dictatorship is Britain. He writes that Britain harbors "precisely the powerful network of special interest organizations that the argument developed here would lead us to expect in a country with its record of military security and democratic stability." Today Britain has one of the lowest economic growth rates among all the democracies, despite the fact that from the middle of the 18th to the middle of the 19th centuries it had one of the fastest rates of growth. This is due, Olson believes, to the gradual accumulation of special interest organizations that inhibit growth. The "British disease," he says, will afflict any democracy that remains stable for a long period.

Looking at the rest of Europe, Olson finds positive evidence that social disruption and reorganization may encourage growth. He reports a colleague's finding that 51 percent of the associations existing in the United Kingdom in 1971 had been founded before 1939. Only 37 percent of the French, 24 percent of the West German, and 19 percent of the Japanese organizations existed before the war. Postwar economic growth in the latter three nations has been described as a "miracle," Olson notes. He argues that it is due to the elimination of long-established privileges held before the war by unions and business groups.

A student of Olson's also made an analysis of growth patterns in the United States. He found that those settled later, primarily western states, had a higher average growth rate than those settled early in U.S. history. In addition, states belonging to the Confederacy, which experienced a social cataclysm during the Civil War, have had a higher growth rate since the war than those on the winning side. Olson attributes this to the destruction of special interest groups in the South.

In a third analysis, Olson looked at towns in England and Europe to see how they fared over two centuries. He found that, except in the case of national capitals, the towns that were the largest and wealthiest in 1600 ceded rank to new towns that rose rapidly to the top by 1800. In England, the third-ranked town, York, fell to 17th place in this period, while Manchester, Liverpool, and Birmingham rose from obscurity to second, third, and fourth rank. Olson believes their success was chiefly due to the relative freedom from the oppressive business codes of the guilds. For the most part, he argues, the guilds retarded the growth of the prosperous towns where they had the greatest influence.

If Olson's theory of economic sclerosis is correct, what does it imply for government policy-makers? Olson says that some readers thought he might be advocating revolution or dictatorship as a means to higher national productivity. This is not the case. Olson's policy recommendations are mild and, by his own description, unoriginal. The most important is that the government should maintain an "open and competitive environment." He writes that "If the government is always intervening on behalf of special interests, there is no macroeconomic policy that can put things right." It would be an accomplishment simply to refrain from adopting new tariffs and subsidies. In an ideal world, existing special interest legislation might be repealed.

Second, Olson makes the commonsense recommendation that countries fighting inflation should apply controls, such as constraints on money supply, in a steady and gradual fashion rather than in sharp bursts. Olson mentions the case of a Danish cartel that waited 10 years to change its prices, even though it was losing profits throughout the period. Government policy must demonstrate resolve if it is to budge slow-moving interest groups.

Third, during times of "unnaturally high" unemployment, Olson suggests the government should offer temporary rewards to companies that raise wages slowly. This might encourage employers to spend available cash on hiring new workers, he says, rather than on raising the pay of those already employed.

Perhaps the most frequent criticism of Olson's work is that there are many other plausible explanations of the trends he cites. Consider the example of the recent boom in the nations defeated in the second world war. A former colleague of Olson's at Maryland, Robin Marris, argued that this spurt of growth actually reflected something he called "catch-up": the rapid rebuilding of industry with the most advanced technology. The absence of interest groups was less important, in Marris' view.

Olson agrees that many factors other than the degree of interest group sclerosis affect economic performance. He concedes that more empirical research is needed if his ideas are to gain acceptance. But he also believes that his thesis has an advantage over most others. "The strongest argument in its favor," he says, "is that it is a simple theory that explains so very much. It is supported not so much by one piece of evidence as by the variety of evidence." Few economists dare to generalize as broadly as Olson, and this boldness is what makes his work intriguing.—ELIOT MARSHALL

Legislation Would Take Program Away from NCI

The House Appropriations Committee has passed a proposal to transfer funding responsibility for an important international program on toxic chemicals from the National Cancer Institute to the office of the director of the National Institutes of Health. Representative David Obey (D–Wisc.) sponsored the measure, citing, in his opinion, inappropriate behavior by the NCI. Institute officials allegedly pressured the international program not to publish controversial data on benzene after they met with industry representatives (*Science*, 3 September, p. 914). Institute and program officials deny any improper actions.

The program is conducted by the World Health Organization's International Agency for Research on Cancer (IARC) and evaluates the carcinogenicity of chemicals. Many governments regulate chemicals based on conclusions reported in IARC monographs. The controversy over benzene arose when IARC for the first time ventured into the area of quantitative risk assessment, estimating how much risk is associated with certain levels of exposure.

The NCI now contributes about $500,000 annually to the monograph program's budget of $700,000. The legislation to shift the program's funding is part of a House appropriations bill that is expected to be voted on when Congress returns from recess.

