establish a comprehensive policy of surveillance and consultation—perhaps even some measure of control—with regard to oil company operations encompassing the whole range of oil activities vitally affecting their countries.

As the problems of oil have become matters that in many key respects can only be handled directly between governments, so their gravity has now become all too clear. Faced with the major "supply shock" of the October 1973 oil embargo and the overall cutback in Arab oil production, the immediate reaction of practically every importing country was to engage in a competitive scramble for oil supplies, coupled with offers to adapt its Middle East policy to Arab demands, and promises of all kinds of financial inducements. It was indeed a humiliating experience for historically independent and proud nations. What we were witnessing, in fact, was not only the fragmentation of the operations of the multinational oil companies, but also the polarization of the oil policies of the importing countries, with foreign petroleum ministers skillfully influencing individual importing countries through the device of handing out oil rewards and punishments.

Then, late in 1973, the advance in world oil prices dictated by OPEC countries was of such magnitude that practically every importing nation was suddenly confronted with major balance-of-trade problems of immediate and continuing effect. The cost of foreign oil supplies for all importing countries will exceed \$100 billion in 1974, compared with some \$20 billion in 1972. For developing countries alone, it will jump from \$5 billion in

1973 to \$15 billion in 1974—and the \$10-billion increase will exceed all the foreign aid that these countries received in the previous year. Meanwhile, as noted, the OPEC producing countries will accumulate, during 1974 alone, surplus holdings of foreign exchange not needed for their own import requirements of some \$60 billion—or nearly two-thirds of the net book value of total U.S. private foreign investment.

Obviously, this surplus accumulation of funds will somehow be recycled into the world's monetary system initially, probably mainly into the short-term Eurodollar market. But this process will not necessarily result in the availability of loans to the various importing countries in accordance with their individual foreign exchange needs. The creditworthiness of the borrower will decide whether or not Eurodollar loans will be available; many of the developing countries and some developed countries will not qualify under this criterion. Foreign grants and soft loans—some of them probably never to be repaid—will have to be made available, and the Monetary Fund and the World Bank are addressing themselves to this problem. I doubt that anything like adequate amounts can be made available.

But the financial oil drainage is *not* only a short-term and passing issue. It will be with us for many, many years—if oil prices remain at present levels (or rise as is now occasionally threatened), and if the oil-producing countries themselves are not prepared to make favorable loan arrangements to needy countries in addition to whatever the developed countries are able and willing to do. To the extent that oil imports are financed by a continued recycling of surplus oil revenues via investments or loans on commercial terms, oil-importing countries will face pyramiding interest or individual charges on top of mounting direct oil import costs.

Equally if not more disturbing is the question whether or not the producing countries owning already large surplus funds will be willing to continue to maintain or to expand their production and accumulate financial holdings that might result, in part at least, in nothing but paper claims that could not be repaid. If the producing countries make direct foreign investments, the bulk of such investments will obviously be placed in the advanced developed countries, where it would appear to be safest and most profitable. That will leave the less-preferred developed countries and the developing countries out in the cold. Moreover, the scope for such investments owned directly by foreign producing governments is likely to be limited. Accordingly, oil-exporting countries with surplus revenues might well decide to reduce production—to conserve their liquid gold in the ground rather than increase potential paper claims above ground. Oil revenue surpluses could thus well conduce to oil supply shortage.

There are thus valid reasons to fear that even where present policies of producing countries provide for expanding oil production, circumstances might arise where, in what they consider to be their own self-interest or even for any political whim, the governments involved abruptly cut their level of oil exports.

Kuwait, Libya, Abu Dhabi, Ecuador, and Venezuela have already announced restrictions in their production. Iran has threatened to do so if the importers object to price levels.

The financial dilemma for oil-importing countries is clear. In order to finance oil import costs, they will have to look to progressively expanded foreign investment by, or indebtedness to, producing countries. Without any amelioration in the cartel prices and payments terms, the alternative for importing countries would be rather severe reductions in oil imports and oil consumption. To cut back imports drastically, to levels that could be financed out of current income, would hardly be a viable solution. The resulting shortfall in total energy, and the economic consequences of declines in production, employment and trade, would further undercut the oil-importing countries' ability to finance even sharply reduced levels of oil supplies. The contraction of energy consumption and economic activity would thus become a cumulative spiral.

In sum, the short- to medium-term implications of the present situation are simply not bearable, either for the oil-importing countries—especially the nations already needy—or for the world economy as a whole. In the wake of this topsy-turvy winter, with the Arab oil embargo against the United States now lifted, the temptation is momentarily strong to suppose that the oil crisis has now genuinely eased. The major industrialized countries of the world once again look forward to economic growth, though at lower rates, with worldwide balance-of-payments deficits, and with a terrible economic and political problem of inflation, to which oil prices have made a substantial contribution. But the oil balance-of-payments burden is just starting and the transfer of funds to oil-producing countries just beginning. In any case, no significant *lasting* relief at all is in sight for the needy oil-importing countries. The fact is that the world economy—for the sake of everyone—cannot survive in a healthy or remotely healthy condition if cartel pricing and actual or threatened supply restraints of oil continue on the trends marked out by the new situation.

As a first step, the insecurity of oil supply and the financial problems that have arisen clearly call for a wide-ranging coordinated program among all importing countries. This was the main reason why the American government called for a conference of the major oil-importing countries in February of this year. This cooperative effort falls into two basic parts: first, what must be done internally by the importing countries; and second, what a coordinated policy should be vis-à-vis producing countries. With the oil-producing countries already cooperating closely through OPEC, cooperation among the oil-importing countries is a simple necessity; properly understood and handled, it can be the only way to achieve constructive overall adjustments.

Among themselves, the importing countries must first establish and coordinate their research and development programs with regard to existing and new energy resources. Unnecessary and time-consuming duplication must be avoided, and research

and development efforts should be concentrated on those resources where optimum results can be expected. The skills available for research and the engineering resources that would have to be employed, if not pooled, should at least be utilized in accordance with a program for maximum overall efficiency.

The oil-importing countries must also establish a concurrent and consistent program of energy conservation which would provide for far greater efficiency in the use of energy resources. Here too the research effort and the measures to be taken should be coordinated on an international basis.

Whatever the course of foreign oil prices, policies to conserve consumption and to spur the development of alternative energy sources will remain relevant for the future. Moreover, a high degree of government involvement is essential to the success of such efforts—including the probable necessity of government guarantees putting a floor under the selling price of alternative energy sources. For if—as we shall see later—there is a chance that foreign oil prices will fall, then private interests working on projects for tar sands, shale, gasification of coal and the like, will not be willing or able to continue their efforts. If a major effort to develop alternative energy resources is to be sustained, particularly in North America, the criterion cannot be orthodox economic soundness weighing the price of alternative energy against the actual (or predicted) price of foreign oil. Rather, the decisive criterion must be the price to which foreign oil could and would rise if the alternative energy supplies were not forthcoming. The public interest in avoiding dependence on foreign oil dictates public support and a substantial measure of price guarantees by individual countries, notably the United States but perhaps others as well, again acting in coordination.

Thirdly, the major importing countries must be able to agree on a problem that has so far eluded their efforts—that of adequate stockpiling and burden-sharing. On stockpiling, no importing nation should now have on hand perhaps less than a supply equal to six months of its imports. And there must be clear contingency plans for restrained consumption and for sharing, if oil supplies are again cut off or curtailed—whether for political or economic reasons. Remaining oil imports must be parceled out according to some formula based not on the previous percentage of imports from the sources cut off, but on the basis largely of need—so that those fortunate enough to possess substantial national energy resources would have the smallest, if any, claim on the oil still flowing. Beyond that, I do not believe it would be politically feasible to establish rules that would require countries able domestically just to cover their minimum requirements to export some of their domestic energy supplies to a less fortunate country.

Moreover, oil-importing countries must abstain from trying to resolve their balance-of-trade problems by unduly pushing their general exports to other oil-importing countries or by restricting their imports from them. Such policies would only aggravate the problems of these other countries. Competitive devaluation of currencies or inflation of export prices would be

self-defeating, since the oil-producing countries clearly intend to adjust the level of oil prices in accordance with an index of currency values as well as the cost of manufactured goods and other commodities in world trade. The oil-importing countries may have to act in many other ways in order to avoid such dangerous repercussions as severe deflation and unemployment. To deal with the situation will require an unprecedented degree of self-restraint, prudent economic management and political sophistication and wisdom. Past experience suggests extreme skepticism that the countries will in fact consistently follow such policies. But if they do not, the consequences for all of them could become very serious indeed.

Bilateral transactions between oil-importing and producing countries or their respective companies will inevitably be of growing importance. But in concluding such deals the importing countries must abstain from trying to obtain unilateral advantages—by making arrangements for oil imports that would tend to preempt sources of supply through discriminatory practices, or by transactions designed to tie up for themselves an excessive part of the import capacity of the oil-producing country. They must also resist the temptation to offset their oil deficits by the competitive rearming of the various Middle East countries, a practice bound in the end to produce a military disaster for all.

So much for the minimum initial requirements for cooperation among the major oil-importing countries. A measure of common appreciation does now exist for most of these “headings of cooperation” by at least a large majority of the relevant importing countries, although they have yet to be fleshed out by practical working arrangements or adequate guidelines for national behavior.

The hardest questions remain. Even if cooperation is achieved in all these respects, can it serve to do more than shorten the period of extreme vulnerability and cushion the impact of continued one-sided decisions by the OPEC countries? Is consumer cooperation truly adequate if it does not address itself to the key questions of price and supply?

I believe the answer to both questions is in the negative. When the brewing crisis came to a head last fall, the initial reaction of many importing countries was to try unilaterally to take care of themselves for both economic and strategic reasons—through barter arrangements, major investment offers to various producing countries, even in some cases extravagant arms supply deals. This tendency was an understandable reaction in the first phase of the new crisis, and indeed a continuing degree of individual national initiatives is not only inevitable, but can be healthy in some respects, in providing an infusion of economic and political alternatives into the changing relationships between oil-importing and oil-producing countries.

