Technologically, the Atlantic Community Exists

London. In business, as in science and technology, the Atlantic Community seems already to be a reality. Yet, on both sides of the ocean, sentiment and fiscal necessity are forcing some resistance to the trend.

In America, research-oriented firms that have become truly international in their outlook are being warned about the effect their heavy overseas investments have on the dollar. In Europe, politicians confront an American technical challenge which seems to grow stronger year by year, and proclaim the European equivalent of Franklin's "We must all hang together, or assuredly we shall all hang separately."

As they ponder ways of declaring economic and political independence of the New World, Europeans note worriedly that the competition between nations—or commercial firms—manifests itself more and more in terms of technology: who has the ideas, the inventions, and the best conditions for getting and exploiting them?

As European markets expand—and for many years they were growing faster than the American market—American penetration seems to be deeper, especially in such research-oriented, fast-growing industries as electronics and chemicals. Europeans see the advantages conferred on American corporations by size of market, hence by size of firm; large-scale operations not only lead to economies in production but also pay for the aggressive sales forces and the research programs that often insure corporate survival. Further, the U.S. government's huge defense programs have, for two decades, offered encouragement to industrial science and technology; one major result has been the forced growth of the computer industry. Then, over the past 4 years, the U.S. government has followed a moderately expansionist economic policy while holding the line on prices.

Faced with what they fear is a commanding American lead in such advanced fields as that of communications satellites, Europeans are not comforted very much by the recent pressures on the dollar which led to voluntary and legal controls on American investment abroad. Many large American firms—Esso and IBM, to name two—are thoroughly domesticated in European markets and have retained large profits abroad for the expansion of those markets. For Europe, the only answer seems to be the construction of enterprises large enough to compete technologically with the United States.

But this is easier said than done. For one thing, Britain is excluded from the six-nation Common Market, and so efforts to join British firms with those on the continent are hindered. Even if the whole British computer industry were merged into one firm, it would probably need alliance with a technologically strong continental firm, such as Philips in the Netherlands, to compete seriously over the long haul.

Moreover, the Common Market itself lacks common legislation on such matters as academic qualifications of scientific personnel, taxation, and the constitution of corporations. Lack of a Common Market law on corporations hinders full unification of the two film companies, Agfa of Germany and Gevaert of Belgium, which in 1964 joined forces in the most notable international merger to occur within the Common Market since its formation. Faced with stiff competition from Eastman Kodak, Agfa and Gevaert could merge because their activities were complementary; Agfa concentrates on film for amateur photographers; Gevaert, on film for industrial and scientific applications.

But Britain and France are experimenting heavily on technical-cooperation agreements for developing civilian and military aircraft. These agreements, to build the Concord supersonic transport and also a fighter plane for the 1970's, are felt to be more promising than such multinational development efforts as the European Launcher Development Organization (ELDO), from which Britain is seriously considering withdrawal. Bilateral collaboration of the kind exemplified by the Concord project, where Britain concentrates on engines and France on airframes, is felt to be more flexible, and simpler. Nonetheless, the collaboration may not work: doubts about the technical and economic viability of the Concord project have not been stilled.

Europe also lacks common policies on patents and on government action to encourage a better climate for technology. Attempts to remedy these defects have only begun. On patents, the members of the Common Market are divided in their views about whether their proposed common patent agreement should be open to others, and the members of the seven-nation European Free Trade Association appointed a working party only in June. As for technology, in March it became known that France had proposed that the Common Market begin discussing a policy for research. To start with, the French proposed two studies: (i) identification of technically retarded and "research-intensive" industries, categories which need the most government help, and (ii) compilation of a general inventory of research in progress in private and public laboratories in the six countries, as a first step toward avoiding duplication.

This French proposal was noted in the March issue of *Communauté Européenne*, the Paris information journal of the three Common Market communities. The journal asserted that the technical gap between America and Europe would widen in the absence of an all-European effort embracing all of science. The success of some of the European research collaborations has led the executives of the communities to feel that "the degree of integration achieved by the member countries requires that the Communities act to provide a coordination of research no longer limited to particular fields. . . . If this combined action for research is not expanded, the economic development of the community risks being shackled."

Discouragement is the dominant tone

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of such European discussions. And the Europeans have much justification for this discouragement. In American discussions of the balance-of-payments problem it has not been sufficiently appreciated how strong a position American firms in research-oriented industries have achieved in European markets, how deeply involved they are in overseas operations, and how huge American corporations are in comparison with their overseas competitors.

According to *Fortune* magazine, only two European firms sold enough in 1963 to be among the world's ten leaders. These were Unilever and Shell, and 21 percent of the latter is owned by individuals and firms in the United States.