—Marjorie Sun

Genex Raises $19 Million from Stock Offering

The Genex Corporation took a gamble on the Stock Exchange on 29 September and it came out reasonably well. At a time when new issues in general and biotechnology stocks in particular are supposed to be out of favor, the Rockville, Maryland, company raised $19 million from its first public stock offering. Its offering sold out on the first day, but its share prices have since declined.

One of the largest biotechnology companies to start up in the past few

years, Genex was forced to go public because it was facing a severe cash flow problem. It needed a major injection of cash to pay for a recent expansion of its research and development activities and to finance several projects that were not being funded by industrial partners. In July, it filed a registration statement with the Securities and Exchange Commission, announcing its intention to go public (*Science*, 20 August, p. 713). It was then envisaging the sale of 2.75 million shares at $12 each, but that plan was evidently deemed too optimistic. The final prospectus scaled down the offering to 2 million shares at $9.50 apiece.

About two-thirds of the proceeds will be spent on constructing and equipping new research and development facilities. The rest will support development and manufacture of proprietary products.—***Colin Norman***

Arianespace Picks Up the Pieces

The next launch of the European rocket Ariane, whose last flight ended abruptly in failure at the beginning of September when the fuel supply cut out 13 minutes after lift-off, is likely to be put back between two and five months from its scheduled November date as a result of the accident.

The exact date of the launch will not be decided until officials from the European Space Agency have had a chance to study the conclusions of an international panel of independent experts set up 2 weeks ago to look at the reasons for the accident. However, Frédéric d'Allest, recently appointed director-general of the French National Center for Space Studies (CNES) which is the prime contractor for Ariane to ESA, said in Paris last week that investigations were sufficiently advanced to state that the next flight was likely to take place in January 1983 at the earliest—and in April at the latest.

The precise timing will have a direct effect on the payload that is carried. If last month's flight had gone according to plan, the next would have been used to place into a polar elliptic orbit the x-ray orbiting satellite Exosat. Exosat will measure the position, structural features, and spectral and temporal characteristics of cosmic x-ray sources.

The launch window for Exosat, however, only extends up to 24 January. If the next launch is delayed later than that, some juggling of payloads will be necessary, the most likely outcome being that Ariane is used to launch EZN-1, the first of a series of European communications satellites financed by the newly formed telecommunications consortium EUTELSAT. Exosat would have to wait until May at the earliest for another launch window.

Although embarrassed by last month's failure which resulted in the loss of two satellites, the maritime communications satellite Marecs-B and the scientific satellite Sirio-2, ESA officials remain confident that the cause will be easier to diagnose and to cure than that which resulted in the failure of Ariane's second test flight in 1980. The latter was found to be due to unanticipated pressure fluctuations in the fuel injection system and took a considerable amount of redesigning to put right. Last month's failure, which occurred in the turbo pump which mixes the liquid hydrogen and oxygen fuels that are fed into the novel cryogenic engines of the third stage, is expected to be easier to solve.

Two potential causes for the latest failure are currently being studied. One puts the blame on mechanical parts mounted inside the pump casing, the other suggests that the problem originated in the lubrication circuit. The commission of inquiry, whose members, ESA emphasizes, have no previous involvement with the Ariane program, is expected to identify one of these as the culprit when it produces its report later this month.

Besides the scheduling problems caused by the delay of the next launch, ESA and the commercial company Arianespace set up to take over responsibility for selling space on future Ariane flights are having to respond to the inevitable concern which the failure has caused among potential commercial customers.

Aware of the major credibility problem which the rocket now faces, ESA has set up a second commission of inquiry also due to report later in October. This one has the task of verifying that the launcher conforms to the specifications that were laid down by the agency in the early 1970's.

Major customers such as INTELSAT, which already has three commercial flights booked for next year, are said to be putting strong pressure on ESA to make sure that Ariane's problems are resolved satisfactorily. Until they are, the commercial future for Ariane does not look as bright as it did a few weeks ago (*Science*, 10 September, p. 1010).—***David Dickson***

Germany's New Science Minister

Despite their growing political popularity, West Germany's ecology parties are unlikely to find an enthusiastic ally in the country's new minister for research and technology, Heinz Reisenhüber, who intends as one of his top priorities to break the current deadlock over the future development of nuclear power by resolving public debates over the safe disposal of nuclear wastes.

A professional chemist with a Ph.D. from the University of Frankfurt and several years scientific and managerial experience in the chemical industry, Reisenhüber has been chief energy spokesman for the Christian Democrats (CDU) since entering the federal German Parliament in 1976. He was appointed to head the ministry of research and technology last week by West Germany's new chancellor, Helmut Kohl.

As chief opposition spokesman on energy policy, Reisenhüber has frequently stated that the safe disposal of nuclear waste is no longer a technical problem, but a question of generating public acceptance by demonstrating that the government is able to bridge the gap between theory and practice in the management of radioactive materials. At the same time, Reisenhüber says he wants to increase Germany's use of nonnuclear power, in particular solar energy. However, he makes clear that he expects the market—rather than the government—to take principal responsibility for promoting such energy sources, arguing that successful innovation is a question of "market pull" rather than "government push."

—***David Dickson***

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