Already, however, the limits of the individual approach are obvious. Even for the most aggressive of the oil-importing nations, it has not worked effectively; they find themselves with very large obligations in return for very small increments of favorable treatment, or for nothing more concrete than a generalized prom-

ise for the future. Moreover, where there have been specific deals, these are as much subject to abrogation or revision as the basic arrangements themselves. "What have you done for me lately?" is not a question confined to the dialogue between politicians and voters.

Moreover, precipitate attempts by individual countries to go it alone can only obscure the nature of the problem, which is basically a common one that engages not only the interests of all the importing countries but the interests of the producers in a viable world economy and in their own regional and national political stability. The producers are bound not to see the problem in this light if one importing country after another posits this arrangement or that as its own selfish *modus vivendi*. And to defer attempts at resolution of the common payments problem while individual initiatives are being exhausted is bound to make eventual general agreement more difficult, because so many inconsistent cards will have been played.

Thus, it is my conviction that a constructive accommodation between the interests of producers and importers, enabling the latter to pay for and finance adequate oil imports, is possible only if the importing countries share a common appreciation of the need for a price adjustment as well as for the establishment of financial mechanisms to this end. Just as far-reaching coöperation among the producing countries has brought about the present situation, so a similar coöperation among the importing countries is now an essential prerequisite to a balanced solution. Only if the major importing nations act to coördinate their policy can they expect to be able to present the supply and financial problems they are facing in an effective manner—and to make clear the implications of these problems for the producers themselves. Moreover, only then could they impress upon at least the relevant producing countries what I believe are the two central elements in a satisfactory long-term arrangement—some downward adjustment in the level of foreign crude oil prices to all consumers, and specific relief, including long-term deferment of payments, for the neediest of the oil-importing countries.

If coöperation among oil-importing countries is essential to the development of constructive coöperation with producing countries, so too is a full and fair understanding by the importers of the case of the producing countries. Many of its key points were presented vividly in last July's issue of *Foreign Affairs* by Jahangir Amuzegar of Iran; these points and others have since been developed in a series of public statements by various leaders of producing countries. Nonetheless it helps to go over the main elements that enter into the attitudes of the producers, and to explore the validity of their arguments, seeking to arrive at a clear picture of what their long-term interests are.

A major goal of producing countries is rapid and consistent progress in their economic development so that they can become economically viable and secure by the time their oil reserves peter out. In the meantime, the pace of their industrial progress depends largely on the size of their oil revenues, and the level of oil prices is of decisive importance for their present and future prosperity.

The producing countries also cite additional reasons to justify the huge price increases that they imposed in the course of 1973. The large increase in oil prices, they say, is warranted by the alternative cost that would have to be incurred if oil had to be replaced by other energy sources such as shale oil, oil from tar sands, etc. Even though there is currently still a surplus of potential oil supplies, oil reserves may well be exhausted in perhaps 20 to 30 years. But in a free competitive market, prices would not, *at this time*, reflect *future* shortages of supply and would thus provide no encouragement for the development of substitutes. Accordingly, the oil-producing countries say that high oil prices are now necessary so that research and development programs for new energy sources will be promptly initiated. Otherwise, with the long lead time required, energy would be in short supply when world oil production begins to decline.

Also, so they argue, high oil prices now will result in oil conservation and encourage the use of oil for the most essential and valuable purposes where it cannot be so easily replaced, such as for petrochemical production. The highest-value use, they maintain, should in practice be the basis for oil pricing.

The producing countries also assert that the high current oil prices redress the injustice of too low a level of prices in the past, when oil prices had fallen behind those of manufactured goods and food which the oil-producing countries had to import. Relatively low oil prices in the past have, they maintain, unduly enriched the developed countries at their expense. (Whatever the degree of validity of this argument for past periods, it should be noted that the increase in oil prices between 1970 and January 1974 has, according to a United Nations analysis, amounted to 480 percent and was extraordinarily larger than that of practically any other commodity. The share of petroleum in world imports of about \$316 billion during 1970—the last year for which detailed statistics are available—amounted to about 7.7 percent; at January 1974 commodity prices, the value of 1970 imports would have increased to \$618 billion, of which petroleum would have accounted for as much as 23 percent.)

Oil-producing countries are aware that high oil prices may harm the progress of other developing countries. But primary responsibility for economic assistance, so they postulate, rests on the rich developed countries. And even though oil-producing countries maintain that in development terms they are still poor, they have stated that they, too, will make a substantial contribution to support developing countries, and a number of them have indeed done so. In addition, they will endeavor to convince other raw-material-producing developing countries that they, too, could improve their economic position substantially if they

would only follow the OPEC example.

The producing countries also complain that in the past they have been deprived of economic development based on their oil resources, such as refineries, petrochemical plants, tankers, and energy-intensive industries. Instead, enormous quantities of gas have been flared. Accordingly, it is a basic part of their development policy that investment in local petroleum-processing plants should be undertaken on a large scale within the oil-producing countries, and that they should participate far more in the whole operation of the transportation and exporting of oil.

Obviously, there is substantial merit in many of the points now so forcefully advanced by the oil-producing countries—and it is no effective answer to point out that Western initiative was largely responsible both for the discovery of oil and for the development of its manifold uses. The major oil-importing nations, in particular, must give heed to the legitimate grievances and aspirations of the oil producers.

On the other hand, the producing countries cannot continue to take the position that the economic situation of the major importing countries is no concern of theirs. It is one thing to adjust oil prices to the real or imagined wrongs of the past, another to carry that adjustment to the point of jeopardizing the future economic, political, and strategic viability of importing countries. For if this happens, the viability of the producing countries themselves must surely be affected over the years to come.

There is thus no alternative for the importing countries but to try to convince the producing countries that there must be responsible accommodation between the interests of importing and producing countries. In order to carry conviction, it is essential that there be basic unity among importing countries about the underlying assessments and their policy goals. In the light of the extremely sensitive relationship between consuming and producing countries, a contrary position of one or two major importing countries would tend to destroy the effectiveness of this approach. It would also further strengthen the producing countries in the sense of power that they believe they hold over importing countries, and would encourage them to conclude that they could effectively maintain their internal as well as external security in the face of evolving world chaos.

In actual fact, however, many producing countries, in spite of the extraordinary concentration of oil and money resources in their hands, are as yet quite fragile entities, without substantial strategic and military strength in world affairs. They have been able to assert themselves because of the disunity among, and unwillingness of, importing countries to take any firm position vis-à-vis the producing nations. Whatever the concern of producing countries and companies in the pivotal transition from surplus producing capacity to tightness of world oil supplies, the oil-importing countries were largely complaisant about the course of events. Now, unrestrained exercise of their oil and money power by producing countries presupposes that the importing countries will continue to acquiesce and remain passive, even if the world's economic and political stability is at

stake. This cannot be a safe basis upon which the producing countries could proceed. If the worst is to be avoided, the producing countries must be made to recognize the danger of pursuing such a course.

There is also the danger that this concentration of oil and money resources would tempt the Soviet Union to make use of fundamentally weak and socially unstable producing countries—by proxy, so to speak—in order to undermine the economic and political stability of the non-Communist world. Soviet adventurism cannot be ignored, especially the application of Soviet power through controls over certain governments such as those of Iraq or Syria, as well as by internal threats through Soviet support of subversive opposition to governments. There exists, in practically every one of these countries, the potential for sudden revolutions by extreme elements.

All of these factors are clearly known to the various dynasties and national governments. Most of them must have inevitably reached the conclusion that their hold on power, which is sometimes tenuous, depends in the final analysis on a satisfactory relationship with the non-Communist world. We are all interested in the maintenance of a peaceful cohesion among Middle East countries. But they must recognize that if this cohesion is mainly used to enable them to enforce their will on the rest of the world through the use of oil and money power, they would not only undermine the position and strength of the importing countries but would also expose their governments and nations to extreme risks.

The oil-exporting countries must be aware that their own independence could not safely be assured if the United States and its allies were to be fatally weakened vis-à-vis the Soviet Union. It would not be in their self-interest to refuse to supply the vital oil needs of the world or to insist on an unmanageable level of prices, and risk the economic, political, and strategic consequences of such policies.

VI

So far I have been making the case for unprecedented cooperation among the oil-importing nations, and for much greater understanding by both producing and importing countries of each other's needs and of the common interests that affect both groups. If reason alone controlled human affairs, one might conclude that a satisfactory solution was possible from greater understanding alone.

Unfortunately, that is not the case. One must in the end come back to the harsh economics of the energy situation worldwide and of the rapidly rising trends in oil consumption that have lain at the root of the present crisis. For it is these trends essentially—far outstripping the growth of indigenous energy sources—that have made the oil of the OPEC countries, especially in the Middle East, so vital to practically every nation of the world, and have thus given the OPEC countries the bargaining leverage to establish the present unilaterally controlled price and supply

situation. With all the understanding and sympathy in the world, the producing countries cannot be expected not to use a bargaining position as strong as the present one of OPEC and its Middle East members. In last July's *Foreign Affairs*, Carroll Wilson argued that the United States would be placed in an intolerable state of dependence on Middle East oil if it did not develop other sources of energy to the maximum and at the same time curtail the rate of growth of its energy consumption from 4.5 percent to a suggested three percent. Essentially the same analysis must now be applied to the oil-importing nations as a whole, not for the sake of eliminating a critical degree of dependence on the Middle East—for that is simply not in the cards at least for the rest of this decade—but for the sake of containing thereafter the problems of oil supply and finance and of establishing now an acceptable degree of balance in the bargaining positions of producers and consumers of oil.

