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The day the experts came to town

Nuclear Plants-

Forum and

Story and photos
by John Frees

After the Idea for a nuclear energy forum was twice turned down by the County Board of Supervisors as being "too controversial", 95 local physicians donated funds out of their own pockets so that San Luis Obispoians could finally have a chance to separate the emotional appeals from the facts concerning nuclear energy.

Those that showed up for the two day debate, however, heard "facts' ' from one side that rather neatly contradicted the "facts" from the other side, leaving the question of the safety versus the benefits of nuclear power still open to contention. At the end of the second day of the forum, after listening to the multitude of speakers, moderator Art Seidenbaum asked those in the audience who had changed their opinions towards nuclear power to stand. Only one person could be counted standing out of the crowd of several hundred.

If a scorecard had been kept on the quality of speakers present, it would seem to be: opponents 10. proponents 2. The line-up of lackluster spokesmen on the side of nuclear energy made the "bal anced" debate lopsided. Add a definitely anti nuclear audience and you have what amounted to a rout for the forces of alternative energy sources.

Friday night brought the largest turnout with the crowd estimated at around 4,000 persons, filling the Cal Poly gym to the capacity. The audience eagerly awaited an interesting and Informative debate be tween two of the giants on each side of the nuclear question. Drs John Goffman and Edward Teller. Dr. Gofman. author of the book. ***Poisoned Power,*** has devot ed several years alerting the public to the dangers of basing our energy source on highly radioactive poisons. He should know, he was associate Director of Lawrence Radiation Laboratory from 1963 to 1969. He is one of the discover ers of four isotopes and the slow and fast fissionability of Uranium 233. and co inventer of the two processes of pluton ium separation. He is also a medical doctor.

Dr. Teller is an equally unimpeachable expert In the field of nuclear research. He has worked at Lawrence Radiation Lab since 1954. and now holds the Associate Directorship. He has a long list of awards and achievements in the nuclear field.

Now these two men were squared off to debate the biggest Issue San Luis Obispo could face: Whether Diablo Can yon. or any nuclear power plant, is worth the risk Dr. Gofman was first, diving right to the heart of the issue, urging people to refect reactors as a means for short term energy source, refect the unstable breeder reactors forever, and vote yes on the upcoming California initiative that tight ens the regulations surrounding the nu clear industry

Promoting energy conservation in America rather than a reliance on nuclear reactors. Gofman blasted members of the scientific community that recently warned of the effect the refection of nuclear ener gy could have on our economic and social cxistance

"I'm dismayed that a number of people seem to be more politically oriented to the level that I would call cheap, servile politics." Gofman said evenly, "and try to make people believe that conservation of energy represents going back to the caves, no lights, no fobs, the end of California's economy. That's vicious, per nicious. and false. What people mean by conservation of energy 1$ to stop wasting energy."

Gofman also cast doubt upon the claim by the nuclear industry that "no one has been hurt by a commercial nuclear power plant", telling the audience that in a study done by himself and Dr. Tamplain. they found radiation levels from nuclear power plants contribute to 32.000 extra cancer deaths per year. He admitted that the problem with his estimation was the dif ficuhy in pinning doum these deaths on exposure from a particular source since it normally take 10 to 20 years for the exposures of a low dose of radiation to develop into cancer.

"Up until 1969. the AEC (Atomic Ener gy Commission) and the nuclear industry with elaborate PR work promoted the idea that below a certain level radiation wouldn't hurt you. There never was. there is not now. any evidence that there's a safe amount of radiation ."

Of course, stated Gofman. the AEC de nied such statistics vehemently, assuring the public that he was wrong by as much as 10.000 times But when the Commit tee of the National Academy of Scientists completed a two year study on the issue, they found that Gofman and Tamplain were within a factor of ten in their estima tion.

Furthermore. Gofman went on. the energy yield from uranium fueled react ors is far less than the AEC would have you believe. He figured with the limited amount of uranium available, nuclear re actors could only supply about 10 to 15 percent of our energy needs.

