

AMERICAN ENGINEERTM

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OSTP Director Shouts Shortage

We know that this is grotesque, but even with thousands of engineers out of work, there are some incorrigibles who are still shouting "shortage." One of these incorrigibles Professor D. Allan Bromley, on leave from Yale University who is director of the White House Office of Science and Technology Policy; this is especially unfortunate because of Bromley's very influential position.

The following is an excerpt from an interview with Bromley which was published in the 2-24-92 issue of *Design News* magazine (page 146):

Q: Once again we hear predictions of a shortage of engineers. Should such predictions be taken seriously?

A: The one thing we can say with absolute certainty is that we have a very real shortage of American engineers. In recent years we have been granting more than 50% of degrees in engineering at the Ph.D. and the M.S. levels to people born outside the United States. And we're getting to the point where the B.S. situation is really close to that level. Now that does not mean that we've got too many foreigners, it means that we've got too few Americans. It's clear that we have a major shortage of American engineers, and we have to do something about that. We are doing something about it."

Not only is Bromley's shortage claim false, but he used erroneous statistics to support it. The correct 1990 figures for foreign students' shares of U.S. engineering degrees are as follows (from *Engineering Education* magazine, Jan./Feb. 1991, p. 41): Ph.D. degrees, 48.8 percent (that's strike one); M.S./Prof. degrees (M.S. degrees are by far the most numerous kind of postgraduate engineering degree), 27.9 percent (strike two); and B.S. degrees, only 7.8 (!) percent (strike three). That's three strikes; Bromley struck out. Also, foreign nationals' percentage share of degrees actually declined from 1989 to 1990 at the B.S. and M.S./Prof. levels.

Furthermore, these percentages have nothing to do with the condition of the job market. For example, the job market for technical Ph.D.'s is severely depressed.

In the same interview, Bromley also falsely stated that Japan produces five times more engineers per capita than the U.S. The correct ratio is about two if based on total populations or about 2-1/2 if based on the numbers of people of college-graduation age. These ratios still appear to give Japan an advantage; however, there are other considerations: (1) Japanese engineers get most of their engineering education from their employers; (2) in both the U.S. and Japan, large numbers of engineering grads do not go into engineer-

ing; (3) the U.S. graduates proportionately more scientists than Japan, and many science grads here are doing engineering work; (4) the utilization of engineers is an important consideration, and we know that engineers in the U.S. are badly underutilized.



"The one thing we can say with absolute certainty is that we have a very real shortage of American Engineers."

D. Allan Bromley, Director
Office of Science and Technology Policy

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Editor's Column

Editor's Note: The April issue was very late and there will be no May issue. This was the fault of the Editor who decided to get married and move to a new address. The Editor's P.O. Box and the address of AEA are unchanged. I hope to get "American Engineer" back on schedule with this issue which you will note is for June. I thank the many AE readers who mail me articles of interest to working engineers. To turn them into publishable copy, I either have to write an article about them or obtain permission to reprint them directly. The former takes lots of effort; the latter, lots of time.

FEDERAL EMPLOYEES IN PROFESSIONAL SOCIETIES

The Editor's Column in the March issue of AE contained a section entitled "Federal Employees in Professional Societies." It discussed Office of Government Ethics (OGE) proposed federal regulations. These regulations (which were tabled) would curb the participation of federal employees in the affairs of professional societies and professional associations (like AEA). The Editor's Column pointed out that the regulations restricted *participation on government time*. A reader (LF of CA) wrote to criticize what he thought was the bias of that article and to correct certain points of fact. His letter appeared in the Reader's Voice column of the April issue. I thank him for writing.

Mr. LF thinks the regulations are a good idea; I'm not sure. I do believe that some professional societies might disappear without the support of employers for *selected* employees to be on the Board of Directors of the society. This support consists of salary for the approximately 1,000 hours per year that the employee puts into professional society affairs instead of employer business. The selected employees (mostly corporate executives and college professors) are those who will enunciate a point-of-view that benefits themselves and not necessarily U.S. working engineers. The paid time off enables corporate executives and college professors to dominate the societies. Practicing engineers are far less likely to receive this largess, because their employers need them to design the products or perform the services that the company markets. Thus they have scant influence in running the societies, which means they derive scant benefit from being in the society. This lack of benefit is one reason why engineers turn to the AEA, where their voice counts. The moral is to strengthen AEA, so that its voice is also heard. Strength is in numbers.