The starting point should be the period from 1968 through 1972, when energy consumption in the non-Communist world as a whole increased at 5.6 percent per year, and oil consumption by 7.5 percent per year. The result was that Middle East oil production went up by an average of 12.5 percent per year.

Now the prospect for the period from now until 1980 is for a substantial expansion in non-oil energy sources and in oil production within the major oil-consuming countries. Yet it remains as clear as it was a year ago that no drastic technological breakthrough is in sight at least in this time frame. We are still talking about natural gas, coal, hydroelectric power and nuclear fission as the primary alternatives to oil—and one need hardly add that even substantial increases in some of these are still fraught with difficulty.

In response to the new situation, it is already reasonable to postulate some conservation at the margin in response to higher energy costs. Given the dynamic energy needs of Japan, the developing countries, and to a lesser extent Western Europe, however, it is difficult to see that "conservation at the margin" will in itself produce a dramatic drop in the growth of energy needs. Supposing, for example, energy consumption grew at only 4.6 percent per year instead of the 5.6 percent of the 1968-72 period, the picture might look something like this:

	1972	1975	1980	1972-1980
	(Millions of Barrels Daily Oil Equivalent)			(Average Annual Percentage Growth)
Primary Energy Demand	80	91	115	4.6
From Non-Oil Sources	35	38	48	4.0
Oil Consumption	45	53	67	5.1
Indigenous Oil Production	18	19	27	5.2
Oil Imports	27	34	40	5.0
Needed from the Middle East	18	23	29	6.3

Obviously, this is a broad-brush projection. But it is enough, I believe, to demonstrate two fundamental conclusions: (1) that even *at current prices* this rate of oil imports could not be sustained by the oil-importing countries on a current payments basis; (2) that with production increases fairly well spread among the producing countries, none would be under any pressure to lower prices or to increase production further. (This is a modest conclusion; actually the pressure would be greater for production cutbacks than for increases. The oil simply might not be forthcoming.) In short, mere "conservation at the margin"—itself more than many governments are now asking of their people—will neither avoid economic calamity nor provide a balanced situation vis-à-vis the producers.

To get these essential results I believe we shall have to go considerably further. Again for illustrative purposes, let us see what the situation would be if the oil-importing countries could manage genuine austerity in their use of energy, cutting their growth rate to, say, 3.3 percent. (The reduced U.S. growth rate would have to be less than this; with all U.S. energy waste, it would still involve a major change in habits and ways. For Japan and the developing countries, the impact on production growth would be far more severe. In short, this kind of reduced rate of increase does deserve to be called austerity.) In such a case, using the same assumptions for non-oil sources and indigenous oil production, a revised table would look like this:

	1972	1975	1980	1972-1980 (Average Annual Percentage Growth)
	(Millions of Barrels Daily Oil Equivalent)			
Primary Energy Demand	80	87	104	3.3
Oil Consumption	45	49	56	2.7
Oil Imports	27	30	29	0.8
Needed from the Middle East	18	19	18	0.1

This level of austerity would, I believe, be just adequate to permit the major industrialized nations to maintain viable economic and industrial operations, including continued growth but at a lower rate than might have been projected on the basis of previous oil prices and supply availability. Even then, most of the oil-importing countries would, at least until the latter part of this decade, be exposed to a very substantial and—in the case of some countries—nearly unmanageable financial burden. In short, while the deliberate initiation of such austerity would require an act of political will far exceeding what is actually happening in most importing countries, the choice will in the end be compelled by financial pressures. The longer it is put off the worse it will get.

Once undertaken, this austerity policy could in time achieve some trade balance between the producing and consuming countries. In particular, the huge annual accumulation of surplus funds by Middle East producing countries would start to decline about 1978 and would reach manageable proportions shortly thereafter. Put differently, the importing countries would in

aggregate terms be able to pay for their oil by a steadily increased flow of goods and services to the producers. At the same time, however, since the ability of the importing countries to supply goods and services is concentrated in only a handful of them, the financial burden of oil imports would vary greatly, remaining very substantial for the less-industrialized developed countries and especially for the developing countries which are net consumers of oil. Thus, it would remain essential to have financial mechanisms and arrangements that would cushion this differential impact and make it bearable.

Turn now to the situation of the oil exporters. The second table suggests that their total exports would level off and then start to decline slightly by the end of the decade, as the importing countries managed to increase their non-oil sources of energy and as indigenous oil sources were tapped more fully (principally the North Sea and the North Slope in Alaska). The table also assumes that oil producers outside the Middle East will increase their total capacity somewhat, and will be motivated to produce at maximum attainable levels—since practically all of these nations need their oil revenues for immediate development purposes. Thus, the total demand on the Middle East would tend to decline by the end of the decade.

This is not to suggest for a moment that the Middle East oil producers would then be in difficulty. They would still be supplying more than 60 percent of the oil moving in world trade, and Middle East oil would remain vital to Japan, Western Europe, and the developing nations—in an austerity situation, any further cuts would reach the bone more rapidly than in the present somewhat “soft” situation. In short, the Middle East producing countries as a group would remain in a strong position.

At the same time, the production levels of individual countries in the Middle East would be placed seriously in question. Kuwait (like Libya in North Africa) is already pursuing policies designed to conserve its oil reserves and thus to stabilize output below previously attained levels of production. On the other hand, Iran and Iraq look to increase their production very substantially from present totals of roughly eight million barrels a day to 12–13 million barrels per day. If these trends were to continue, and if the need for Middle East oil were to level off at 18 million or so barrels per day, it is evident that the remaining suppliers—especially Saudi Arabia and Abu Dhabi which had previously benefited from oil revenues far in excess of their development needs—would then have to accept a drastic reduction in their levels of production, or alternatively to seek to increase their output by reducing their prices (and thus giving consumers an incentive to ease up on their austerity).

It is an open question, which of course cannot be analytically resolved, whether in the light of these circumstances the various Middle East producing countries would decide to “fight it out” among themselves by competing for exports through price reductions. They might seek to go in the opposite direction, to enter into a production and export control agreement under which they would rearrange their respective production and export

levels. At the same time, they might try to increase their prices and tax takes so as to provide for the needs of those Middle East countries that would have to reduce some of their previously anticipated production. On a rational basis, the latter course might be chosen, since any price and tax reductions would tend to force others downward as well, so that the Middle East as a whole would obtain lower revenues for the same or a higher level of production than before the initial price and tax reductions.

In trying to assess what under such conditions the producing countries might actually decide to do, we must think not only or even mainly in economic terms, nor draw only on past experience with regard to the cohesiveness of private cartels in similar circumstances. At most, the economic facts of supply and demand frame the problem; it will still be decided by national governments in the producing countries, and their policies are likely to be governed by an extraordinary combination of political and strategic as well as economic factors.

On the basis of such a broad assessment, the short-term argument for controlling production and maintaining or further raising prices and tax takes must encounter a growing awareness of wider relevant considerations. For such a course—in effect responding to consumer austerity by higher producer prices—would surely leave the importing countries with even worse financial problems than are now in prospect. Even more heavily than now, the burden of paying for restrained but more expensive oil imports would fall upon lagging economies suffering from extremely serious financial problems. Even more than now, the producing countries would have to ask themselves whether they could expect to remain islands of prosperity in a worldwide depression, or of political stability when the will and ability of strategically powerful nations to support them had been eroded.

To sum up, four elements are essential to move to a reasonable adjustment: far-reaching coöperation among the oil-importing nations, an understanding by the importing nations of the interests and aspirations of the producing countries, a clear-cut (and painful) program of energy austerity by the oil-importing countries, and a recognition by the producing countries that even in an austerity situation any attempt to hold prices high must result in worldwide dangers to which they could not be immune. Only with far-reaching consumer coöperation can it be expected that the producing countries will come to this necessary conclusion; at the same time coöperation without austerity will not do the job. Both are needed, and a large new dose of political will, not yet in sight, will be required to achieve them.

The key to a reasonable solution is time: to make the financial burdens on all oil-importing countries tolerable and to bridge the gap until the day, not too far distant, when the producing countries, at least in the aggregate, will have reached the point where they can be paid in goods and services—and where they will have joined, for practical purposes, the ranks of the developed nations.

And the basis for such an adjustment, in turn, is the acceptance

of a principle that, while the sovereignty and control of nations over their natural resources remains unquestioned, such control cannot and must not lead to the unrestrained exercise of power, but must be based on a mutual accommodation of interests or, as the United Nations Declaration on the Establishment of a New International Economic Order puts it, on an appreciation of "the reality of interdependence of all the members of the world community." Otherwise it will be destructive to all.

Such a principle is not, of course, confined to the case of oil. The April meeting of the United Nations General Assembly, and the United Nations reports prepared for it, have underlined the degree to which the rise in food and fertilizer prices over the past two years—created in these cases by market forces in combination with national domestic agricultural policies—have damaged the interests of the needy developing countries in particular. The United States especially has it in its power to adopt measures that would ease the actual cost of food supplies to this group of countries; one suggestion would be that the United States provide grain and other crucial food to needy countries on concessionary terms or through the application of PL 480 funds. A similar move might be undertaken by the major countries that export fertilizer. Now, as preparations are underway for a World Food Conference in the fall, such moves would be even more in order, based on the continued operation of market forces for most consumers but with measures to cushion the impact on needy countries.

Oil remains the biggest and most difficult case. Since 1970 the price and availability of oil moving in world trade have been determined progressively by the OPEC countries unilaterally, to the point where the present situation effectively is one of price imposed by a cartel. Completely free market prices for traded oil are not a practical alternative; in a free market the existence of large reserves and the very low cost of developing and producing such oil would mean a market price that would be very low indeed. Such a price would not be acceptable to producing countries—since it would not provide them with the budgetary and foreign exchange revenue badly needed for their economic development. Nor would it in fact serve the interests of importing countries as a whole—since it would lead to wasteful consumption of oil on the one hand, and on the other would provide no inducement to the major countries to push forward in good time with research and development on new and more costly energy resources which will be needed even more once readily available supplies of oil begin to stagnate or decline.