Between 1950 and 1963, overall American investment overseas tripled, and American investment in Europe increased by a factor of 5. In 1963, total direct American investment was estimated to be $4.2 billion in the United Kingdom, $1.8 billion in the German Federal Republic, and $1.2 billion in France. In the same year, total American investment in Europe was estimated at $4.1 billion in the automobile and aviation equipment industry, $2.8 billion in petroleum, $2 billion in chemicals, $2 billion in nonelectrical machinery, $1.5 billion in electrical machinery, and $1.3 billion in food products.

In 1963, the 20 Esso-owned companies in Europe represented a combined investment of $2 billion in property, plant, and equipment. They sold roughly a fifth of all the petroleum in Europe.

Many large companies are so deeply involved in overseas markets that their outlook becomes international. In 1962, McKinsey and Company, management consultants, surveyed 100 American firms which accounted for over 50 percent of overseas direct investment. Of these firms, 25 had more than one-fifth of their assets abroad and 28 were earning more than one-fifth of their pre-tax profits overseas. Since 1960, these 100 firms had increased their overseas assets about five times as fast as they had increased their domestic assets.

Sales by overseas subsidiaries of American firms rose by 70 percent between 1957 and 1963, according to one estimate. This was six times the growth of direct exports from the United States. In 1963, the figure for total sales by overseas subsidiaries of American chemical companies was $4.8 billion, as compared to $1.9 billion in direct exports from the United States.

Countries like France are worried about the continuing flood of U.S. money for loans, stock purchases, and direct investment. In 1959 the excess of new American investment funds over such withdrawals as loan repayments, stock sales, and profit repatriation was $190 million. In the next 4 years the excess was still large: $129, $132, $139, and $93 million, respectively, according to a government statement of 27 April in the French *Journal Officiel*.

Europeans note with a shudder such purchases as Boeing's payment of $3 million for a share of the German aircraft firm of Boelkow, near Munich, which shares in the manufacture of the third stage of the ELDO rocket. Together, Shell and Esso have bought a half interest in a German gas firm, to insure a market for the natural gas they jointly exploit in the Netherlands. Americans are also purchasing shares in German oil-producing and refining firms.

In conversation on the American drive into Europe, the subject of imbalances in payments for patent-licenses shows up often. People never tire of pointing out that Germany or Italy or France pays more to the United States in license fees than the United States pays them. In France, for example, it is estimated that the country had an overall license-payment deficit of $380 million in 1963, with much of the money going to the United States. For the past 15 years, the number of patents of French origin registered with the government patent office has stuck at about 15,000. But the number of foreign patents has soared; in 1952 the total was 8000; in 1962, 25,000. In 1963 not a single major French industry had a favorable balance of license payments, and only two sectors of industry supplied more than half the patents in their fields. Of the 51 firms registering the most patents in France in 1960, the largest was Dutch, 11 were German, and 21 were American. Only nine were French.

Such a situation is regarded as a worrisome sign of foreign technical dominance that might become invincible. The pessimists are not comforted by past examples of the transience of technical leads, such as British dominance in the field of textiles, Germany's hold over chemicals and metals, and Japan's rapid growth as a maker of iron and steel. The pessimists say that, although a policy of heavy license payments may work out well in the short run—in reestablishing the economies of Germany and Japan, for example—the long-run prospects are poor.

In the short run, a policy of buying licenses may be more effective than heavy spending on research because it deploys scientists throughout the chain from laboratory to factory instead of concentrating them at the end farthest from production. But in the long run the cost to an industry of buying needed technical information may rise so high that the firms are faced with the choice of spending large sums on research and development or selling out. It appears that the French computer firm of Machines Bull and the computer division of Olivetti, both of which initiated deals with General Electric, found themselves in this situation.

It is in aviation and space that American dominance has received the greatest recent publicity. Not necessarily with complete accuracy, European observers point to Boeing as a prime example of the commercial advantages conferred by association with America's Defense Department. Boeing, having been awarded the contract for the B-52 weapons system and the KC-135 tankers that went with it, was able to lay the groundwork for almost invincible invasion of world markets with its 707 passenger jets. Douglas' success with the civilian-developed DC-8 was more modest, and General Dynamics experienced financial disaster with its 880's and 990's. In addition to the successful 707 (which has been modified for greater economy of operation), Boeing has introduced the shorter-range 720 and the three-jet 727. Then, this year, Boeing decided to introduce a short-range two-jet airliner, the 737, but only after the top technical management of the German airline Lufthansa decided that the economies of sharing parts in an all-Boeing jet fleet were unbeatable, and more important than the slight uncertainty of depending upon a single firm. Lufthansa's decision, which caused much anguish in Britain, turned the 1000-plane market for short-range jets into a catfight. Britain's BAC-111, which is selling well, will have to fight both the argument which decided Lufthansa and the DC-9 introduced by Douglas.