NATIONAL COUNCIL FOR INDUSTRIAL DEFENSE (NCID)

The May 1991 issue of AE contained an article, "Evans Bill Could Save 100,000 Jobs," by Jerry Zeifman, a member of the AEA Board of Directors and General Counsel for NCID. I regard NCID as a friend of AEA and of the working engineer. The Evans bill would have prevented the Department of Defense from awarding an annual \$20B worth of defense contracts to foreign nations, thus bringing this work back to the U.S. However, Congressional Subcommittee Chairman, Nicholas Mavroules, succeeded in having the bill tabled for an indefinite period. Last month I received a bulletin from NCID, entitled "FUTURE PLANS FOR 1992." I'll quote some of it here.

"Out of a conviction that various so called 'free trade' agreements are actually fostering anti-competitive transnational monopolies that are dangerously threatening to the jobs of Americans, NCID will soon commence litigation in the courts challenging the constitutionality of such agreements. The thrust of our litigation efforts will be to prevent both Congress and the President from depriving our federal courts of the authority to decide cases involving claims brought by American citizens against foreign companies that are unfairly exploiting the American market. Conversely, we are also challenging the authority of international trade tribunals comprised of foreign arbitrators to invalidate laws of the United States. Our litigation

efforts will also be coordinated with a bi-partisan legislative challenge in the Congress, which is in the process of being organized by several Members of Congress who have sought our recommendations and assistance. In addition to the above, we are planning to conduct a conference on International Trade in the fall of 1992—inviting prominent participants to propose effective measures to restrict the exportation of American jobs and revitalize American manufacturing, agricultural, and maritime industries... One of the principal objectives of all of the above activities will be to generate meaningful and constructive debates on the economic and political issues that are likely to be raised in the coming presidential and congressional elections."

ENGINEERING SHORTAGE FORECASTS

AE has published articles about forecasts of a vast future shortage of engineers in the U.S. We have always pointed out that such forecasts are based on supply of but not demand for engineering. Thus they are erroneous and detrimental to the professional well-being of U.S. engineers, as well as the nation's economy. The source of many such forecasts is the National Science Foundation (NSF), which published reports about the future reduction in engineering graduates and called such reduction a 'shortfall.' Of course NSF never corrected the innumerable news articles that translated that word *shortfall* into a future shortage. Now I understand Congress has been probing the shortage predictions and their source, and has actually grilled NSF spokespersons. *EE Times* published an article and *Electronic Design* an editorial about the predictions, the damage they did to the U.S. and the congressional inquiry into the matter. We are fortunate to have permission to reprint the article and editorial in this issue.

MORE ON ENDING THE INDUSTRIAL EXEMPTION

The March '92 issue of AE carried my article "Why End the Industrial Exemption?" It contained a statement that there's a federal law mandating grandfathering, in the event legislation is passed which would jeopardize the careers of professionals already in practice. Grandfathering is a critical issue in ending the industrial exemption, because non-registered engineers already in practice don't want to be thrown out of a career, if licensure is mandated by law, and they fail to pass the PE exam. A number of readers have questioned the existence of a federal law mandating grandfathering. Wishing to learn the truth, I asked a colleague in the National Society of Professional Engineers (NSPE). He responded by saying he'd written to NSPE headquarters and received a reply from the NSPE attorney. The reply stated that the attorney was unaware of the existence of any such law. This complicates the job of ending the industrial exemption. Persons attempting to write new legislation would have to create wording for grandfathering, unless they could find it already written.

An article in the March '92 issue of *Engineering Times* (the NSPE publication) discusses pending legislation in Virginia that would "...require licensure of all state and local engineers in responsible charge of engineering for improvements to real property—terminology that focuses on engineering projects but not products or processes. It would, however, provide grandfather protection to all engineers currently employed by Virginia through June 30, 2010." I would like to hear from Virginia PEs who can get their hands on the wording of this pending legislation. It could save a lot of trouble for those who wish to write new legislation to overturn the industrial exemption.

*Robert Bruce, AE Editor
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Did you introduce AEA to an associate this month?

THE PROFESSION

Congressman hits NSF shortfall study

Continued
its own political agenda. In a statement, Wolpe expressed his belief that the NSF wanted to boost its education budget.