Another alternative mentioned by Gofman besides conservation was solar power. He read data put out by ERDA (Energy Research & Development Agen cy). stating that solar collectors on 3% of the land with the efficiency of only 10% could produce the total energy require ments for the country for the year 2000.

He closed by warning the public against believing unequivocally the information released by the AEC. The nuclear indust ry says they don't release one particle of plutonium in 10.000. Gofman pointed out. but a look at the record proves otherwise. For example, the fire at the Rocky Mountain Plain in 1969. released about a pound of highly radioactive and poisonous plutonium on to the ground surrounding the plant.

When he finished his speech, he was given a tumultous round of applause. The members of audience wcanng the "We NEED Diablo Canyon" buttons looked glum

Then, with little fanfare. Art Seiden baum Introduced Dr. Edward Teller. Pro ponents and workers at Diablo Canyon waited eagerly for this well respected member of the nuclear industry to cut Dr Gofman's arguments to pieces A hush fell over the crowd as he approached the microphone: opponents held their breaths, proponents grinned It was as if their team was behind 3 to 0 in the bottom of the ninth, but the bases were loaded and here comes Casey to bat

But instead of showing up with a 42 . ounce bat to blast the ball out of the park, it was as if Teller carried a football to the plate and tossed it to the first baseman.. For twenty minutes. Teller labored with the English language, telling the crowd about the loss of credibility of various members of the scientific community, the wasted energy he found In the bright lights used for the videotape machines his recent visit to Indonesia and the poverty he found there.

Members of the audience began to look at each other oddly, as if to say. "Who is this guy?" Then they began to leave. When Teller finally began to speak about nuclear power, its safety and value to America, it was nearly too late. At good 25% of the listeners had fled into the night in search of better entertainment.

Teller said that the world uses 240 "quads" of energy per year A quad is a quadrillion BTUs (British Thermal Units). This condemns 80% of the population to energy poverty, he said, and by the year

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2000. the world will need 400 quads of energy per year just to maintain the same level as today. which would still make 80% of the world "energy poor" Oil gives us 165 quads, but it b a diminishing source Coal gives us 65 today, but can be accelerated to 300 quads by the year 2000. He feh solar energy would produce no more than 30 extra quads per year, even with an expanded program of de velopment.

That leaves nuclear energy. But instead of proving Gofman wrong. Teller tiptoed around the question of public safety. "We have produced an Inexpensive form of energy." he said, "nuclear cncjgy. It is not the best imaginable We should try to improve it. but we have it ***now."***

Although there had been some doubt about participating in the debate when he learned that Dr. Gofman would be his opponent. Teller said he was glad to have an open forum such as this because the criticism will help the nuclear industry.

"We have an excellent chance to make nuclear energy as clean as humanly pos sible. Once we do it. I think the rest of the world will copy us." But he warned. "If ***wc*** don't do it. people more hard-pressed. In a greater hurry, will disperse radio activity more freely. It may even dnft back on ourselves. Let's not count ourselves out of the race."

Where Gofman spoke arrogantly, auth-oratativcly. Teller shrugged and qualified his remarks, treading lightly on the Issue of nuclear safety.

"It is nonsense to say that anything is safe. That anything is completely safe. Medical doctors know • • and all of us should - that they arc treating an In curable disease called life That there is no solution. There is only the possibility of a reasonable balance to reduce the hazards where we can. and to understand them whenever possible."

Waving his hand in the direction of Dr. Gofman. whom Teller refered to only as "the previous speaker." he cited Gof-man's statistics of 32,000 extra cancer deaths per year due to nuclear radiation, and told the audience that he didn't know whether his opponent was right or wrong.

"Let me add." he said. "That I suspect, that he docs not really know whether he is right or wrong " The proponents gave him scattered applause.

"When someone is exposed to heavy doses of radiation." he continued. "We know the consequences. Light doses - • such as background radiation give ef fects which are discoverable by statistical means."

Teller, who said he preferred uranium fueled reactors to plutonium fueled ones, told the crowd that a uranium reactor In Canada has been safely operating for years, that it could be a demonstration of the reliability and security of nuclear power plants.

