

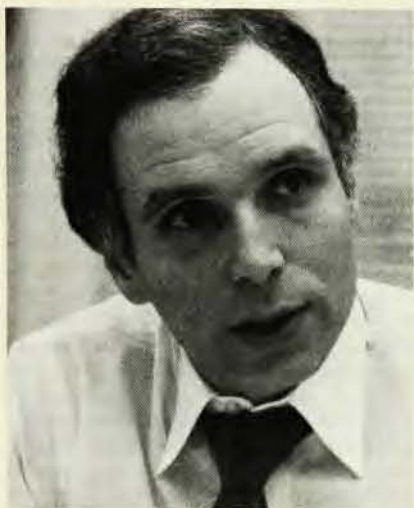
Scientists in Congress likely to remain scarce but valued

Scientific originality and technical inventiveness were no strangers among the first political leaders of the United States, as the names Franklin and Jefferson testify. But then, the founding fathers grew up in an enlightened century, in which the whole range of knowledge and intellectual endeavor was considered to be within the reach of the best minds. With the passing of the founding fathers, the scientist-statesman became a rarity in US politics, and even in recent years—with scientific and technological issues looming larger than ever in the affairs of state—only a smattering of people with substantial scientific or technical training have served in Congress. By our count, the outgoing Congress contained just one person with extensive experience as a scientist, Rep. Don Ritter of Pennsylvania. Ritter, a metallurgist, earned a PhD at MIT and taught at Lehigh University. A number of other legislators in the 99th Congress had scientific credentials of some kind, but Ritter was the only one who had taught and practiced science at the university level.

Precisely because they are such a rarity, the people in Congress who have some scientific training are increasingly highly valued, if not necessarily by their constituents, at least by their colleagues and in the scientific community. Ritter says that people in Congress come up to him "all the time with questions involving scientific expertise."

Among the members of Congress who can make some claim to being at least somewhat versed in the sciences, the one most recently elected—Rep. Ed Zschau of California—has been called by a colleague "the star" of the freshman (1982) class. Depending on how a number of close races turn out on 6 November, Zschau and Ritter almost certainly will be joined in the next Congress by some other people with backgrounds in science, engineering or science education. But there will not be many of them, and gone will be a couple of the scientist-statesmen familiar from earlier years.

Harrison H. Schmitt, who was prob-



ITTER

ably the best known scientist in Congress from 1976 to 1982, lost his Senate seat two years ago to the Democratic challenger Jeff Bingaman. Schmitt, a geologist with a PhD from Harvard and a BS from Caltech, was better known with much of the public as an astronaut than as a scientist. This year another astronaut, Jack Lousma of Michigan, has mounted a strong campaign for the Senate seat held by Democrat Carl M. Levin. But Lousma, in contrast to Schmitt, entered the NASA space program as a pilot, not a scientist. The National Coalition for Science and Technology, a fledgling group that opened a Washington office in March 1983 to lobby Congress on issues of interest to scientists, has taken no position in the Lousma-Levin race. The Coalition is an outgrowth of SCITREC-PAC, a political action committee founded in 1981 to make contributions to campaigns.

In 1982, a contributing factor in Schmitt's defeat may have been the support national groups favoring a nuclear weapons freeze gave to his opponent. Another candidate who was defeated in 1982 after being targeted for defeat by the pro-freeze groups was Pennsylvania Representative Jim Coyne, one of just three or four scientists elected to the House in 1980,



ZSCHAU

depending on how scientists are defined (PHYSICS TODAY, October 1980, page 52). Coyne, the president of a chemical company, specialized in energy issues as a member of the House Committee on Science and Technology and strongly supported the development of domestic alternatives to imported oil.

James Martin, a former chemistry professor who has been a Republican Representative from North Carolina since 1972, gave up his seat this year to run for governor. A strong supporter of science funding, Martin often was active in Congress on issues involving scientific expertise, especially health policy questions. He wanted to rewrite current law, which bans all proven carcinogens, to permit use of food additives unless possible risks clearly outweigh benefits. As an ally of chemical companies, Martin worked hard in 1980 to minimize the size of the "superfund" the companies were required to create to provide for the cleaning of toxic waste sites.

Among the new candidates selected in this year's primaries to challenge incumbents or vie for open seats, there is a man running in North Carolina's fourth district who could do something to replace Martin as a science specialist in the state's Congressional delegation.