Erich Bloch was the director during most of the period the forecast was circulated. He was not called to the hearing of the House subcommittee on Investigations and Oversight. But a poster board was set up in clear sight of attendees with quotes from Bloch telling Congress about "shortages" of people—even though his employee, House, maintained that his report was not a labor-market analysis but simply a prediction that the number of engineering degrees would drop in the next decade.

The hearing uncovered evidence that the NSF itself was split over House's paper. Repeatedly, conflicts arose within and outside NSF over how House arrived at his forecast. At one point, NSF's own people refused to publish the paper as an official document. The 1986 paper went through 10 revisions and permutations in the next five years in an increasingly frantic attempt to prop up its findings.

Most important to Wolpe, however, was the fact that Congress based legislation, in part, on the forecast. The 1990 Immigration Reform Law, the Excellence in Mathematics, Science and Engineering Act of 1990, and the NASA authorization bill all cited "shortages" as a reason for federal action.

"The credibility of the Foundation is seriously damaged when it is so careless about its own work product," said Wolpe.

Methodology

The subcommittee called 10 witnesses during the April 8 hearing. Besides House, two were from NSF: the new director, Walter E. Massey, and Kenneth Brown, director of the NSF's Science Resources Studies Division. The division clashed frequently with House's Policy Research and Analysis (PRA) division over the forecast's methodology.

That methodology was the focus of questioning of the first seven witnesses, an assortment of statistical experts from other governmental agencies, academia and from the Engineering Manpower Commission of the American Association of Engineering Societies, an umbrella group that IEEE belongs to.

The basic message from those witnesses was that the paper's methodology was flawed. Its emphasis on supply did not take into account job-market demand. It

extrapolated data on the basis of the peak year of engineering graduates. And it did not undergo vigorous peer review.

Facing Wolpe, the persistent chairman of the I&O committee, the gaunt, visibly nervous Peter House defended his work. He said he never meant to have the paper



Rep. Howard Wolpe: This was not good science.

used as a labor-market analysis.

In his written statement, House noted that "PRA found that demographics, specifically the size of the college-age population group, had been the dominant factor explaining the growth in numbers of new NS&E (natural science and engineering) bachelors degrees over the past 25 years."

With a declining population of 22-year-olds on the horizon, House tracked how the number of degrees would likely decline if a "conservative" estimate of 4 percent of graduates took NS&E course work over the next few years. PRA then took one of the peak engineering graduation years and drew a line straight across the chart to past the year 2011. The difference between the likely number of engineering degrees and that line became the "shortfall," a number that one congressional staffer called "meaningless."

House defined demand as "if you pick a period, and suppose a zero growth rate, it's the number of degrees we need."

"We're not comprehending," said Wolpe, shaking his head.

"All we did," House said, "was project the number of degrees in the natural sciences and engineering that was going to fall from 1986 on." And, he said, they have. "We did not do a market analysis related to jobs."

Study use

House was then asked why the study was called "Future Scarcities of Scientists and Engineers." The "scarcities" title, he said, "was for

those who felt there should be more degrees in NS&Es."

Wolpe then pressed the bow-tied analyst about how his study was used. Wolpe noted that House's boss, Erich Bloch, talked about a "cumulative shortfall" in engineers and scientists in arguing for higher NSF funds in 1986-87. "He frequently mentioned your numbers. Did you ever remind Bloch you were addressing only one point? Did you ever go to him?"

"No." Then, in an unintentionally funny moment, House added, "I didn't pay attention to Erich's speeches."

House repeated his assertion that "my input was one of many." He later added that if Bloch received other numbers from elsewhere, "it was within his purview to translate them into a shortage." But, House added, "he could not make that kind of statement from my numbers."

The hearing revealed that while one division of NSF was warning of shortfalls, another dismissed that contention.

Wolpe presented a statement from Joel L. Barries, a former study director for the utilization studies group of the Science Resources Studies division of NSF. In it, he said, "in 1989, I supervised the preparation of a report . . . which had a new section on projec-

tions based on the SRS model."

The SRS concluded that the labor market "would adjust to any spot shortages in personnel."

Barries said the model prepared by its sister division at NSF, House's PRA unit, befuddled them. "Even the SRS staff . . . could not always follow



Erich Bloch: Predicted shortages of personnel.

the reasoning and methodology."

The PRA model tracks engineering degrees. The SRS forecast model "breaks out supply into four components: new degree holders, re-entrants, immigrants and up-grades," Barries pointed out. Witnesses at the hearing confirmed that any study of labor-market shortages must take those factors into consideration and look into demand and market forces.