Accordingly, the price of oil moving in world trade is bound to be a kind of administered price, not necessarily negotiated

directly between producing and importing countries but at least established in a way that would attempt to accommodate and reconcile the economic and financial interests of both groups. In addition, the specific plight of the needy oil-importing countries should be provided for, if not through a two-tier pricing system, then at least by long-term deferral of payments and easy credit terms for loans.

In sum, I believe that the world situation would now call for solemn undertakings that would assure the essential oil requirements of all the importing countries on terms and conditions that are economically and financially sustainable. This should be accompanied by measures to deal along the lines proposed with the cognate cases of food and fertilizer. At the same time, it is imperative that all the necessary provisions be made to safeguard the essential economic interests of the producing countries into a future when their position will inevitably become less strong than it is at present. Such a combination of actions would be an act of statesmanship in which the oil-producing countries and the oil-importing countries could and should join not only for the common good, but perhaps even more so in their most cogent self-interest.

Today, governments are watching an erosion of the world's oil supply and financial systems, comparable in its potential for economic and political disaster to the Great Depression of the 1930s, as if they were hypnotized into inaction. The time is late, the need for action overwhelming.

CPYRGHT

Smithsonian

Volume 5, Number 4

Table of Contents

Editor Edward K. Thompson
Board of Editors Ralph Backlund, Grayce Northcross, James K. Page jr., Edwards Park
Associate Editors David Bourdon, Marlane Liddell, Louise Smith, John P. Wiley jr.
Picture Associate Caroline Despard
Assistant Editors Dee McRae, Donna Reifsnider, Meredith Riegle
Art Direction John Beveridge
Advertising Director Thomas H. Black
General Manager Joseph J. Bonsignore
Production Nannie Clay Shanahan
Business Carey O. Randall
Circulation-Promotion Director Anne Keating

Board of Regents
 Smithsonian Institution

Ex Officio

Chief Justice of the United States
 Warren E. Burger, Chancellor
 Vice President of the United States
 Gerald R. Ford

Appointed by the President of the Senate

Honorable J. William Fulbright
 Honorable Henry M. Jackson
 Honorable Hugh Scott

Appointed by the Speaker of the House

Honorable George H. Mahon
 Honorable William E. Minshall
 Honorable John J. Rooney

Appointed by a Joint Resolution of Congress

Mr. John Paul Austin
 Dr. John Nicholas Brown
 Dr. William A. M. Burden
 Dr. Robert F. Goheen
 Dr. Crawford H. Greenewalt
 Dr. Caryl P. Haskins
 Honorable A. Leon Higginbotham jr.
 Mr. Thomas J. Watson jr.
 Mr. James E. Webb

National Board of the Smithsonian Associates

Mr. Lewis A. Lapham, Chairman,
 Mr. Harry Hood Bassett, Mr. John W. Brooks,
 Mr. Richard P. Cooley, Mr. Joseph F. Cullman 3rd,
 Mr. Harry B. Cunningham, Mr. Paul L. Davies,
 Mr. Leonard K. Firestone, Mr. Charles T. Fisher III,
 Mr. G. Keith Funston, Mr. Alfred C. Classell jr.,
 Mrs. David L. Guyer, Mr. Ben W. Heineman,
 Mr. Henry J. Heinz II, Mr. William A. Hewitt,
 Mr. Frank Y. Larkin, Hon. George C. McGhee,
 Mrs. Robert S. McNamara, Dr. Ruben F. Mettler,
 Mr. Charles M. Pigott, Mrs. Malcolm Price,
 Mr. Francis C. Rooney jr., Mr. Merritt K. Ruddock,
 Mr. Thomas J. Watson jr., Mr. James O. Wright

Smithsonian is published monthly by the Smithsonian Associates, 900 Jefferson Drive, Washington, D.C. 20560. © Smithsonian Institution 1974. All rights reserved. Reproduction in whole or in part without permission is prohibited. Subscription price \$10 a year in U.S. and possessions, \$11.50 elsewhere. Single copy price \$1.00. Second class postage paid at Washington, D.C. Editorial offices, 900 Jefferson Drive, Washington, D.C. 20560. Advertising and circulation offices at 420 Lexington Ave., New York, New York 10017. Please address all subscription correspondence and change of address information to P.O. Box 2606, Greenwich, Conn. 06830

4	The view from the castle: Secretary Ripley hails successful reintroduction of barn owls to the Castle
8	Phenomena, comment and notes: Tales of sharks and rabbits; some innovative remedies for the control of crime, population and beach erosion
14	Letters to the Editor
20	A Bicentennial reminder of 200 years ago: Colonies choose delegates for a congress
22	Visitors learn in the Portland zoo—but not more than monkeys, camels, ostriches and giraffes By Daniel Jack Chasan, photographs by Ralph Morse
30	The 19th-century restorer Viollet-le-Duc salvaged (ruined, some say) France's medieval monuments By Bern Keating, color photographs by Dmitri Kessel
40	Yankee Jonathan, an American sharpie, left an indelible mark on Uncle Sam By Richard Wolkomir, drawings by Arnold Roth
48	In <i>Carrying the Fire</i> , the command module pilot describes the long, long ordeal of preparation for the moon By Michael Collins
56	Eighteenth-century bathing machines brought elegance to skinny dipping—for kings and commoners alike By Peggy Heinrich and Ray J. Worssam
62	Replica of Drake's famous <i>Golden Hinde</i> , lovingly built with ancient tools, prepares to brave the Atlantic Text and photographs by Terence Spencer
70	Huge Arecibo radio telescope is being reshaped to give scientists a more sensitive ear on the universe
72	The hunger for coal brings boom times to a depressed area—energy-rich Sweetwater County in Wyoming By David Snell, photographs by Yale Joel
80	The chairman of the Council on Environmental Quality offers a detailed, long-range plan for U.S. energy By Russell W. Peterson
83	Smithsonian tours
86	Book reviews
90	July events at the Smithsonian
92	The early bird only catches the wrong train By Patrick Ryan

Nation's chief environmental adviser offers a long-range plan for energy

How much energy will the United States really need in the year 2000? How can we produce it with minimal damage to the environment?

Some people still think the shortage of energy last winter was a fluke, but in truth it was the public's first exposure to a problem which will dominate our national life until the end of the century and beyond. Major choices must be made about our energy future, and each of us—as voters, consumers, employees, home owners—has a stake in and some influence over future energy policy.

The most important aspect of that policy is the goals we decide to work toward. At the Council on Environmental Quality (CEQ) we have developed a set of goals which we call the Half and Half Plan—a specific and manageable program of energy conservation and production, geared to energy needs and environmental needs. Like all plans, it involves numbers, graphs and projections. But implicit in the numbers and curves—at the heart of the plan—are the really important things: human needs, individual life-styles and basic values.

To begin with, there is the question of whether our nation should seek to become self-sufficient in energy—dependent largely upon our own resources. Some believe such independence is neither desirable nor practical. I believe it is both.

The United States, with six percent of the world's population, consumes about a third of the world's energy. In the rest of the world, hundreds of millions of people are living on less than \$100 a year. Many nations are trapped by an explosion in their population which nullifies efforts to improve their level of economic well-being. Historically, population growth has

slackened as per capita income has increased. But to accomplish economic growth requires raising the use of energy. For this reason, if for no others, the United States has an obligation to plan its energy future so that energy supplies outside the United States can be devoted to improving the quality of life elsewhere around the globe.

To rely primarily on our energy resources, however, does not mean that the economy must squeal to a painful halt or that our comfort and convenience must decrease. Energy use will continue to grow. But the question is: How much? What will our society's energy demands be in the year 2000?

Traditionally, future energy demands have been calculated by projecting current growth rates in consumption. From 1965 to 1970, energy use per capita grew at a rate of more than three percent a year. In 1972, the Department of Interior began with that and projected a total of 192 quadrillion BTUs (British Thermal Units) of energy in the year 2000, more than two-and-one-half times present consumption. (A quadrillion is a million billion; in the jargon, it is often shortened to "quad.") This projection was an excellent technical effort, and was representative of a number of "high-range" forecasts of that period. But the oil embargo changed our perspective. That amount of energy production is simply out of the question without unacceptable dependence on foreign sources or unacceptable damage to our environment.

What must be understood is that the advertisements which read "A nation which runs on oil cannot afford to run short" should have read "A nation which runs on oil is certain to run short." Seventy-five percent of the U.S. energy today comes from petroleum and natural gas. But 1970 was the peak year for domestic petroleum production; oil from Alaska and the outer continental shelf will merely slow the decline in what is available to us. And natural gas supplies are ex-

pected to reach their peak shortly. From here on out, domestic oil and gas production will be declining at the same time that our energy needs will be increasing. Hence, to more than double energy consumption while using only our domestic resources would require us to quadruple or quintuple present coal production in the United States, and to increase nuclear power from less than one quad today to as much as 60 to 80 quads by the year 2000.

Even if we *could*, we do not want to do that. The production and use of energy is the single most important cause of environmental degradation—all the way from the devastation of lands by surface mining and the hazards of deep mining to oil spills, sulfur emissions and other pollution of air and water. To consume 192 quads in the year 2000 would put terrible strains on the environment.

So for many reasons we need a lower goal for total energy consumed. The Half and Half Plan represents that—a target of 121 quadrillion BTUs instead of 192 (see graphs pp. 82, 83). We at CEQ believe this is a more desirable goal for the United States.

Half growth, half conservation

The Half and Half Plan grew out of analyses of the growth in per capita energy consumption since 1947, not just during the last few years. Over the longer period the rate of growth in energy consumption per capita averaged 1.4 percent. That is lower than the recent three percent rate, but it supported, over the period, a great growth in national affluence.