Republican William Cobey Jr., who is challenging incumbent Ike Andrews, earned a BA in chemistry at Emory University and sold newly developed chemicals for Dow after getting an MBA in marketing from the Wharton School at the University of Pennsylvania. The fourth district contains a large number of universities, including the University of North Carolina and North Carolina State, and it abuts the Research Triangle. Nevertheless, Cobey reports that science policy is playing little role in the campaign because—he claims—his opponent, Andrews, “does not understand these issues well enough to say anything about them.” Andrews beat Cobey narrowly in 1982 by 51% to 47%, and he could be vulnerable this year, though the odds generally favor incumbents, barring exceptional circumstances.

A veteran of North Carolina State's nuclear engineering program, Albert Wiley, is running as the Republican candidate in Wisconsin's second district, which includes Madison. Wiley, who has a PhD in radiological sciences, argues that with energetic political leadership Madison could become a world leader in biotechnology and build an applied research establishment comparable to North Carolina's Research Triangle. Wiley portrays his opponent, 13-term incumbent Robert W. Kasten Jr. as a candidate of the past, and he likes to remind people that Congress contains scores of lawyers (like Kasten) but “only a small handful” who “understand the complexities of science, medicine and high technology.” Wiley reports, though, that he is running a “very low budget grassroots type campaign,” and he concedes that an incumbent has “enormous advantages,” especially one who has been there 26 years. One incumbent who may be in serious trouble this year is Idaho's Republican Representative George Hansen, a former math and science teacher. Hansen was convicted in a Federal court earlier this year for failing to make a financial disclosure of certain transactions made by his wife, and this embarrassment could improve the prospects for his opponent Richard Stallings, a history professor, who mounted a strong challenge in 1982. But Hansen has appealed the case, and he has survived legal difficulties before.

People who work in education are running in a number of districts this fall; few of the educators seem to stand much chance of winning. For example, Simon Lakritz, a California education administrator, is in an uphill race against a Republican incumbent, Charles Pashayan Jr. Lakritz is making a major issue of Federal cutbacks to education, especially cuts in funds for the educationally disadvantaged in math and reading. Pashayan is allied

with local timber interests and won reelection in 1982 by 54%.

Another California politician considered to be an ally of the timber industry, Democratic Representative Douglas H. Bosco, faces a challenge this year from David Redick, a telecommunications executive. Redick has an MS in engineering from the University of Michigan and currently works at Honeywell, where he sells, as he puts it, “the guts of communications systems for very large projects.” Redick considers himself a spokesman for high-tech industry and he strongly supports what he refers to as “high frontier,” that is, President Reagan's “starwars” proposal for accelerated development of ballistic missile defense systems based on directed energy technologies. Redick considers Bosco vulnerable because, Redick says, Bosco is “too liberal” for California's first district, which traditionally has voted Republican. Bosco, who was opposed in 1982 by some environmentalists but supported by pro-freeze groups, won by 51% to 47%.

A difference of four or five percent is enough to be called a “landslide” in Presidential elections, but in House races, spreads of 20, 30 or even 40 percent are not at all unusual. In California's 26th, 28th and 31st districts, where two educators and a retired geophysical engineer are running as challengers, the incumbents won by 60%, 79% and 72% in 1982. By comparison with the prospects facing challengers in those districts, the outlook seems almost good for John J. Hickey, a research scientist who is running against Democratic incumbent Tom Lantos in California's 11th district. Lantos won by a mere 57% in 1982.

Hickey currently works as leader of the acousto-optic group at the Dalmo-Victor Operation of Bell Aerospace Division of Textron, having received training in electronics as a member of the Navy. Hickey supports “starwars” and says that he has the backing of Edward Teller. Hickey favors cuts in defense spending, saying that as a person working for a major Pentagon contractor, he “can speak to the issue of waste in defense.” A staunch fiscal conservative, Hickey would phase out Social Security, inaugurate a flat-rate income tax, and oppose Federal subsidies of all kinds, including, generally, subsidies for high-tech industries. Conceding that a lot of his positions are controversial and claiming that Lantos “has a lot of money,” Hickey describes himself as a “dark horse.”

A technically trained candidate with quite good prospects this year is Republican Joe Barton, who is running for an open seat in the sixth district of Texas. Barton, a project control consultant for Atlantic Richfield, has a BS in industrial engineering from Texas A&M and

an MS in industrial administration from Purdue. He is running with the support of the current sixth district incumbent, Republican Phil Gramm, who gave up the seat to run for the Senate.