The SRS attempted to publish its findings. But the report was held up for a year. The SRS director met with House to find out why. "At that meeting," Barries said, "Dr. House said the problem was that the report did not support the director's position that there would be serious personnel shortages in the 1990s."

At the hearing, House said, "I can't say if I said that."

Asked by Wolpe whether the "pipeline study" had an impact, House replied, "I can't say." Wolpe cited the numerous occasions in which it was quoted, and asked incredulously, "And you're not sure what impact it had on policy?"

"I just don't know."

House conceded that by mid-1990, the NSF itself backed away from the shortage conclusions. In 1991, the word "scarcities" was removed from the title, as was the prediction there would a shortfall of 675,000 engineers and scientists.

The Michigan congressman, who was the only representative on the panel (except staff) for most of the hearing, conceded that when Democrats and Republicans present data, people recognized the potential of a built-in bias.

"No one expects the NSF to play that game," said Wolpe. "This was not good science."

Bloch has since retired as director of NSF.

NSF study under fire on the Hill

By ROBERT BELLINGER

Washington — A congressional hearing last week fiercely criticized the controversial prediction made five years ago by the National Science Foundation that the United States faced a massive shortage of scientists and engineers.

"That prediction . . . was the equivalent to shouting 'fire' in a crowded theater," said Rep. Sherwood Boehlert, R-N.Y.

The NSF paper predicted a shortfall of 400,000 to 692,000 engineers and scientists. It became one of the most widely quoted papers the NSF ever produced—and one of the most controversial.

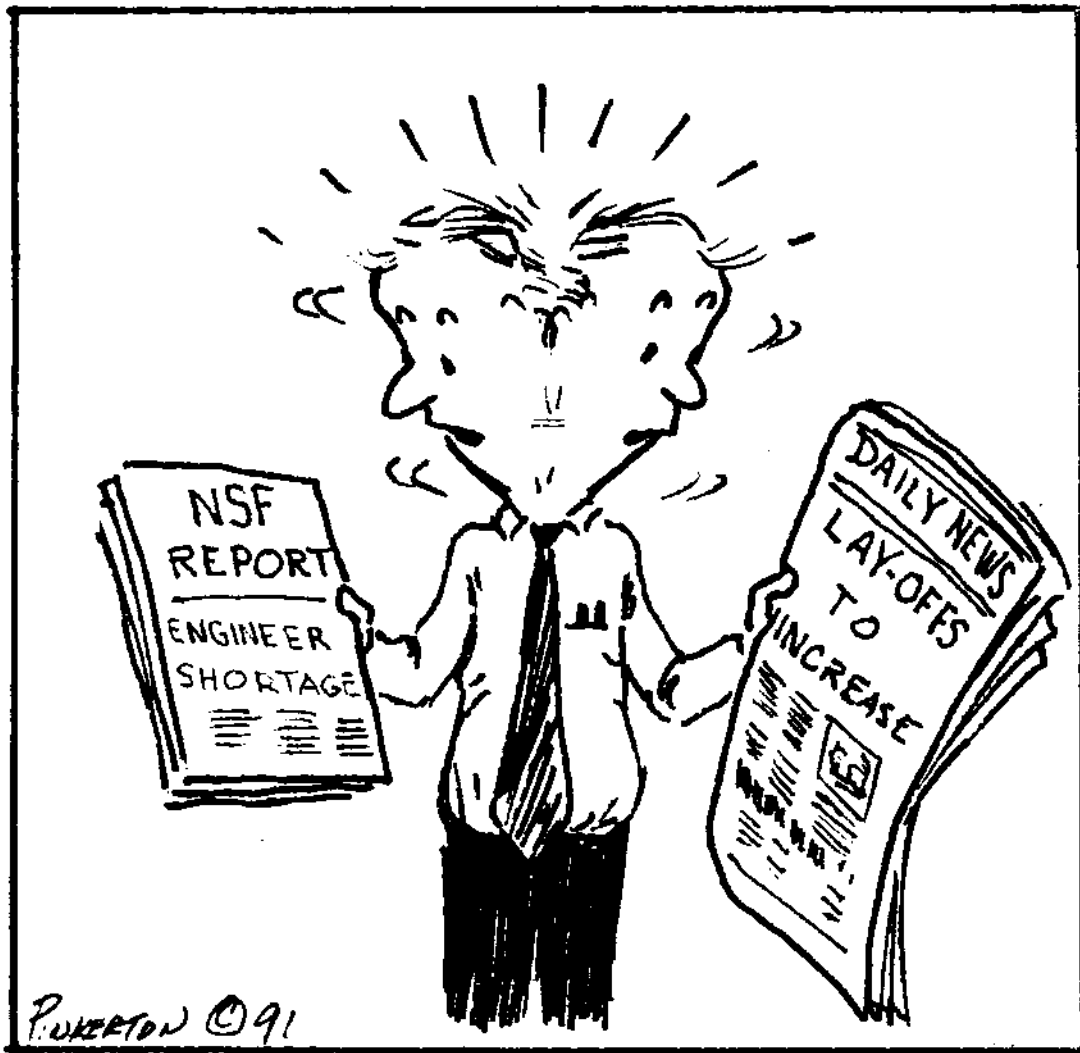
Last week, the man behind the prediction, Peter W. House, the director of the Policy Research and Analysis division of NSF, was grilled for more than two hours on methodology, squabbles within NSF over the report, and why he remained silent for five years while the media, executives and Congress spread the news of an impending shortage.