Such combined technical-economic forces operate strongly in the military field. Even the Australians chose the American TFX fighter in preference to

the now-canceled British TSR-2 because huge series production of the TFX had cut its cost to something like half that of the TSR-2. Similar arguments led Britain to cancel production of a supersonic vertical-take-off fighter and a short-take-off freighter and to decide to order American C-130 cargo planes and Phantom jet fighters for both its air force and navy. The British are still arguing over whether to buy the TFX themselves.

Meanwhile, the success of the Hughes synchronous-orbit satellite Early Bird, another project heavily backed by the U.S. government, has dimmed most hopes for any significant European participation in the first system of communications satellites. A galling element in this situation is the U.S. State Department's refusal to allow foreign purchase of Hughes licenses for a British defense satellite system. This refusal strengthened the Defense Department's wish to have Britain join the military communications satellite system which it is planning.

All these considerations reinforce a purely nationalistic concern about U.S. ownership of so large a fraction of Europe's economies.

It is easy to make too much of all this. It seems that European firms and individuals own about the same dollar amounts of property and have about as much direct investment in the United States as Americans have in Europe (something like $60 billion in each case). The interdependence of businessmen and firms across the Atlantic seems almost as tight as the interdependence existing in science. If Esso has a huge share of the European petroleum market, Shell has a large part of the U.S. market. Unilever is a very important firm in America. Bowaters, a British firm, owns the largest paper mill in America (in Tennessee) and supplies about 20 percent of U.S. newsprint. About 70 percent of this firm's profits come from the United States, into which Bowaters moved only after World War II.

American ownership in Europe does not mean American management. For example, Hugh C. Tett, the chairman of Esso in the United Kingdom, is a science graduate of Exeter University who rose through the large research effort Esso maintains in Britain. Ownership in America does not mean that European firms are milked for profits or that all the research and development is done in America. In developing its System 360 of computers, IBM shares the work among a whole group of laboratories in Europe. The European subsidiaries of IBM pay about half their profits as corporate income taxes to European governments (which then can use the money to help European computer-makers and which benefit generally from the increased use of computers), and at least half of the remaining profit must be retained in Europe for investment. European governments still hold a full armory of fiscal and social weapons for controlling American subsidiaries, as the French government showed in long negotiations concerning which of the workers in Machines Bull factories General Electric would lay off.

European firms continue to make important technical contributions. A notable one is the high-voltage, direct-current power transmission equipment pioneered by the Allmänna Svenska Elektriska Aktiebolaget (ASEA) for over 30 years. This equipment will be used in the direct-current portions of the giant "intertie" system for transferring electric power from the Columbia River valley to southern California. The heart of this system is a set of mercury-arc rectifier-inverter valves developed under the leadership of Uno Lamm, now technical director of ASEA. The valves cut the cost of converting power to direct current for long-distance or undersea transmission to the point where direct current can be used in certain applications, such as transfer of power between England and France, Sardinia and mainland Italy, the South and North islands of New Zealand, Sweden and Germany, and the 50-cycle and 60-cycle systems of Japan.

An effective European response to the combined technical and economic pressure from the United States can be seen in the iron and steel industry. The oxygen-blast and continuous-casting processes have been two significant attacks on the economic advantages conferred by giant—and, for many, prohibitively costly—blast furnaces fed with ore and coke. These and other cost-cutting measures have allowed European and Japanese steelmakers to enter the American market. This development was certainly a major factor in the U.S. steel industry's decision, in the late 1950's, to abandon the price-wage spiral and turn more rigorously toward greater efficiency and more research and development.

Developments in iron and steel are notable in Sweden, where engineers highly aware of foreign technology can be found all the way from the ore face at Kiruna to the shipyards in Göteborg. These engineers have received private and public money to experiment with new processes in the laboratory and in the factory. Swedish engineers of the Stora Kopparberg company, led by Bo Kalling, have developed the Kaldo rotating oxygen furnace to handle such high-phosphorus ores as those of Kiruna. The Stora Kopparberg researchers have used many elements of the Kaldo system to develop a rotating pig-iron furnace. A plant incorporating such a furnace is being integrated this year with the Stora Kopparberg steel mill at Domarfvet; 20 percent of the cost is coming from a government development fund that is fed with Kiruna iron mine profits.

Both technically and economically, then, the Atlantic is much more of a two-way street than commentators in either Europe or America generally acknowledge. This is not to deny the seriousness of balance-of-payments difficulties, or Europe's need to catch up technically in many fields. But underneath the crises, quietly, a much more open and competitive situation has developed. One of the major questions for the future is whether this technical and economic community will develop into a closed system or whether it will open outward to include less-developed regions.—VICTOR K. MCELHENY