Furthermore, the Half and Half Plan assumes that one-half of this growth in energy consumption per capita can be achieved through energy conservation—through reallocation from wasteful uses to ones which meet important human needs. To paraphrase Benjamin Franklin, a BTU saved is a BTU earned. Each BTU saved for one purpose means one more that can be put to wise use somewhere else. In a nation that has been profligate in using energy, there is plenty of room for relatively painless conservation.

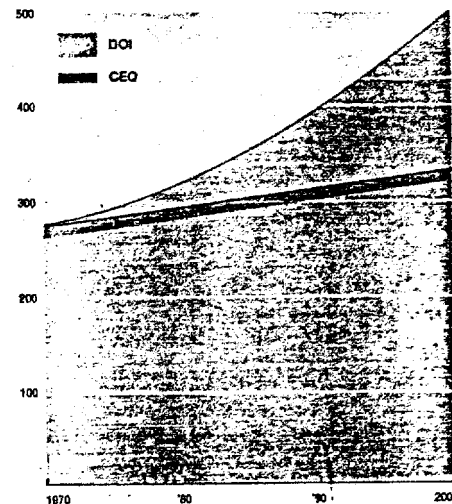
I believe the United States should make it a major national objective to make energy savings of 0.7 percent each year. By the year 2000, conserving at that rate will reduce gross energy inputs by 27 quadrillion BTUs, more than one-third of our present energy consumption. By making such savings, only 0.7 percent of the overall growth rate of 1.4 percent must be provided through additional production of energy. Half conservation and half growth—hence, the Half and Half Plan.

The energy savings can be achieved by means with which readers of SMITHSONIAN are familiar: better insulation and more energy-conscious architectural

design in residential and commercial buildings; personal efforts to reduce household energy use; more efficient appliances; more recycling of materials; better land use; more energy-conscious design of industrial processes; and, most important of all, a more efficient transportation system.

At CEQ we have looked particularly closely at the transportation sector and think it would be possible to provide all needed transportation services in the year 2000 with 21.6 quads, a small increase above the 17.0 quads we use today. Some may feel this is heretical (the Department of the Interior, for example, projected 42.7 quads, nearly twice as much), but we think it could be done.

NET ENERGY CONSUMPTION PER CAPITA
(in Millions of BTUs)



Interior Department projection showed per capita energy use would rise by 2.5 percent; CEQ calls for only 0.7 percent.

Improved mass transit would be an important factor, but the major change would come through smaller, more efficient cars (see p. 85). It is obvious that a car that gets twice as many miles per gallon uses half as much gas. (It also cuts air pollution.) If, over the next decade, we adopt a new ethic about what constitutes a desirable automobile, we can provide for universal auto ownership in the year 2000 and still consume little more gasoline than we do now.

Of course, many Americans have deep-seated feelings about cars; many still believe a big car is an important sign of success. A few months ago I went to a meeting at the State Department. All sorts of dignitaries pulled up in front of

the building in limousines, but when I arrived in CEQ's Pinto, we were waved away by the doorman. Clearly a member of the establishment would not be found in such a car! I had to park a few blocks away and walk to the meeting. The point is that we are going to have to change our attitudes about some things. But we've done it before. People were delighted with the black Model T before color, fins, accessories and yearly model changes appeared.

Hope from new technology

Even if such conservation is achieved, even if half of our 1.4 percent growth rate is accomplished by energy saving, a great deal of energy will still need to be produced. The question is: How can it be done in the face of dwindling supplies of oil and natural gas?

Many people have high hopes for new technologies such as solar energy, geothermal energy and nuclear fusion. I support an aggressive pursuit of these technologies, but it takes wishful thinking to expect that more than three percent of our total energy will come from such sources by the year 2000.

Nuclear fusion as a source of energy still faces many unknowns. Even with major breakthroughs in fusion research (and these are by no means certain to occur), we cannot expect any significant production from commercial fusion power plants by the year 2000.

Solar energy is now quite properly being pushed very hard. Its main application will be to heat and cool buildings. But solar energy will be used almost exclusively on new buildings—few old ones will be retrofitted—and it will be of limited use in the high-density urban dwellings which constitute a steadily larger percentage of new home construction. Once you do the arithmetic, you have to conclude that solar energy appears unlikely to contribute more than one percent of our energy in the year 2000.

The story is similar for geothermal energy, for it can supply no more than two percent of our electricity needs by the turn of the century.

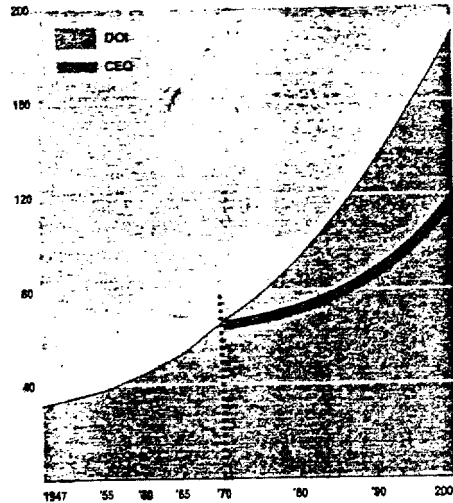
Therefore, even if energy from the Earth's heat, the sun's radiation and the fusion reaction are pushed along as fast and as far as possible (as they should be), they simply cannot solve our basic problem in the next 25 years, and we are left, inescapably, with the alternatives of coal and nuclear fission.

The United States has the world's larg-

est supplies of coal and the most advanced nuclear technology. Both sources also have severe environmental problems associated with them, as SMITHSONIAN readers are well aware. Yet environmentalists must realize that when they oppose a particular solution to a basic social need, they must have an alternative. At present, these are the only alternatives in sight, so it behooves us to establish and enforce the proper environmental regulations for both of these sources.

With coal, how to mine it is the first

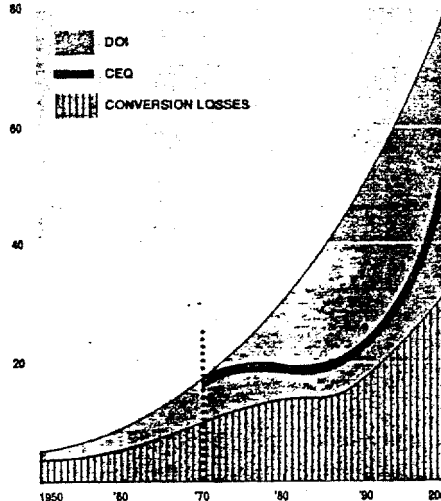
GROSS ENERGY CONSUMPTION
(In Quadrillions of BTU's)



Estimate by Interior called for a total of 192 quadrillion BTUs in the year 2000. Half and Half plan requires but 121.

problem. Everyone has seen pictures of the ravages of strip mining, but not everyone knows that strip-mined lands—with the exception of relatively arid lands—

ELECTRICITY USE
(In Millions of BTUs)



Greater use of coal and nuclear fission means far more energy consumed in form of electricity, entailing large losses in

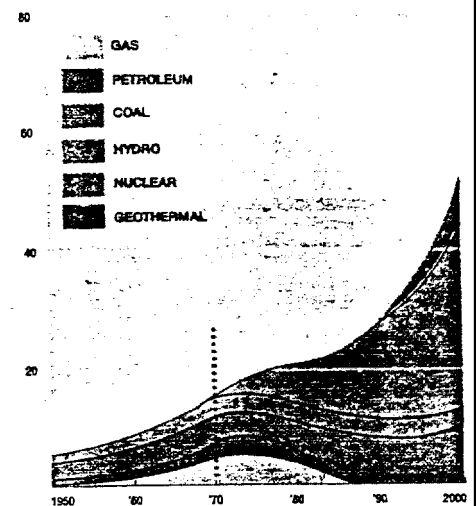
restoration at a considerable cost. A study CEQ did a year ago showed that full restoration for Appalachian strip mines was achievable for about three to nine percent of the value of the extracted coal. As the value of coal rises, that percentage becomes even smaller. We must insist on full restoration.

Deep mining is environmentally less damaging but is extremely hazardous to the miners. Many coal companies have a horrible record in protecting the health and safety of the men underground, but others have good records. We need to develop new mining technologies and insist on the best safety practices.

However it is mined, we must burn coal in a way that minimizes the threat to our health from emissions of sulfur oxides. Fortunately, about half of our coal has low sulfur content; this should be allocated to densely populated areas. Furthermore, we must refine technologies for removing sulfur from coal. In Japan, stack gas scrubbers have worked successfully. And by the mid-1980s we can be converting coal to gas, extracting the sulfur in the conversion process and then piping the gas to individual homes for heating and cooling.

The development of nuclear energy poses a different type of environmental risk, centering on the safety of nuclear reactors and the safe custody of nuclear

ELECTRICITY ENERGY SOURCES
(In Quadrillions of BTUs)



conversion process (left). At the right are electric sources. As petroleum tails off, fission becomes main factor.

materials throughout the fuel cycle. Many persons, including myself, are therefore concerned about the projected growth of

nuclear energy during the remainder of the century. My own feeling is that we need to redouble our efforts to build a greater safety factor into the design and operation of our nuclear plants and to insure greater protection from sabotage and from theft of material suitable for fabrication of nuclear weapons.

It is hoped that breakthroughs in solar energy by the 21st century may preclude the need for more fission reactions. In the meantime, we must not set a course which will require the construction of too many new reactors too quickly. The Half and Half Plan, for that reason, projects a total of 35 quadrillion BTUs of nuclear energy in 2000 as compared to 49.2 under the 1972 Department of Interior projection.

We must also focus more attention on the safeguarding and ultimate disposal of radioactive wastes (see SMITHSONIAN, April 1974). Currently, the mass of waste is still small, but even under the Half and Half Plan we will have hundreds of nuclear plants and therefore a great deal more waste products to deal with. We must therefore accelerate our efforts to develop more acceptable methods of handling this material.