"An overall shortage has never materialized," said Howard Wolpe, D-Mich. "There may even be an oversupply." Wolpe is the chairman of the Investigations and Oversight subcommittee of the House Committee on Science and Technology, the subcommittee looking into the NSF "pipeline paper."

Questions also arose whether NSF used the predictions to "project a sense of crisis" and further

Continued

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Reader's Voice

This column in the "American Engineer" is for readers to voice an opinion relevant to any issues that affect the professional life of an engineer. Articles or letters should be in good taste and not slanderous. Each submission should include the name, address, home and business phone of the writer. Except for short excerpts, we will include the writer's name, city and state (unless the writer requests anonymity). We reserve the right to edit each submission, as long as we don't change the gist of it. We assume that authors who send us material have accepted these conditions, unless they instruct us otherwise in writing.

Editor: There has been a controversy within IEEE, because of approximately \$100K that IEEE spent for ads in prominent newspapers, praising America's engineers for the high tech products that made the U.S. so successful in Operation Desert Storm. An AE reader wrote IEEE stating they should spend a like amount on ads in the same newspapers, which tell there's a surplus, not a shortage of engineers in the U.S. and thousands of U.S. engineers are now out of work. IEEE published his letter. I wrote IEEE with the same message, and my letter was later published also. The reader really deals with two issues: first that the IEEE ads were a misplaced investment, second that U.S. industry is exporting our manufacturing capability and the jobs that accompany this capability.

From Frank Smerke of CA: - "Many thanks for your letter to IEEE supporting mine. Mr. Whitelaw (then IEEE VP) responded to my letter by saying 'The ads have been praised by the decision makers...'. (Editor: Naturally decision makers, whoever they are, would praise the IEEE ads. This is pure motherhood, the life-blood of decision-makers.) I really burned, when I read 'IEEE-USA in the months ahead will utilize similar public service ads...'. This has got to be wasted money. The administration is undercutting not only the engineering profession, but also the entire USA industrial base. We are scheduled to eternal interdependence with the Third World and its poverty. Our IEEE leaders are cooperating with administration efforts to make the USA competitive with countries that have thirty-seven-cents-per-hour wage rates. GM closes USA plants and opens others in China, where no one has money to buy these cars. Guess where they intend to sell them. Our domestic auto industry will vanish, like consumer electronics. Our steel industry is almost gone, and they're after our aircraft and computer industries. We must do everything possible to expose the Council on Foreign Relations (CFR). CFR is the preferred new name for the Trilateral Commission. I would like to see you continue to challenge the competence of IEEE-USA, as I have."