In closing, he cautioned the people; "Nuclear reactors could make -In the next 25 years • • a great contribution. But in a half year or so. all of you will go to the polls. I'm not sure you realize how crucial your vote is going to be A number of reasons • • rising costs, exaggerated criticism, is giving the nuclear industry a hard time. If this initiative passes, and other states follow California, we will stop nuclear energy and a worldwide energy shortage will result."

Saturday morning, the audience was composed of a few hundred dlehards scattered throughout the gym. waiting for the first speakers to begin the debate on "Heallh Considerations." Many a pinch ed. sleepy face squinted out Into the brilliant October sunshine, members of the press yawned and gazed with heavy-lidded envy at the few who thought to bring along thermoses of coffee.

Dr. Cyril Comar started things off for the proponents, facing Dr. Gofman on the subject. Dr. Comar has 30 years under his belt working with radiation biology, and is currently the director of the Environmental Assessment Dept, at the Electrical PoweT Research Institute In Palo Alto.

He told the audience that they can expect less and less from fossil fueled energy, forcing us into "conservation until it hurts, then we have shortages."

He cited the dangers from pollution in coal-fueled power plants, and contrasted this with the Environmental Protection Agency's figures on cancer deaths based on 1200 reactor-years of. experience. They announced that only 0.2 of a death per year could be contributed to radiation from nuclear power plants.

He concluded that the low risk of nu clear power and Its potentially high yield of energy makes it much more desirable than reliance on coal as our main energy fuel.

Dr. Gofman disagreed with Comar's estimation of the unavoidable dangers of coal fired plants, saying. "When we ask the nuclear industry how to solve the difficulties with the breeder reactor, they say. 'No problem.' We ask them about waste storage, again. 'No problem.' But ask them how to solve the problems of coal? ItU take us a thousand years to learn.'"

The energy industry won't do anything about cleaning up coal or nuclear-fueled plants, unless they are "grabbed by the scruff of the neck and forced to." Gofman said. And again he referred to his statistics from the previous lecture concerning his estimation that 32.000 extra cancer deaths are being created due directly to nuclear power, not to mention 1.000.000 people that have already been con demned to death from nuclear weapons testing in the last 30 years.

In his rebuttal to Gofman's speech. Comar opened his remarks by blurting, "In the nuclear Industry, they have some very bright people, they have some very stupid people: most of them are medi ocre." He went on to tell the audience that the legislatures and the laymen have too little data to be in a position to judge the question of nuclear power -- it should be left to the experts.

Dr. Douglas DeNike, a psychologist and coordinator of the Nuclear Initiative Task Force, stood at the microphone at the beginning of the debate upon the ques tion of safety, and deadpanned. "What the nuclear industry is telling you is that they haven't killed anyone yet. so give them a chance "

Then, reading from a report completed after the dlsasierous fire at the Brown's Ferry Reactor in March of this year, he pointed out several deficiencies in super vising. training, and equipment. These led to the fire that cost $100 million and may force the expenditure of several hundreds of millions of dollars to Improve the safety features on the nation's other 54 reactors now in operation.

DeNike. considered somewhat of an expert in terrorist techniques, told the audience of the weaknesses in the secu rity systems at many plants he has in spected. He cited the four attacks by gucriHas at reactors In France as examples of how easy it would be for the same situation to occur here.

Dr. Lawrence Grossman. DeNike' s opposite on the question of safety, is a specialist in neutron transport and nu clear reactor theory. He called himself a "rational humanist and political-liberal" in his opening remarks, and added. "I can only look at the risk of nuclear power compared to other forms of energy gen eration."

Using the analogy that if one wanted to reduce to zero the possibilities of food poisoning, one should stop eating. Gross man said if people felt the same about the dangers of nuclear energy, then they should be prepared to starve for energy.

"There is one chance in 17.000 of a core accident resulting in meltdown." Grossman said, which would mean such an accident could happen once every one and three-quarter centuries.