Gramm was a leading figure among the so-called southern “Boll Weevil” Democrats, who generally supported Reagan on economic and social policy in 1981 and 1982. After the Democratic House leadership punished Gramm in 1983 by stripping him of his key committee assignments, Gramm switched parties, resigned his seat and promptly won reelection by a decisive margin. His support should be most helpful to Barton.

Barton strongly supports “starwars” and would advocate, as a newly elected Congressman, a major updating of the Federal government's computer system. Barton believes that an upgraded system would enable the government to cut costs enormously, across the board.

At this writing, with only about half the primaries over, it is not possible to provide an exhaustive list of new candidates with scientific or technical backgrounds. The primary results from the spring and summer strongly suggest, however, that not very many new scientists or engineers will join the few figures in Congress who currently are considered to be more or less affiliated with the scientific and technical communities.

Three scientist-statesmen have campaigned this fall to retain seats in Congress—Rep. George Brown of California, Rep. Ritter of Pennsylvania, and Rep. Zschau of California. Individualistic and attentive to the interests of their constituents, these three can be called a group only in the loosest sense. They disagree with each other about as much as they agree, and even when they work closely together, their fundamental approaches to national policy differ in subtle but important ways.

Zschau, a Republican and the junior member of the group, represents the Silicon Valley, where he founded a very successful company that makes mini-computer disc storage systems. Zschau owes his political reputation to a successful lobbying campaign he led in 1978, with support from booming high-tech industries, to get Congress to reduce the capital gains tax.

Ritter, also a Republican, represents the troubled steel communities around Allentown and Bethlehem. A former professor of metallurgical engineering, Ritter was elected to Congress in 1978 for the first time. He served on the House Committee on Science and Technology but gave up his seat to be on the Energy and Commerce Committee, which deals with many matters of vital concern to his constituents. Ritter



BROWN

supports free-enterprise approaches to economic policy, and he says he works hard "to make health and environmental standards consistent with medical and scientific evidence." Ritter resisted tighter clean-air standards in skirmishes during 1982 over renewal of the Clean Air Act, and he opposed a telecommunications bill that would have put restrictions on the phone rates AT&T could charge, on the ground that it would inhibit technological innovation. Ritter spent a year in the Soviet Union as a participant in a scientific exchange program and he came back with a very low opinion of its communist government.

Brown, a Democrat who has served in Congress since 1962—except for 1971-73, when he gave up his seat in an unsuccessful Senate bid—represents a San Bernardino-River San Bernardino-Riverside district that includes two Air Force bases and large General Electric and Lockheed plants. Brown was one of the earliest and most militant opponents of the Vietnam War, and he has wielded considerable influence on at least one arms control issue in recent years, the question of whether to press for a treaty banning anti-satellite weapons.

Brown is a high-ranking and very influential member of the House Committee on Science and Technology, where he has worked hard to defend the Environmental Protection Agency's budget and powers. As Chairman of the committee handling the Federal Pesticide, Fungicide and Rodenticide Act, Brown sought to forge a compromise between the chemical industry and environmental activists, a task he found extremely frustrating. The trouble, he says, is that these "two highly polarized groups have a very hard time communicating with each other. Each can block anything the other wants to do, but they can't get anything constructive done without

cooperating."

Brown strongly favors the exploration and peaceful uses of space, and he may serve as chairman of the House space subcommittee next session if he survives this election, in which he faces a tough challenge from John Paul Stark. Brown has advocated the creation of a National Technology Foundation to parallel the National Science Foundation.

Brown's BA is in physics, but despite that and his active interest in many dimensions of science policy, he is not sure he deserves to be considered part of the scientist-statesman group. "I'm not really a scientist," he says, pointing out that his training comes nowhere near to matching Ritter's or Martin's. At the same time, he says that "yes," his "ability to cope with science issues probably is somewhat above average [in Congress], which admittedly is not a very high standard."

Zschau, Brown's junior by 20 years, seems less inclined to worry about the scientist label, though his advanced degrees are not technically speaking in science fields. Zschau's BA at Princeton was in philosophy, but he also took a lot of physics and mathematics courses, and his thesis was on the philosophical implications of relativity theory. Zschau has a master's degree in statistics and a PhD in business administration—his doctoral dissertation was on computational procedures for a class of linear programming problems. Before founding his own company, System Industries, he taught business at Stanford and Harvard.