From LF of CA: - "The old-line engineering societies engage in heavy meddling in pre-college education - MATHCOUNTS, 'Engi-

neers for Education,' (formerly titled the National Coalition of Engineering Societies for Precollege Mathematics and Science Education), etc. Unfortunately this activity helps reinforce the popular misconception that the supposedly poor quality of American math and science education threatens to cause future shortages of engineers and scientists. Nothing could be further from the truth. For example, the percentage of SAT math scores over 600 was high in 1991 - 17.9% after dropping to 14.4% in 1981. Also on National Assessment of Educational Progress (NAEP) assessments, the percentage of students at advanced levels in math (8.5% in 1971, 8.2% in 1988) and science (8.5% in 1971 and 8.2% in 1988) have changed little. Furthermore the subscores on all three segments of the GRE general test rose between 1981 and 1990, despite an increase in students taking the test. International comparisons often unfairly pit average American students against the best students of foreign countries and ignore the fact that Americans tend to spend more years in school than people in most foreign countries. Indeed Gerald W. Bracey, a research psychologist and policy analyst for the National Education Association, aptly commented in Phi Delta Kappan magazine ('Why Can't They Be Like We Were?' Oct. '91 pg. 110)."

(Bracey Quote) "The authors of *A Nation at Risk* launched a crusade for school reform by claiming that America was drowning in a 'rising tide of mediocrity.' **There is no such tide** (emphasis in original). Those who penned this document were sometimes merely naive in their interpretations, but at other times they verged on being criminally uncritical about the misinformation they were fed. (One wonders whether they understood it)."

(Mr. LF continues) "Also I feel that since teachers do not butt into engineers' work, engineers should not butt into theirs. If I were a teacher, I would resent meddling engineers implying that teachers are not doing an adequate job. And I feel that with all the problems plaguing the engineering profession, we should be using our precious spare time to help ourselves, not pre-college education."

From Committee on Science, Space, and Technology (U.S. House of Representatives) to Richard Tax: - "Thanks so much for your help. The engineering community really responded in a meaningful and useful way."

Editor: Below is a letter from a lady in U.S. academia to the editor of "INSTITUTE" (the IEEE monthly tabloid). It appears that she, like many other observers of the U.S. technology scene, is skeptical of the benefits of such projects as "Discover E," which are aimed at impressing Americans with the importance of science and engineering. In this letter, the emphasis is in the original.

From Prudence Mumbusch of NYC: - "I thank you for two highly informative articles by G.F. Watson in the March/April *Institute*. It

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(Reader's Voice continued)

seems that strong forces within government and business are working assiduously to increase the number of engineers available in this country.

"With all the love and respect to IBM's Jack Kuehler, NASA's Bonnie Dunbar and the other elite engineers joining them in the 'Discover E' project, as well as the corporate sponsors behind it and the E for effort, I think many will agree with me that those people are slightly out of touch with reality.

"Not one of the corporations and government bodies mentioned in the two articles is increasing its employment of electrical/electronic engineers. Many of those companies have laid off thousands of workers, including engineers, in the last few months. While a few engineers might be working on the wonderfully interesting things described in the articles, most of the engineers who still have their jobs are constantly assailed by attempts of management to reduce them to mere drones. Many engineers who had spent decades in developing their skills and who had sweated blood for the good of their companies and the 'competitiveness' of our country, are now out of work. Careers of twenty or thirty years now lie in ruin.

"In the name of maintaining our 'competitiveness' self satisfied and satiated 'leaders' engage in social engineering for the purpose of turning more people into engineers. Nobody wants to hire or retrain those who have previously worked hard and proven their

worth. **Now, even though they already possess the qualifications that are presumably needed so desperately for a 'well-educated, technically literate workforce for the future,' those worthwhile people are not wanted anywhere.**

"Please tell the anxiety-ridden CEO's mentioned in your articles that the problem they are worried about is already solved: **The highly educated and skilled engineers they want are out there by the thousands. All they need is jobs!** Now will someone please solve the problem of where the demand for engineers is going to come from. Do the government and industry leaders have anything in mind concerning that? **If so, they are clearly attempting to exclude present day engineers.**

"It is morally obscene and grotesquely repugnant to tell young people, any people, that education is the key to the future, while at the same time our nation's most highly educated individuals have to go hat in hand begging for employment, and our top universities are downsizing their engineering, math and science departments. Children are affected too; I know of many who had to drop out of college because their parents lack suitable employment.

"Again, thank you and George Watson for bringing this alarming distortion to the attention of the science and engineering community."

*Robert Bruce, AE Editor
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Separation Agreement

No this is not an article about marital discord; it's about separation from employment. Several readers, including Dr. Keats Pullen, have mailed me a copy of a separation agreement that a large corporation requires its employees to sign, as a requisite for their collecting certain separation benefits. I think maybe a lawyer wrote it, and I reprint it verbatim. Notice the 'gag rule'.