D Bertram Wolfe was the proponent for the industry on the subject of waste disposal, but he spent 15 minutes of his talk placating the audience with nuclear PR. such as "The dose you get from watching TV two hours a day is eqiii valent to the radiation from a nuclear power plant." and "We have enough radium in the oceans that if we took all the plutonium from all the nuclear power plants for 100 years and threw it into the seas, we would raise the radioactivity only 1 100 of 1%."

When he finally got around to the discussion of wastes, he told the audience

(continued on page 6)

Forum and Againstum

(continued from page 5)

that salt mines would be the safest, not counting the rather leaky one recently considered by the AEC in Kansas.

Dr. l.e$lie Grimm, zoologist and psychologist from the University of Washington. has been touring California as an informaiton specialist on nuclear energy, working with the organization Project Survival to alert people to the hazards of nuclear-fueled power plants She began her speech with a status report on the nuclear waste re processing plants, indicating that many are not operating due to construction or safety problems. The three that are presently being built cannot keep up with the demand. Grimm said, and by her calculations, a new plant would have to be built every 18 months to handle volume of nuclear waste being produced.

The long term storage of nuclear waste is the biggest problem facing the nuclear industry, she indicated. Although salt mines seem the best place since geologically they won't shift for several thousands of years, present experiments with radioactive materials and salt crystals show the salt may allow the radioactivity to leach to the surface or pass into the water table.

She mentioned the short term problems the Industry is having with storage, while waiting for suitable permanent areas to be found, as In the Hanford plant In Washington, where over 100.000 gallons of radioactive wastes have leaked Into the ground from rusty drums.

But by far the largest problem is the reactor itself.

"How do you take it apart when you can't get near it for more than a few seconds at a time?", she said. "And even if you could, where would you put it? Dismantling it would cost at least as much as building it. Probably the only real solution will be to cement it over like a tombstone."

Since the wastes last for several thousand years, she argued, do we have the tight to burden future generations with these problems?

After a well deserved lunch break, the interested citizens of San Luis Obispo returned for another round of talks on the nuclear question.

Michael Peevey discussed the economic implications of nuclear power, including a seemingly well-researched report of the result that the passing of the upcoming Nuclear Initiative could have on our economy. Peevey. speaking in well-modulated tones that reached to all corners of the cavernous gym, was perhaps the first speaker on the proponents who hit the issues head-on in a powerful and convincing manner.

He said the initiative is unnecessary because California already has the State Energy Commission whose job it is to regulate nuclear power. He thought the legislatures had too many other bills to consider each year to be able to judge whether nuclear power should be continued.

The economic impact of the banning of nuclear power would result in higher electric bills for consumers for three reasons, he pointed out. First-, someone had to pay for the plants already built or under construction. Secondly, replacement plants that burn coal or oil would have to be built to offset the nuclear energy loss. And thirdly, a reliance on oil can only mean higher prices from the OPEC countries.

David Dinsmore Comey. Peevey's opponent. came to the conference equipped with charts and graphs that he handed out to all members of the audience. He told them he wasn't merely going to talk about the inefficiency of nuclear plants, he was going to teach the audience how to recognize the inaccuracies of the data put out by the nuclear industry (for themselves).

Explaining capacity factors (the amount of power a nuclear plant should put out compared to the amount it actually produced) Comey showed that most of the operating nuclear plants are falling far short of their design potential Considering their high initial expense compared to fossil fueled plants. Comey said he found that In the long run. nuclear power plants actually weren't worth the trouble or danger to have around

On the subject of Energy Alternatives. Lee Schipper. an Information Specialist with the Energy Resources Group at UC Berkeley, said he believed conservation to be a "miraculous source" of energy He gave the audience many examples of energy waste, and suggested ways to save extra energy. He feels 5.000 megawatts can be saved by 1980 through conservation.

as the Director.of the Radiation Center, is also Department Head of the Nuclear Engineering section at Oregon State University A handsome, impassive Chinese gentleman. Dr. Wang Impressed the crowd with his expertise in the energy field.