A greater reliance on coal and nuclear energy means that we will be moving more and more to electricity in the residential and industrial sector. Oil supplies will have to be reserved to meet transportation needs and for petrochemical feedstocks. The use of greater amounts of electricity in turn means greater losses of

energy in the process of converting fuel to power (see graphs opposite). In other words, we will have to burn more and more fuel to produce the energy that we can actually use. It will also require more transmission lines extending across our countryside.

As a result of the shock of the Arab boycott last winter, there is considerable pressure these days to scuttle environmental constraints and go full-steam ahead to produce energy. Much of this pressure comes from those who fought the environmental movement in the first place and now see the present situation as an opportunity to win the battle they lost before. The Delaware Coastal Zone is an example.

When I was governor, Delaware already had extensive industrial areas and an existing refinery with room for expansion. We therefore decided that a 115-mile stretch of unspoiled marshes and beaches should not be developed for further energy facilities but should instead be preserved for their natural and recreational value. Now the pressures are building to reverse that decision. It would be a major mistake to give in. We need energy, but we need to protect our land.

It would be a mistake to trade an energy crisis for a health crisis.

The United States, then, must make a decision about its energy goals to the end of the century. We can attempt to continue the pattern of energy growth of the recent past, or we can make a serious com-

mitment to energy conservation. In choosing between these two alternatives we need to reflect upon the impact of this choice on our lives.

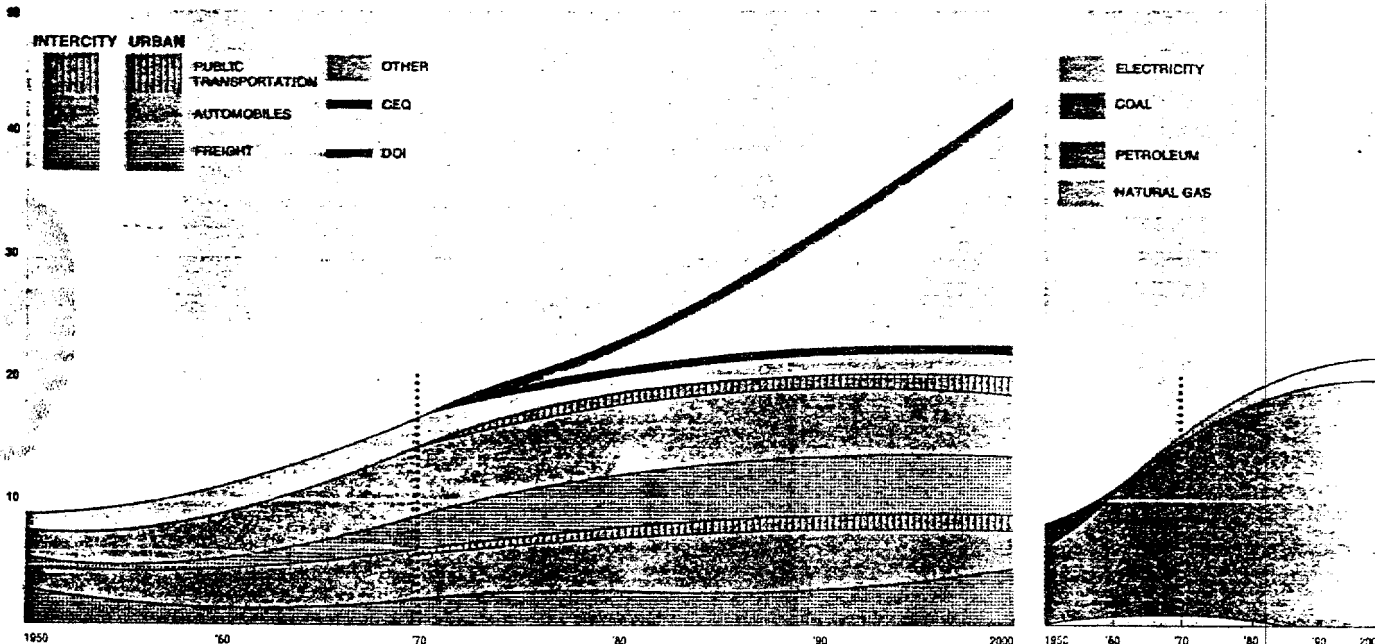
The poor in our society can make good use of more energy. Meeting their needs is important, and the growth included in the Half and Half Plan can permit them to share more fully in the benefits conferred by our energy-based economy. But for most Americans, I find it difficult to conceive how a large increase in energy would improve the quality of life appreciably, even before considering the environmental costs and risks associated with this choice.

My vision of a future guided by the Half and Half Plan is of a nation undergoing some readjustments, but not fundamental ones. We would have to recycle our waste rather than continue to exploit virgin materials (recycling steel and paper, for example, requires 70 percent less energy), but this is manifestly desirable. We would have to become accustomed to smaller cars, and to walking more and driving less. We would be slightly cooler in the winter and slightly warmer in the summer, and we would turn off lights as we leave a room and consume fewer throwaway articles. Most important, we would all have to think about energy, as seriously as we now do about money. To my mind, few of these changes should provide any real discomfort.

Furthermore, a commitment to energy conservation may produce some unfore-

TRANSPORTATION SECTOR

(In Quadrillions of BTUs)



Half and Half Plan calls for limited energy growth in transportation sector,

achieved primarily through the use of smaller and more efficient automobiles.

Limited petroleum stocks will have to be reserved to power these automobiles.

seen benefits. For example, as a continuing energy consciousness influences the planners and architects and citizens who create our homes and towns and cities, we are likely to find ourselves drawn more closely together. Instead of living in free-standing houses two miles from the store and 25 miles from work, we would move toward an intermixing of the various elements of our lives. The same will be true for our neighbors as well.

The end of profligacy in energy consumption may well force us to live with a greater sense of community—and we may just find that we like it.

¹ Incidentally, Saudi Arabia has implied that in its judgment the present high level of posted prices would have a disruptive effect on the international payments accounts and should, accordingly, be reduced somewhat. While it might be difficult to obtain the support of OPEC for a cutback of posted prices, Saudi Arabia could easily achieve a similar result by reducing the price at which it sells its own oil to a level equal to the tax-paid cost of the companies' equity crude plus a per-barrel profit comparable to what the producing governments have said the companies are entitled to earn. Such a price would be some \$3.00 per barrel less than 93 percent of posted prices.

CPYRGHT

OIL, TRADE, AND THE DOLLAR

CPYRGHT

There's some new muscle in the U.S. international position, but it will be sorely tested while we and the world learn how to deal with the high cost of energy importance.

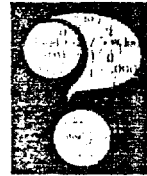
by Lawrence A. Mayer

In an era when Americans have been reeling from one economic crisis to another, it seems almost Panglossian to suggest that some large economic problems may actually be getting solved. The problems in question have to do with our international economic position, which, only a couple of years ago, was a dependable source of bad news. U.S. goods, it then seemed, were not competitive in international trade. The dollar was chronically in trouble. And the broad scheme of international monetary arrangements, laboriously fashioned at Bretton Woods in 1944, seemed to be in need of a systematic overhaul.

It is at least clear that a lot of the recent news about these matters has been good. The U.S. trade balance, \$7 billion in the red in 1972, swung back into surplus in mid-1973. The new international monetary arrangements, based on floating exchange rates, are working reasonably well. And the dollar is a more desirable currency.

Has the international position of the U.S. undergone a fundamental change for the better? A flatly affirmative answer to that question would seem to overstate the case; in matters pertaining to trade and currency, even questions that seem to be "settled" have a way of popping up again. For example, after the Arab oil embargo was imposed, it was taken for granted that the economies of Europe and Japan would be set back. It was also widely assumed that U.S. investment outlets would attract a lot of the surplus revenues the Arab producers were generating. For both reasons, the dollar strengthened dramatically; its "trade-weighted" value—i.e., the value in relation to the currencies of other major countries, weighted in proportion to our trade with each of them—rose by 14.7 percent between early July, 1973, and late January, 1974.

But by this spring the oil pinch in Europe and Japan suddenly looked less serious, and the U.S. inflation seemed more serious. Furthermore, the U.S. was not yet receiv-



THE NEW QUESTIONS
ABOUT THE U.S. ECONOMY VI

ing much of that Arab money. Consequently, the dollar turned down again, losing about two-thirds of the post-embargo gain by late April.

Obviously, then, there remain some questions about the strength of the dollar—indeed, of our international position generally. And yet, when all the caveats have been entered, it still appears that the most interesting questions about our position have to do with the possibility that it is becoming a lot stronger.

Some invisible advantages

Both the fact of our increased strength, and the nagging presence of those oil-related problems, are evident in the recent history of the U.S. trade balance. A surplus in U.S. merchandise trade began to materialize last summer and for a while seemed to be very strong. But it is now clear that the future of the trade balance depends very largely on some "unknowable" matters—on the amount of oil we must import and on the price we pay for it. There are some educated guesses to the effect that our bill for foreign oil this year will be in the \$20-billion range, versus \$7.5 billion in 1973. If the increase is really that sizable, then the substantial merchandise surplus envisaged earlier will become a deficit.

But when one takes the so-called "invisible" international transactions into account, the prospective U.S. position looks better. Net income earned on international investments (the 1973 total: \$9.7 billion) is again bound

Research associate: Jo Thomson

dollar has made a comeback, but it's been straining lately—and the strain is no act.

to outstrip any net deficits incurred by Americans on tourism, transportation, and military spending. In consequence, the total current account of the U.S.—the net on merchandise trade combined with the net on invisibles—may still be roughly in balance this year.