I, _____ for and in consideration of the promises and obligations as set forth in the following paragraph, hereby release and discharge the Company and its officers and agents, from all contracts, agreements, claims, actions, demands, rights, benefits (except those required by law), and suits of every nature and description arising from the employment relationship previously existing between the Company and me. I understand that this includes any claims which challenge the company's right to terminate its employees, including claims that may arise from Federal or State Civil Rights legislation and/or the Age Discrimination in Employment Act. It is also understood that, by my acceptance of these promises and obligations, the Company releases me from obligations and actions of a similar nature, with the exceptions of agreements regarding trade secrets or competition based on knowledge gained as a result of my employment. I also agree not to assist in any litigation or investigation against the Company—except as required by law, in which case I will give timely notification to the Company. Furthermore, I will keep confidential the terms, nature or scope of this agreement or the fact that such an agreement exists. I also agree not to disclose to anyone any information obtained in the course of my employment and related to the functions of any position formerly held with the Company.

In full consideration of my signing this agreement, the Company will:

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I understand that this Agreement between the Company and me is not and shall not be construed as an admission of any violation of federal, state or local law or regulation or of any duty owed by the

Company to me. Furthermore, I have been encouraged, and have had ample opportunity to discuss and obtain legal counsel concerning this action with individuals of my own choice not associated with this Company.

I sign this agreement of my own free will, and acknowledge the consideration given me to be adequate and satisfactory, and that neither the Company, nor its agents, representatives, nor employees have made any representations to me concerning the terms or effects of this Agreement other than those contained in this Agreement.

(Here appear lines for employee name, signature, date, signature of company representative and date of his/her signature.)

The Age Discrimination in Employment Act (ADEA) supposedly protects employees against age discriminatory hiring, firing, layoff, promotion, retirement, etc. However corporations have found a way of circumventing the spirit, if not the letter, of the law by separation contracts like the above. If the company in question actually had an age-discriminatory layoff or retirement, employees who signed this document could not avail themselves of the protection of ADEA. There was Congressional legislation written to plug this loophole, but it never got passed. Can any lawyer tell me if this agreement has some illegality?

Robert Bruce, AE Editor

Sample Copies Available

Members of the American Engineering Association are encouraged to submit names and addresses of friends and associates who they think would be interested in receiving a sample issue of the "American Engineer."

Names should be sent to: AEA, P.O. Box 820473, Fort Worth, TX 76182-0473.

Editorial:

Congress Meets The NSF

The mid-1980's study conducted by the National Science Foundation—yes, the one that insidiously predicted a looming engineering shortage—has prompted an investigation by Congress of that organization. Hearings initiated by the House of Representatives' Sub-committee, began in early April. For that hearing, the president of the American Engineering Association, Billy E. Reed, submitted written testimony that included the statement, "I do not know of a working-level engineer who believes the National Science Foundation is a friend of the engineering community." Here we have a U.S. government agency, the NSF, that is not "a friend of the engineering community," but rather has done harm to all engineers doing their part to improve the country's competitive technology stance.

According to an article in the *San Jose Mercury News*, "The National Science Foundation official who did the study, Peter House, defended it by telling the panel that he sought to depict a hypothetical situation. He said the study was never intended as a forecast of what might happen in the real world." Unfortunately, in that real world, real engineers have to practice their profession and earn their salaries.

In his written testimony, AEA's Reed notes: "NSF itself has a vested interest in having a shortage. With a projected shortage, NSF is in a better position for additional funding, which keeps the bureaucracy expanding. The only loser is the working-level engineer who has no representation in the process."

Reed concludes with six recommendations: "Require any study or survey to be reviewed by an independent, neutral body before being released or 'leaked' to the public or press. This body should be representative of the engineering workforce...Require the effects of current market conditions to be considered as part of the overall study or survey as a leveling mechanism...Require NSF to spend as much resources and effort in 'recalling' a faulted report as is spent in publicizing the release of the report...Stop NSF from lobbying Congress on such issues as immigration, etc. It's one thing to testify on credible, scientific evidence, but quite another to spend taxpayer money to lobby for the NSF point of view...Place working-level engineers in areas of responsibility within this process...Stop funding ESP—engineering shortage propaganda. This money could be better spent to create jobs for engineers." Amen.

