



More than 300 attended this year's technical conference. Registration overflowed the headquarters hotel as well as four other local motels. Nineteen speakers discussed subjects from energy to drip irrigation.



This panel discussed the energy situation. They are: (l-r) David A. Witts, attorney, Dallas, Tex.; Charles A. Rothfus, exec. v-p, Colorado Petroleum council, Denver, Colo.; Dr. Clair J. Batty, mechanical engineering dept., Utah State Univ.; Dr. Ernst Smerdon, head, dept. of agriculture engineering, Univ. of Fla.; Dr. David Pimental, prof. of insect ecology, dept. of entomology, Cornell University.

Sprinkler Irrigation Association Report

THE energy situation and the irrigation industry shared the spotlight in February during the two day meeting of the Sprinkler Irrigation Technical Conference.

More than 320 members and guests met in Denver, the mile high city, to discuss head on the potential prob-

lems facing an industry dependent on energy to move water. Despite a few Aggie jokes and the usual razzmatazz of meeting old friends and acquaintances, it was a deadly serious meeting. This energy situation has started the wheels rolling in the creative minds of men. Concern

about the present and more so about the future has fueled the inventive fires to develop conservation practices and/or new energy sources.

This was put in better perspective by Dr. David Pimental of Cornell University. Speaking on "food production and world energy supplies," the entomologist said that it "wasn't until man tapped the fossil energy did growth really take place." He reported that there are currently roughly 3.6 billion humans on Earth. "With the current rate of increase

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Executive director Wally Anderson, SIA, (l) chats informally during lunch with Dr. Falih K. Aljibury, irrigation specialist, San Joaquin Valley, Univ. of California, Parlier, Calif. Dr. Aljibury presented a paper on sprinkler irrigation.



Dr. Henry Indyk, extension specialist in turfgrass management, Rutgers University, discusses the use of irrigation in sod production. He drew much interest in this growing field. One of the newer innovations is using spray effluent on sod fields.

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and with our known biological controls, it is inevitable that the population will reach seven billion by 2000."

In 1850, we started to use fossil fuels, he continued. Ninety-two percent of our fuel came from wood back then. Now 96 percent comes from fossil fuels. He said that America consumes 34 percent of the total world energy and 35 percent of the world's petroleum. He charged that our use of energy has increased while the efficiency of energy inputs has decreased.

Pimental cited an example of corn production to prove his point. He also said it takes 940,800 K cal (a unit of energy) to produce nitrogen today. In 1945, it required 925,500 K cal to produce the same amount of nitrogen.

One thing further. Dr. Pimental claimed that food production is "cheap only because we have a high Gross National Product (GPN). Only 17 percent of our income goes for food (1970). "We don't have the most efficient production of food, he charged. It costs us about \$40 to produce 1000 kilocalories versus \$10 for the Indian to produce 1000 kilocalories. Twenty percent of the labor force in the U.S. is involved in supplying the farmer.

He concluded his comments by saying that he has two hopes for the future, 1. mankind has the wisdom to stop reproducing and 2. the development of alternative energy resources.

Riding on this wave of energy, Dr. Ernest Smerdon, University of Florida, brought the energy situation even closer to home. "The era of cheap and plentiful fuels is coming to an end," he said. "We can't continue to use energy like we have in the past."

The agricultural engineer pointed out that irrigation is an extremely high user of energy. Most all irrigation is not gravity flow. He said that every irrigation design in the future (regardless of location or use) must be examined for efficiency of design in developing the system.

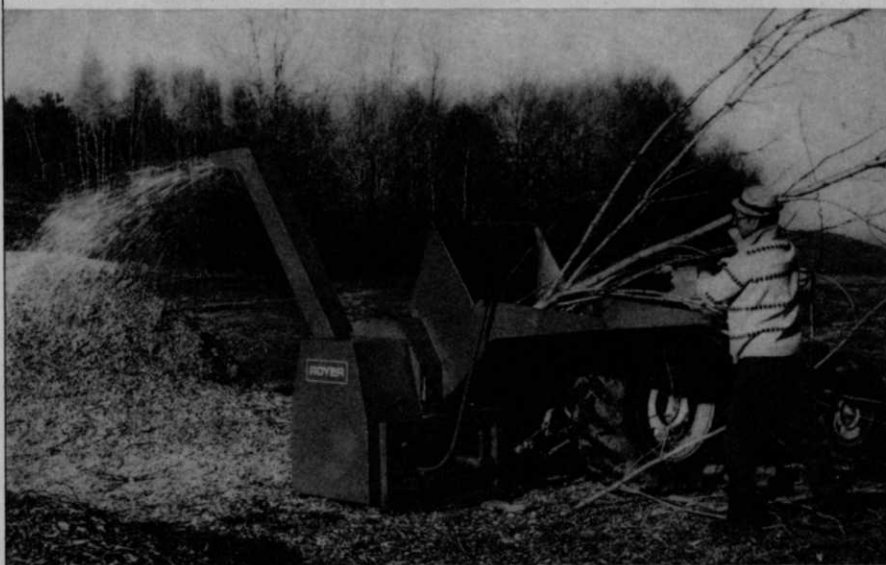
Although most of his remarks were directed to irrigation as it applies to agriculture, it is interesting to note that efficiency of design in the development of an irrigation system fits the turfgrass industry too. One can't help but reflect on the number of golf courses with poorly designed irrigation systems because there

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were only so many dollars allocated.

Dr. Smerdon did include in his remarks on energy conservation practices the idea that alternative energy sources were being investigated. He referred specifically to nuclear fission, fusion, and solar energy as possibilities.