Zschau sometimes is identified as a computer scientist, sometimes as a physicist, sometimes as a businessman. However that may be, his ability to understand complex issues involving science and technology is universally recognized as exceptional. Hailed as one of the brightest and most promising of the 1982 class, Zschau was invited to chair the House Republican Research Committee's Taskforce on High-Technology Initiatives. Ritter, the Pennsylvania metallurgist, was made vice-chairman of the taskforce.

The Zschau-Ritter Taskforce has as its mission, according to aides to the two Congressmen, the formulation of an alternative to "industrial policy," that is, ideas for central planning that have been somewhat in vogue among Democratic Party intellectuals in recent years. According to staffer H. Thomas Yolken, "Republicans take the view that central planning has not worked well in Europe and that only certain aspects have worked well in Japan." Yolken served on Ritter's staff as a Congressional Science Fellow sponsored by the National Society of Professional Engineers.

In May 1984, the Zschau-Ritter

Taskforce issued a report called "Targeting the Process of Innovation: An Agenda for US Technological Leadership and Industrial Competitiveness." The report recommends a strong Federal commitment to basic research (including increases in funding for civilian research in the fiscal 1985 budget, tax credits for industry-funded research performed at universities, and modification of the antitrust laws to facilitate joint research ventures among businesses); an array of incentives for investment, entrepreneurship and innovation; more emphasis on education and personnel training; and expansion of market opportunities in the United States and abroad. The Taskforce suggests that reducing the Federal deficit is the most important action needed to improve market opportunities, based on the belief that a smaller deficit would help bring down interest rates and lead to a weakening of the dollar against foreign currencies.

Zschau and Ritter do not see eye to eye on every issue affecting industrial competitiveness and technological innovation, which is scarcely surprising, considering their personal backgrounds, the dramatic differences between their districts and the complexity of the issues themselves. Ritter, a staunch anti-communist, has been inclined to support the Reagan administration's efforts to restrict publication of sensitive research (see PHYSICS TODAY, July, page 57). He also tends to support restrictions on the sale of technology to East Bloc countries, though he is leery about restraints that seem only to lead to a loss of business to European and Japanese rivals.

Zschau has argued for legislation that would lift export restrictions if East Bloc countries can obtain the relevant item from another source and if after one and a half years the source cannot be eliminated. Zschau favors exempting exports to Western Europe and Japan from licensing altogether, except where there is a party known to be diverting goods to the East. Zschau's views place him at loggerheads with the preponderant faction in the Senate, which enacted a bill this year that would give the Pentagon unprecedented authority to review exports to free-world countries, not just the East Bloc nations.

As for restrictions on publishing of sensitive research, Zschau says that if we were to adopt such measures, "we would only be hurting science itself. Even if research is Federally funded, I do not feel that scientists should be restricted from communicating with each other." Classified military research is the exception, Zschau says, where confidentiality is assured contractually between scientists and government.

While Zschau has been generally supportive of the Reagan administration on basic economic policy, his views on arms control are distinctly out of keeping with those prevailing at the White House. Zschau was a co-sponsor of the House freeze resolution, he favors negotiation of an anti-satellite treaty and he opposes the MX missile and production of chemical weapons. He is lukewarm, at most, on prospects for "starwars" missile defense systems. Ritter, though he represents a district that traditionally has voted Democratic, tends to support the administration's defense policies.

Ritter is a strong advocate of "risk assessment," a proposal to make agencies assess the hazards associated with regulations before rules go into effect. Ritter has won support for this position from Frank Press, president of the National Academy of Sciences, and he hopes to see Congress adopt legislation soon that would call on selected agencies to report on how they currently do risk assessment. Environmentalists have been wary about risk analysis, fearing that it could become a vehicle for industry to block unwelcome regulations. But according to H. M. Kingston, another Congressional fellow sponsored by the National Society of Professional Engineers on Ritter's staff, risk analysis has won considerable support from Democrats as well as Republicans in the House.

Because of his resistance to tighter clean air regulations, among other things, Ritter is not a very popular figure among environmentalists. Still, this year Ritter worked to strengthen the "superfund" toxics bill in one important respect. He wrote a new section providing for the first time for cleaning up of leaky underground storage tanks. Ritter's challenger this year has been Jane Well-Schooley, a former vice-president of the National Organization of Women.