Given the strong underlying growth in demand for energy in the U.S., and the difficulties involved in bringing new sources on stream, oil imports might continue to increase fairly rapidly for several more years, widening our deficit on merchandise trade. But there is a chance that the current account may begin to improve before too many years if effective economies are made in the use of energy and world oil prices are lowered. Moreover, export orders for U.S. durable goods are strong. They have doubled just in the past two years. One reason is that U.S. goods have become relatively cheaper in foreign markets; as of several weeks ago the trade-weighted value of the dollar was about 19 percent below the level of May, 1970, when the fixed-exchange-rate system began to break up.

Many of the durable goods on order are long-lead-time items, which in general have been rising—i.e., they will be strengthening U.S. export demand for years to come. Typical of these are engines and turbines, electrical equipment, railway equipment, aircraft and parts, and ships. Plenty of short-lead-time items are also doing well, of course, including steel, agricultural machinery, and construction machinery. Exports of food are at record highs and are likely to remain high unless harvests abroad are tremendous.

There will be other opportunities for export gains. Many other nations are hastening to develop their own sources of energy, e.g., in the North Sea, and these developments could open up markets for U.S.-made oil drilling and production equipment, as well as for valves, compressors, and other pipeline equipment. American industry has a good chance of selling billions of dollars worth of natural-gas liquefaction plants, tankers to transport energy in cryogenic form, coal-gasification plants, machinery to manufacture hydrogen or oxygen, equipment to make fuel from waste products, fuel cells, and nuclear power equipment.

Can they afford our goods?

There is one way, however, in which the energy situation may have an inhibiting effect on U.S. exports. Europe and Japan still have to get adjusted to paying a lot more for the oil they import. They took \$30 billion worth of U.S. goods last year—42 percent of all our exports. Now, with their mounting oil bills, the Europeans and Japanese will presumably try to hold down on other purchases. In addition, those of the less developed countries that are not blessed with their own reservoirs of oil riches will be using more foreign exchange to buy oil (as well as food and fertilizers). In fact, it is hard to see how countries like India and Bangladesh can fill their most critical import needs without new infusions of foreign aid.

President Nixon's "Project Independence," the policy designed to make the U.S. self-sufficient in energy by 1980, may also threaten U.S. exports. Suppose that the oil prices don't stay at their current high level—that they are forced down by an avalanche of new supplies. But suppose also that, by the time this happens, the U.S. is committed to exploit a range of expensive energy sources, including shale, tar sands, and the less productive oil fields. In the past, low-cost energy has helped the U.S. compete in international markets. If we now get stuck with a lot of high-cost energy, we might dissipate this advantage and make U.S. exports more difficult to sell.

Still, there are more reasons for being hopeful about our trade prospects than could have been cited a few years ago. In addition, some businessmen and economists believe that the environment for trade has been made healthier by one rather important development: the emergence of the new international monetary arrangements based on floating exchange rates.

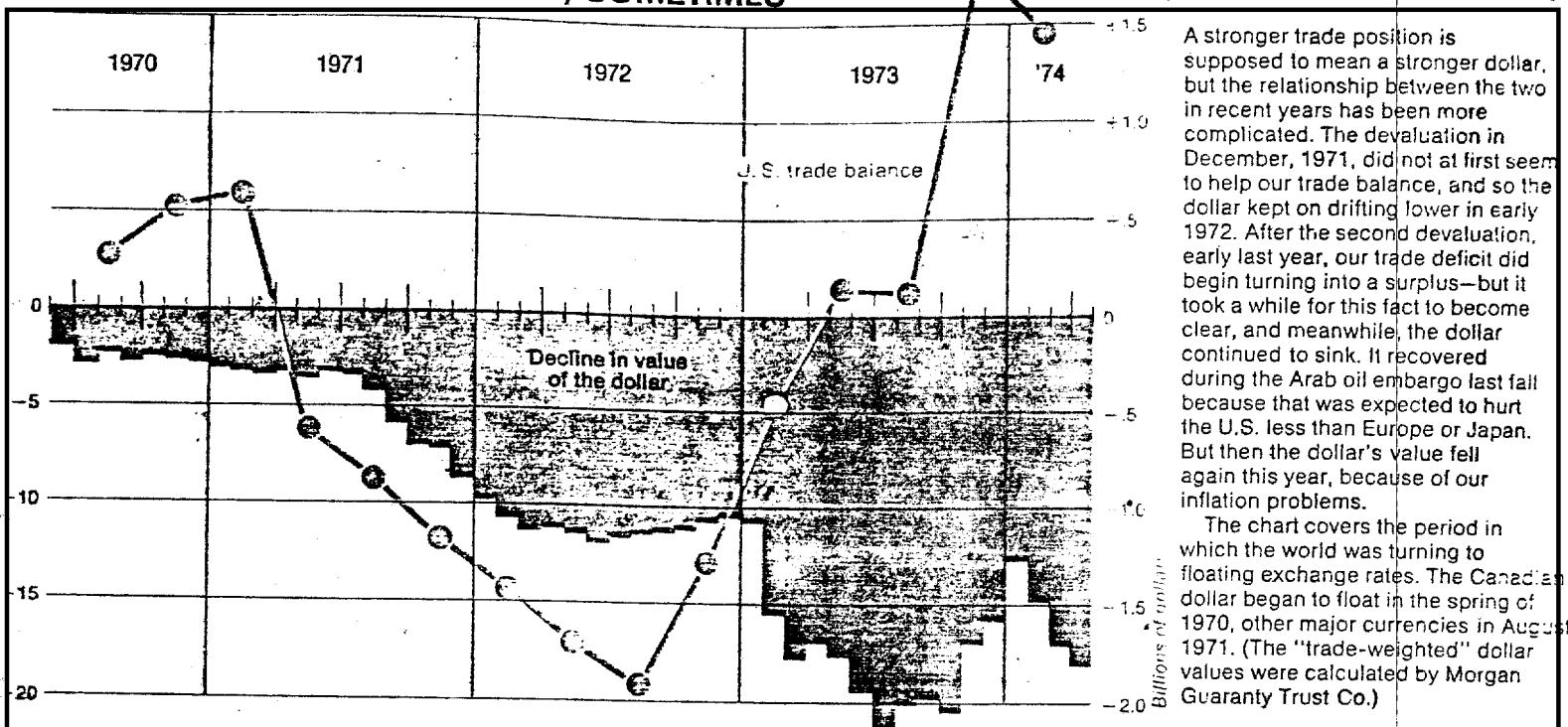
Saved by the float

Floating rates may foreshadow the solution to a problem that had affected our international position for years. The postwar system of fixed exchange rates, whose origins go back to the Bretton Woods Conference, was increasingly troublesome in the 1960's. For reasons of domestic policy and international prestige, nations were clinging insistently to their currencies' par values, in the face of evidence that these were unrealistically high or low. More and more speculative capital flowed to (or from) currencies with strengthening (or weakening) balances of payments, forcing abrupt rate changes—which were made more painful for having been too long delayed.

The fixed-rate system represented a special problem for the U.S.; since the value of other currencies was stated in terms of dollars, it was difficult for this country to change the dollar's value without disrupting the system. Besides, we just didn't want to devalue—even when the dollar became steadily more overvalued during the 1960's.

Without floating rates, the world would probably have gone through several severe currency crises in the past year or so—notably in the first half of 1973, when the German mark was soaring and the dollar was weak; and again when the oil embargo was imposed last fall. During the embargo, huge flows of capital would have gone out of some European currencies and the Japanese yen. Foreign-exchange markets would have had to close and there would have been something like hysteria in the banking and business communities before rates were repegged. But in the event, the float made possible a gradual rebalancing of exchange rates. It was harder for speculators to ensure themselves against losses when they attacked currencies.

It used to be argued that any floating system would be bad for international investment and trade. Businessmen would not be able to make deals involving future



A stronger trade position is supposed to mean a stronger dollar, but the relationship between the two in recent years has been more complicated. The devaluation in December, 1971, did not at first seem to help our trade balance, and so the dollar kept on drifting lower in early 1972. After the second devaluation, early last year, our trade deficit did begin turning into a surplus—but it took a while for this fact to become clear, and meanwhile, the dollar continued to sink. It recovered during the Arab oil embargo last fall because that was expected to hurt the U.S. less than Europe or Japan. But then the dollar's value fell again this year, because of our inflation problems.

The chart covers the period in which the world was turning to floating exchange rates. The Canadian dollar began to float in the spring of 1970, other major currencies in August, 1971. (The "trade-weighted" dollar values were calculated by Morgan Guaranty Trust Co.)

commitments if they could not count on stable currency rates. This concern seems to have been misplaced. Businessmen are still generally able to hedge their bets in the forward currency markets.

Some critics also argued that a float would inevitably be "dirty." Central bankers would intervene in the currency markets, trying to push the value of their own currencies down or prevent them from rising, in an effort to make their countries' exports attractive; thus the float would not really be free after all, and capital would still be moving around, fleeing from overvalued to undervalued currencies. One might suppose that dirty floating would seem especially attractive today, because so many countries need to boost their exports, in order to get more foreign exchange to pay those oil bills.

In fact, dirty floating has not been much of a problem. The main reason is that, in an era of escalating inflation, cheaper currencies look a lot less attractive. More and more countries have become conscious of the fact that devaluation makes imports more expensive and thus works to jack up the inflation still further. In addition, by encouraging exports, devaluation reduces the supply of goods available to domestic consumers—a process that also jacks up inflation rates.

Actually, some nations may try to increase the value of their currencies so as to make imports cheaper and exports more expensive. Countries that are steadily running large export surpluses are likely to have compelling reasons for wanting their own currencies moved higher—something that leading economic-research institutes in Kiel and Essen have recommended for Germany.

Meanwhile, currencies aren't actually floating with

complete freedom. Some of them naturally fall into blocs: for example, those in the Western Hemisphere are tied to the dollar, and seven currencies in Europe are linked in the so-called "snake." But even apart from these blocs, the float is not exactly free. In order to prevent excessive day-to-day fluctuations, central bankers routinely buy and sell their currencies in the open market. This process is generally referred to as "managed floating."