Steve Scrupski, Editor-in-Chief

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Reach Out

AEA would like to reach people in all engineering disciplines. We would also like to obtain the names and addresses of the publications and editors that serve the many engineering disciplines. To do this, we need the help of our membership. This is an opportunity for you to participate.

Please, clip and mail the masthead with the mailing address and editor's name of your favorite engineering or technical publication to AEA. Eventually, we will be able to reach them and keep them and their readers up to date on AEA events.

Reach Out to your congress, senate, other representatives and the news media. Your "American Engineer" is our way of reaching you with facts, articles and information concerning engineering issues. You can copy these articles and send them to your representatives and the news media to support your concerns.

Reach Out to an associate and encourage them to join and support the AEA. If you're the bashful type, just place your "American Engineer" or a copy in their mail to be read at their convenience. You can also Reach Out to an associate in another department, company, division or state by mailing them your copy of AE. We encourage you to copy AE for a friend or associate in the hope that they will also support our efforts.

Reach Out to the active volunteers that are making this publication possible. Tell them what you like or what you dislike. Provide them with questions, answers and information or just a hand written

note of appreciation. Believe me when I tell you that it is important to let your volunteers know that you care.

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AEA Reaches Out To ASME

MARCH SPEAKER QUESTIONS THE MYTHICAL SHORTAGE OF ENGINEERS

At the March 25th meeting of the North and Mid-Jersey ASME Management Chapter, (prior to the National Science Foundation oversight hearing), Richard Tax vice-president of the American Engineering Association, challenged the idea that there is an impending shortage of engineers in this country. The historical demand for engineers seems to be changing. Defense industry cutbacks, industrial downsizing, and increasing numbers of "early retirements" in recent years are making unemployed—and under-employed—engineers common. In spite of all of this, colleges are increasing their efforts to encourage students to study engineering.

Tax's talk led to discussions of actions that could improve the situation. The discussion lasted for more than an hour and ranged from who might have some control over the issue, what options are available, and how engineering societies and individuals can affect the situation. There were lively comments about technical obsolescence, engineers moving out of engineering into management, and the status of engineering in the eyes of both employers and engineers themselves.

Those who attended left with a new perspective on the conventional wisdom, and some thoughts about how the ASME and other engineering societies might be involved to their members' benefit.

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A Plan To Utilize Displaced Engineers

If imitation is the sincerest form of flattery, then admiration and approval run a close second. I've heard of a plan by the Task Force on Pre-College Math and Science Education of the American Association of Engineering Societies (AAES) that merits some attention. The AAES, as you know, is an umbrella organization of engineering societies. It has no rank and file members, only delegates from other societies and operations personnel. The AAES plan is to place 100,000 qualified volunteers in each of the primary and secondary schools in the U.S., to advise the schools on how to improve the math and science education. This is not the focus of my admiration, so read on.

The Regional Committee of IEEE Region 1 (northeastern U.S.) has suggested an interesting twist to the AAES plan, which I hope the AAES subscribes to. The twist is to utilize the services of displaced engineers, as advisors to each of the 100,000 schools in the U.S. These engineers would be in a good position to give grade school and high school students realistic information, both about math and science education and about the profession of engineering.

I'm aware that some AEA members are disenchanted with IEEE as an avenue for true improvement in the professional status of working engineers. This is one possible reason these members joined our organization. But I have to give credit where credit is due.

Certain groups in IEEE really work for the betterment of the profession. The problem is that the IEEE Board of Directors often defeats their efforts. The most important thing IEEE should do for its working-engineer members is to enunciate the engineers' professional goals as goals of IEEE, and then actively work toward those goals. That's what AEA does.

A major need of the engineering profession is to reduce the vast glut of practitioners, first by raising the standards of the profession, and secondly by limiting the unregulated entry of foreign nationals into the U.S. engineering work force. The top level of IEEE does not address this problem. In the past, when there was a surplus of engineers, the IEEE attitude was laissez-faire. When there was a perceived shortage (which was never real), then IEEE supported the outcry for an increase in engineering enrollments. IEEE has recently tempered its cries about a shortage of engineers, but it doesn't go far enough.

Nevertheless I admire and approve of the IEEE Region 1 plan to utilize displaced engineers to advise schools on math and science education. Those of our readers who agree can contact AAES at the following address and offer support for the suggestion. Write to: American Association of Engineering Societies, 1111 - 19th Street, NW, Suite 608, Washington, DC 20036.

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