Are scientists good statemen? Much depends, obviously enough, on what one considers statesmanlike policy. Even for the most objective and dispassionate observer, it is difficult to give a politician high marks on purely technical grounds, if the politician is pursuing objectives that seem repugnant for one reason or another. Much depends, too, on what one sees as the politician's main responsibility. If the politician is seen as a person whose job is to approach choices in an unbiased way and make correct decisions, then a well trained scientist might reasonably be expected to do better than average, especially where technical or quantitative matters are at issue. If the politician is seen as a person whose main responsibilities are to represent interests, conciliate conflicting parties and articulate concerns, there is no especially compelling reason to expect

scientists to be better than average and maybe even some reason to expect them to be worse. In some circles, anyway, scientists are seen as rigid and untrained for the give and take of politics. One aide to an incumbent scientist-statesman, speaking (understandably) not for attribution, remarked that after some reflection he had concluded that scientists do not make very good statesmen. He felt that scientists tend to get lost in details and lose sight of the big picture.

Rep. Brown disagrees. He feels that his science education has stood him in good stead on the Hill, however modest his physics degree may be. "The mathematical training is very helpful," Brown said. "The discipline trains you to communicate objectively rather than politically."

Zschau does not think that "you can generalize that any particular background makes a good statesman or a good businessman." While scientists in politics are "the exception rather than the rule," Zschau thinks this is a "matter of interest and temperament"—not to speak of "comparative advantage." Many scientists "can make contributions both to politics and to science," Zschau observes, "whereas most politicians can only make contributions in politics."

Ritter, who has worked as a university administrator, sees no shortage of political people in the academic world. He thinks scientists are under-represented in Congress largely because of technical reasons having to do with election law. Ritter notes that almost all scientists work for incorporated organizations, be they businesses, laboratories or universities, and he says that "this makes it very difficult to run for office." This is because election law bars corporate contributions to campaigns, and contributions are defined to include time off work, use of an office telephone, desk, and so on. "Partnerships," Ritter says, "are much easier to operate out of in campaigns." —ws

Education

Navy funds scholarships for science fair winners

Four new college scholarships were introduced by the US Navy and Marine Corps last May. The awards, each of which is for \$10 000, go to high school students selected among participants in the International Science and Engineering Fair, which was held this year in Columbus, Ohio. The participants in the fair are winners of state and local science fairs. The new International Scholarships supplement the Navy's four National Science Awards. All the awards are granted at the beginning of May each year.

in brief

A new audio-visual package called "Moments of Discovery" is available from the AIP Center for History of Physics for a price of \$85. One of the package's two units, "The discovery of nuclear fission," draws on the center's collection of tape recordings, and includes the voices of Bohr, Rutherford, Einstein, Fermi, and others. The second unit, "An optical pulsar discovery," includes accounts by John Cocke and Michael Disney of their search for an optical pulsar and a live recording—made serendipitously—of their discovery of the first optical pulsar.

A new astronomy newsletter for teachers and librarians, covering new developments in the field, practical suggestions for classroom activities, and references to written and audio-visual resources, is to be published and distributed without charge by the Astronomical Society of the Pacific, starting this fall. Teachers wishing to receive the newsletters should write their requests on school stationery, specifying grade level, and send them to Astronomical Society of the Pacific, Teachers' Newsletter, 1290 24th Avenue, San Francisco, California 94122.

A new science and mathematics center for pre-college teachers, capable of accommodating more than 200 teachers a week, has been established in a vacant school in La Canada-Flintridge, California, as a joint project of the Jet Propulsion Laboratory, the Los Angeles County Schools Teacher Education and Computer Center and NASA. Equipment includes computers, a laser holographic system, a lab centrifuge, and a television studio.

Polytechnic Institute of New York is introducing this fall a new MS program in imaging sciences and engineering. The program, which Polytechnic scientists believe to be the first of its kind in the country, will integrate image processing, optical design, and photoactive materials. Polytechnic developed the program in cooperation with companies including IBM, Fairchild-Weston, Eastman Kodak, and Xerox.

The Astronomical Society of the Pacific has established a fund to support public education in astronomy and to commemorate the work of the late Bart J. Bok (see *PHYSICS TODAY*, December 1983, page 73). The Society has raised \$25 000 so far and hopes to build an endowment of at least \$100 000 to finance a Bart J. Bok Memorial Lecture Series, purchase of library materials, and awards for high school astronomy projects. □