A sense of what's fitting

In principle, managed floating is quite different from dirty floating. In practice, there seems to be something of an overlap. Central bankers do not ordinarily reveal information about their operations until after the fact, nor do they indicate within what ranges they are trying to maintain the values of their currencies; thus it is generally difficult for an outsider to differentiate between operations that are designed to smooth out fluctuations and those intended to affect the fundamental trend of currency values. It is known, however, that central bankers in general have some notions about "appropriate" rates for their own currencies. Consequently, they're intervening when free-market processes produce results that seem to them to be "inappropriate." To be sure, the interventions tend to be moderate. They seem to serve as signals that the central bankers are concerned about the trend of the market—but they are not serious efforts to buck the market.

The U.S. appears to be among the countries that intervene in exchange markets on this basis. However, Federal Reserve Chairman Arthur F. Burns recently hinted, a bit mysteriously, that the U.S. might go further in some

circumstances. He observed, in testimony before Congress, that "no responsible government is prepared to allow the international value of its currency to be determined solely by the untrammelled play of market forces." Burns then added a sentence that has since been much quoted: "We in the United States certainly cannot accept with equanimity exchange-rate movements that clearly undervalue the dollar."

There is some disagreement about the meaning of those wide swings in the value of the dollar since it started to float in February, 1973. Professor Peter B. Kenen of Princeton believes that the subsequent large decline, the recovery beginning in late July, and the recent retreat of the dollar, are all perfectly normal. "It's not a calamity," Kenen insists. "It's the way markets behave. Why should exchange markets be more stable than those in copper or cocoa? I am not saying that money is a commodity, but we have lived so long with narrow movements in exchange rates that a 20 percent change seems enormous—and it shouldn't."

On the other hand, Edward M. Bernstein, a veteran of international currency negotiations who is now a Washington-based consultant, believes that "we shouldn't want haphazard swings like those of last year." He believes the swings can and will be moderated.

It is agreed, at least, that some rules need to be established for the floating-rate game. Efforts to develop guidelines for intervention by central banks were going forward in the International Monetary Fund last month, and some principles were expected to emerge soon.

Aside from the guidelines, the IMF has for about two years been developing proposals to replace or reform the collapsed Bretton Woods system. But even without any resounding new agreements on this weighty matter, a lot has been accomplished. A system of sorts is in place, which means that there is something to elaborate, improve upon, or amend—that there is no need to start from scratch. In effect, the world is backing into monetary reform.

The case for a strong dollar

It is not entirely clear whether we are also backing into an era in which the dollar will be strong. The case for thinking that it will be strong is rather complex and has to do largely with the chain of events set off by the world oil cartel when it began pushing up prices last year.

The sharp rise in oil prices is equivalent to a tax levied by the oil countries on their customers. This tax promises, in the words of Nathaniel Samuels, a partner of Kuhn, Loeb & Co., "to transfer wealth from one set of countries to another on a scale and at a speed never experienced before." However, the transfer is not the end of the matter; ultimately, it seems likely, that wealth will return to the more industrialized nations, as payment for their goods or in the form of investments.

If all the money were used to purchase goods, the non-

Communist industrial countries would be transferring an immense quantity of resources to the oil producers. Something like 20 to 30 percent of the industrial countries' exports would go to the oil-producing countries during the next few years, versus 4 percent in 1972. In fact, the purchases will surely be much smaller, because the Arab oil countries in particular—including the one with the most oil of all, Saudi Arabia—don't have the populations or technology to absorb that many goods.

Within a few years, therefore, the oil countries may add something like \$135 billion to their financial assets—a sum roughly equal to the official international reserves of the advanced countries early last month. Projections for ten years ahead run from two to four times that sum. The only financial markets capable of absorbing investments on any such scale are, of course, in countries with well-developed economies. Since these advanced countries are in general the ones incurring the increased oil bill, it is clear that, by and large, those "petrodollars" will be coming home.

Nevertheless, there are many countries in the industrial world that won't be getting nearly enough investment inflows to offset the higher oil bills. The U.S. has a tremendous advantage over Japan and most of Europe in this respect: we are less dependent on imported oil than they are, and we have highly developed capital markets that seem likely to attract sizable sums from the oil-producing countries. In the near term, it is true, a lot of this money will be flowing into the chief European money markets—including the Eurodollar market. Still, there is a prima facie case for expecting the dollar to be stronger in the long run than the Japanese yen or most European currencies.

A need to spread it around

Indeed, it may become an important responsibility of commercial and investment bankers in the U.S. and other countries to relend abroad many of the oil-country funds they receive. There is a widespread feeling that, in this "recycling" effort, the existing private markets must be supplemented by special arrangements. For example, former Secretary of the Treasury George P. Shultz has suggested creating a kind of internationally sponsored mutual fund to take in Arab money and invest it here and abroad. H. Johannes Witteveen, the managing director of the International Monetary Fund, has been trying to set up a special "oil facility" to recycle some of the money flowing to the countries with surpluses. And the Shah of Iran has expressed a willingness to lend money at below-market rates to needy countries.

Thus the recycling process is likely to create a lot of new money flows in the world. In some circumstances, the U.S. might actually be competing with Europeans for funds. With the ending of controls on lending and investing abroad, U.S. bankers have a new incentive to raise funds. If interest rates on certificates of deposit were

competitive with Eurodollar rates, a lot of short-term money could be attracted from the Eurodollar market—some of which would then go right back again, as loans.

The end of capital controls also means that our investment bankers might recapture a lot of financing business that has recently been done in Eurobonds. That is, U.S. corporations can once again finance their foreign subsidiaries by issuing bonds in the U.S. and sending the proceeds abroad. Foreigners may also want to float debt issues here because of the excellent U.S. secondary markets. Some foreigners are put off by the Securities and Exchange Commission's registration requirements for new bonds, which are a lot stiffer than European borrowers are accustomed to. But Europeans can also resort to private placements, which avoid the SEC disclosure rules.

Though recycling may divert a lot of the petrodollars abroad, the U.S. is still expected to end up with more of the oil producers' investments than anyone else. Some such expectation, in any case, represents a main hope for a strong dollar in the years ahead.

They're making us save

There is one other perspective from which the higher oil prices might be viewed as good news for the U.S. The Arab "oil tax" seems to involve a kind of forced saving for the industrial world, i.e., it is obliged to consume less, yet at the same time it is expecting to receive vast investment funds of a kind normally provided out of domestic savings. As it happens, this forced saving is occurring at a most opportune time—a period in which many businessmen and economists have been expressing concern about a great world capital shortage. Whatever other effects the higher oil prices have, they are at least creating tremendous supplies of capital.

On the other hand, the industrial world can take only so much "good news" of this kind. It is not clear what would happen if producers of other basic materials emulated the oil producers and formed cartels. Senator Abraham A. Ribicoff of Connecticut recently conjured up an image of "an international squeeze play affecting such materials as chromium, tin, manganese, platinum, cobalt, nickel, bauxite, and asbestos." C. Fred Bergsten, an economist at the Brookings Institution, has been raising similar alarms. The recent demand by Jamaica, that aluminum producers make far greater tax and royalty payments on the island's bauxite, has intensified these concerns.

Conventional wisdom holds that cartels are bound to be more or less transitory. Even oil, admittedly a special case in many ways, cannot have its price rigged indefinitely, according to the traditional view: sooner or later, one or another member of the cartel will start shaving the price in order to increase the member's own revenues. Cartels can also be undermined by various consumer stratagems, including, for example, substituting steel for tin and the development of synthetics (rubber).

But Bergsten believes that the conventional wisdom no longer applies. He adds, ominously, "Examples of successful cartelization come from an era which now seems light-years away. Shortages of supply have replaced shortages of demand as the dominant force in world economics for the first time in almost fifty years, and the power position of suppliers and consumers has thus changed dramatically." It is still uncertain whether Bergsten or the traditionalists are correct in their respective views on this matter.

A dilemma with a wallop

All things considered, the U.S. international position has surely been improving. When President Nixon formally ended the convertibility of the dollar into gold on August 15, 1971, and thus finished the whole Bretton Woods system, no one knew quite what would happen. There was widespread fear of competitive devaluations and of a turn to autarchy among nations. Floating was a fearsome step advocated mainly by academics.

The dire forebodings, then, have so far proved to be misplaced. On the other hand, the new international economic environment presents a few problems that were not envisaged earlier. One has to do with exchange-rate policy in an age of inflation.

We now know that lower exchange rates can have a terrific inflationary wallop. But higher exchange rates can wallop an economy too: they reduce exports and, therefore, foreign-exchange earnings—which most countries desperately need in order to pay their oil bills. It is not clear that the present floating arrangements could endure if many countries, searching for an elusive optimal rate, adopted dirty-floating policies.

There is an especially tricky problem about the appropriate exchange rate for the U.S. Suppose that the rate goes up sharply, reflecting a sizable inflow of Arab investments. A rising rate would profoundly affect the structure of American industry, i.e., by shifting the balance between export- and import-oriented industries; but the new structure might come undone some years later, when those Arab investments petered out—and the exchange rate went down. Altogether, this would appear to be a rather painful sequence for a lot of Americans.

But suppose, alternatively, that those Arab investments turn out to be rather meager, and the exchange rate falls. This too could affect the structure of industry and, of course, leave us facing heavier doses of inflation.

As all these stunning new problems come into focus, it is increasingly clear that the international economic environment was transformed by the oil-price explosion. It is noteworthy, and encouraging, that the explosion took place without tearing apart the world's great web of trade. There have been some displays of rather aggressive self-concern, but, in general, the leaders of the industrial world have worked together remarkably well. We can only hope they continue to do so.

END