There are three barriers which we must overcome, reported Charles A. Rothfus, executive vice president, Colorado Petroleum Council. First we must accept the fact that there is a shortage of energy. Second, we need enlightened leadership. Third, we have long cherished the role of being bigger and better than those other people in the world. This role is now changing.

Rothfus lead the audience into a clearer meaning of what is meant by the energy crisis. "We are not out of oil," he said. New oil is being found daily. "Second, we have an energy crisis not because what happened, but because what didn't happen." The Alaskan pipeline was delayed. Leases for oil exploration on the continental shelf were tabled. New refineries were not built. Uses of coal were not developed due to environmentalist pressure. Nuclear plants were not constructed because of environmentalists.

He said that in the short range we must continue to rely on gas and oil heavily. This includes completing the Alaskan pipeline, drilling on the continental shelf, attracting capital, developing increased refining capacity, and building deep water ports for foreign oil.

What about the long range? Rothfus had answers for this too. He said we must rely on coal, nuclear power, solar energy, geothermal energy and breeder reactor energy. He pointed out that there is a three to five year lag between the initial "go" signal and the "on stream" status. "The barrier between new supply and where we are is a people barrier," he said.

Other discussions on the energy situation were given by Dr. Clair Batty, Utah State University, and David A. Witts, a Dallas, Texas attorney.

One of the interesting discussions in the afternoon lineup was a speech by James W. Ball, research associate, Colorado State University. Mr. Ball, who is twice retired and now actively working on his third career, discussed, "Problems Encountered with Entrapped Air."

Through a series of slides and
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Much of the discussion centered around energy. Interest was expressed in using plant material — possibly even water hyacinths — as energy sources. Dr. Indyk (c) talks about the sod market with an SIA delegate. At right is William A. Closter, Kynbrook, N. Y.

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charts he ably demonstrated the explosive power of water and air. Most SIA members realized that air in a line has detrimental effects. But Ball showed conclusively that entrapped air has the ability to rupture steel pipe and crumble two foot thick concrete.

His advice: 1. Make good installations, guard against flotation; 2. Fill pipes and tubing slowly; 3. Release air slowly; 4. Use air release valves that close slowly; 5. Design pipe to withstand high pressures—if all else fails.

Donald A. Clemans, superintendent, Olive Glenn Golf Club, Cody, Wyo. headed the speaker's list on the second day of the conference. His topic, "Water — Good or Bad" drew a good deal of interest in light of the energy situation as reported the previous day.

Here are some of the points he made: Water expands when cooled. It creates erosion problems. An excess of water helps make organic matter (peat bogs). Drainage and air movement in soil is more important than water during periods of drought.

Clemans said that he has observed that in turfgrass care during the past 50 years a number of changes have taken place. We've shortened the height of cut. We've started irrigating, not just greens, but tees, fairways and almost everywhere else that will help turfgrass or orna-

mentals. We've allowed golf cars to be driven down fairways during wet or dry conditions. We've doubled the number of golfers. And we've become product oriented.

The superintendent remarked that too much water can have as great an effect on turf as too little. His slides showing flooded fairways and greens adequately proved his point. However, he also said that as a turfgrass manager, the superintendent must become more water conscious. "We've all heard of maintenance budgets, quality improvement budgets," he said, "but have we heard of water budgets."

Under a discussion of "Pumps For Irrigation," Robert M. Wilkin, Wilkin Irrigation and Supply Co., Irving, Tex., said that proper engineering is probably the most important factor in the success and efficiency of a complete irrigation system. "Let's all get honest," he said. "If necessary, increase our costs enough to use proper engineering, and let's educate our clients to look for proper engineering . . . Few people will make a poor choice if they understand the alternatives. In the long run, poor engineering and designs do not save money. They just divide the expense between initial costs and subsequent repair bills after installation."

The meeting took a twist in a different direction with the next speaker. Dr. Gerald L. Smith, landscape architecture and environmental planning department, Utah State University, told the delegates that by the year 2000 more than 80

percent of our population will live in urban areas. This calls for open space planning, he said. By that he meant areas dealing with wild plants currently administered by the Forest Service, USDA, etc., and lands occupying pockets, corridors and elsewhere which have been abandoned or bypassed by populations.

The current energy shortage will restrict usage of our National Parks, he predicted. However, more people will be spending time in park areas closer to home.

"Urban open spaces cannot be thought of as a single use," he said. They must become integrated into the rest of life style; they must be adaptable to a multitude of uses. He said that acquisition of open space must relate to where people are located. For example, no strictly urban person will use open space located miles from shopping centers, churches and other places normally visited.

He concluded that the potential for open space planning around major cities is good. He cited a study of the 10 largest cities which showed that 20 percent of the land has not yet been developed.

Dr. Henry Indyk, extension specialist in turfgrass management, Rutgers University, discussed the use of sprinkler irrigation on sod farms. This has been of interest to a growing number of sprinkler irrigation equipment manufacturers. Pointing out that the sod producer is generally located close to the market, Indyk said that irrigation and sod production have engaged in a romance which has definite signs of long life.

"The sod producer judges his product (sod) by the appearance and development of the rhizome and root system," he said. "Use of irrigation minimizes the time from seeding to maturity."

He said that water reduces the chances of fertilizer burn on sod; and, it can be used to carry fertilizer to the growing plants. Many sod producers use water before harvesting. And water after installation of sod is necessary to the success of a job, he remarked.

"I'm optimistic about the future of the sod industry," he mused. "Turf plays an important role in the environment."

One further point. Dr. Indyk said that the sod farm offers a site for disposal of waste water to communities contemplating spray irrigation of effluent. In addition, sod farms can be used in the open space planning and preservation of open land. □