He opened by agreeing with everything Schipper had said, but felt the young man was "to naive " Wang does not feel that Americans will work to save energy where it interferes with their convenience or causes them additional expense

Wang examined some of the alternatives mentioned in the last 10 years, and. using figures derived from a Ford Foundation study of future energy needs, he showed that even with nuclear power in heavy use. there will still be a gap in the energy needs for a hungry tomorrow. Claiming solar energy can only produce 11-17% of our future energy requirements. Wang said. "Whoever said solar energy is here right now doesn't know what he's talking about"

"The minute risk associated with nuclear power." Dr Wang said in closing, "is insignificant compared to the social and economic risk we are running by not developing that energy source to its fullest."

Art Sidenbaum couldn't hold the weary audience in check after the nuclear education marathon. As soon as the question and answer period between the two men was completed, the crowd surged out into the warm afternoon sunshine, grateful that the forum was held, and probably more grateful that it was over. The amount of raw information that washed over the collection of minds in the audience. could, in retrospect, make the issue of nuclear-fueled energy even more confusing than it was before the forum

Meeting the Father of the H-Bomb

an inquiry upon Dr. Edward Teller
by T.W. Speers

Seated at the last outpost of literate civilization, the forward table of California's press corps. I looked at the speaker's rostrum sitting atop risers placed at the rear of Cal Poly's mam gymnasium. It appeared as a small pinnacle jutting up from a smaller mountain; a place where, theoretically, anyone could speak their minds.

Few who stand behind a rostrum are listened to or believed, and as I looked at the 4.CXK) persons behind and In bleachers above me. I knew that credibility was the prime focus of San Luis Obispo's Nuclear Power Forum

I had come specifically to see Dr Edward Teller; legendary friend of such notables as Enrico Fermi. Leo Szlaird. Albert Einstein, —a member of The Los Alamos staff that developed the first Atomic bomb: the ***father*** of the I lydrogen bomb. There was no doubt-no matter how one felt about Dr Teller's achievements-that the man who would stand behind that speaker's rostrum had seen and been in times that will be considered as critical landmarks of this century. This point alone made Teller's presence important. aside from the topioof his speech which was favorable to the development of nuclear energy.

I was interested in Teller the human being. It is simple to criticize a man. condemning him by saying that he is his opinions and nothing more That may be so. but I felt that there was something in the man I had to look for An essential humanity, a repeated word or phrase that would reveal the inner Edward Teller. It is much more difficult to criticize a person's humonity. and it was Teller's humanity I had come to witness

I was introduced to Dr. Teller prior to a news conference elsewhere in the gymnaslum Obviously his mind was on other things: cameras, newspersons I understood that Teller is accessible to journalists. but has an inherent distrust of them, and a I shook hands with the Doctor. I felt every inch one of ***them,*** uncomfortably

I began to wonder how I would react to a snide remark in the press if I were a scientific. prime mover the likes of Dr. Teller I began to watch people wandering in and out of the gymnasium's lobby where Telk≫r stood, pausing to point and whisper among themselves ("See? ***That 's*** Edward Teller* Right over there, the brown suit"') and drift off How incredibly easy it is to be anonymous, the main facet of fame is that one Is exposed to the winds of every kind of opinion: warranted or unwarranted, favorable or libelous.

Dr Teller greeted me in a low. basso tone, shot through with a Hungarian accent. Considering the situation. I had little or no opportnity to ask him anything.

Through acquaintances in the Nuclear Forum Committee. I had requested a chance to speak with Teller Breakfast was arranged for Saturday morning, and I asked the Doctor if this was true before leaving to return to the press table. It was. and I trudged off to await the speakers

Dr Teller began his speech slowly, hands placed carefully on either side of the podium His tempo would rise when reaching a cntical point-right hand raised with is index finger leveled at the audienco It.seemed habit that he was used to speaking clearly and precisely using added emphasis on key words, allowing a pause for their effect to register before moving on to his next point, he was as clean and smooth as a rhythmic machine

At breakfast he eorefully fined up his ***coffee mug and two*** glosses ***before him in a line, straightening his silverware on the green woven placemat As he spoke he uould gesture slowly in rhythm with the*** • cords—one ***hand on either side of the line of glassware.***

(Continued on page 7)