



Students actually install an irrigation system as part of their training. Practical experience such as this is invaluable in understanding the problems installers have.



Sprinkler head assembly knowledge is important. These students may be faced with a head repair job. Knowing how to disassemble and repair a head may save many hours of work later.



Bruce Camenga discusses problems with students. Students are limited to only a few student contact.

# Irrigation University ... Teaching

**I**N MAY 1973 WEEDS TREES AND TURF initiated a two part irrigation survey among its readers. Part I was to golf course superintendents and Part II included parks and grounds superintendents, Weeds Trees and Turf commercial turfgrass managers, irrigation contractors, etc.

One of the most profound findings was that more of our readers are planning on installing underground systems themselves than ever before. Fifty percent reported they would do it themselves and 50 percent stated that they would have it installed. A similar study conducted by this magazine in 1970 showed that 80 percent would have the job done by someone else and 20 percent would do it themselves.

Why this sudden change? The answer is threefold: Dollars involved; people more aware of the mysteries of underground irrigation; and, poor design and function of installed systems. In defense of this latter statement, many systems have been installed on a dollar basis alone, whether the system was one of proper design or not.

The irrigation survey showed that the four major complaints of an underground irrigation system are: 1. lack of reliable water men to work manual systems; 2. poor design; 3. system not designed to cope with wind; and 4. broken plastic pipe and pipe joints.

In addition, it is a well-known fact that this industry is under the stress

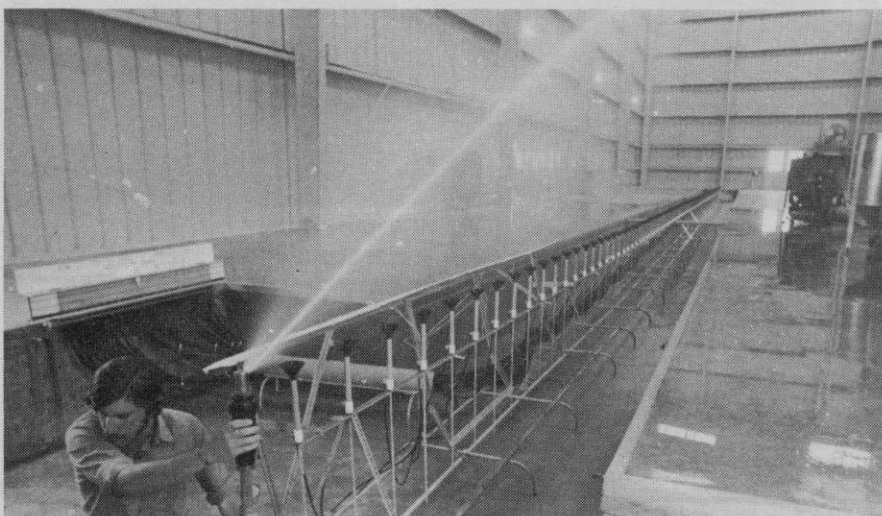
of tremendous growth. Witness the construction record of new golf courses, the conversion from manual to automatic irrigation systems on existing golf courses, openings of spacious shopping plazas and the increasing use of irrigation in parks and you will quickly see that the greening of America is no myth.

This tremendous rate of growth has not been matched by people who have the practical and technical skills. While experience in irrigation systems still is a good teacher, the pace of the market is such that few have time to benefit from this slow process. Extra emphasis placed on individual product sales has in some cases worked to the detriment of the industry as a whole.

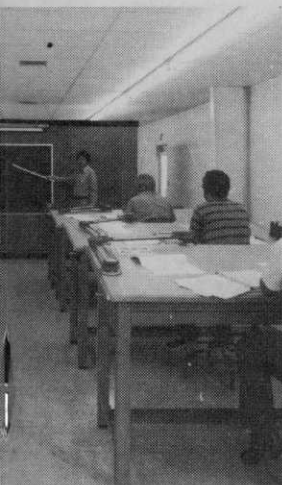
A degree of confusion floats about as to system names, sprinkler heads, controllers, valves, pipe, pressure, cost and as many as a score or more variables. With the number of variations possible from one manufacturer alone, a user could easily become confused and flustered in trying to design and implement a system.

Small wonder, then, that some architects, installers and even distributor salesmen tackle irrigation system design without complete knowledge of the problem at hand. They've all seen underground sprinkling systems that do a poor job of watering. Their only hope is not being forced to design one that duplicates an already bad mistake.

With this information in mind, WEEDS TREES AND TURF concluded that the greatest challenge facing the irrigation industry today



Inside the test facility at Toro is an elaborate hydraulic measuring device. Here, worker determines the dispersment of water over an area. Note hydraulic gauge at left.



placement and selection of instruction period. Classes students for greater teacher/



Designing an automatic underground irrigation system requires knowledge of heads, pipe, product strengths and weaknesses, special product features and design techniques.



Individual and small group classes give the student time to bring out individual problems. Bruce Camenga creates an informal atmosphere in his discussions and instruction.

# ng Industry The Fundamentals

is in providing knowledge and practical training to individuals to cope with system design. This challenge has brought forth many new ideas. But perhaps the most unique is one developed by the Toro Company.

They, too, had been concerned with the widening gap of trained vs. untrained people. So a little over a year ago they formulated a plan which formed the cornerstones of an

industry-wide school on irrigation that is now starting its second year.

It's called "Irrigation University," and it is the only one of its kind in the country—or the world for that matter. What makes it different is that the course of instruction is built around the physical application of irrigation rather than product, product, product.

Toro states their reasons for start-

ing the university as: 1. knowledge of equipment, accessories and assembling must be correctly used to develop a system that does the job; 2. innovative features of product lines will reduce overall cost, when properly applied; 3. strengths and weaknesses of products is paramount for profitable success; 4. the need to extend knowledge to the in-

*(continued on page 31)*

## Toro's 1973-74 Schedule Of Classes

Enrollment in technical training courses during the 1973-74 season is expected to be at least three times higher than last year, according to Bruce C. Camenga, manager of field technical training for Toro's irrigation division at Riverside.

He's expecting enrollment to exceed 175 in eight different courses, scheduled from now to next June.

Organization of the courses has been completely restructured to relate course content and class schedules to specific areas of irrigation interests, says Camenga.

Classes are scheduled for residential contractors, distributors management, distributor specialists, landscape architects, golf course architects, governmental designers, golf course superintendents, parks and grounds superintendents and college and

Classes scheduled include:

- Distributor specialists, a university instructors.

program for irrigation technicians on design for all markets. To be scheduled.

- Landscape architects, reviewing fundamentals of irrigation design and product applications for the commercial market, Oct. 29 - Nov. 1.

- Residential contractors, for the beginning contractor and new distributor personnel dealing with these contractors, Nov. 6-15 and Dec. 8-17, (two courses).

- Golf course architects, to review and strengthen the concepts of golf course irrigation design, Dec. 17-20.

- Governmental designers, to upgrade the skills of city, county, state and Federal agency irrigation designers, Nov. 27-29 and Dec. 11-13.

- Commercial turfgrass superintendents, including superintendents of parks and grounds, golf courses and other turfgrass areas. Course will bracket the annual

convention of the Golf Course Superintendents Association of America, Feb. 5-7 and Feb. 11-21 (two courses).

- College and university instructors, a course in hydraulic theory, design theory, product application and installation procedures for instructors who teach turf irrigation, Jun. 18-27 and Aug. 21-30. (two courses).

All of the courses will be held in Toro's new training and research center at the Riverside, California plant. All of the instructors are Toro personnel except for representatives of pumping equipment manufacturers and several invited guests.

Tuition is \$50 for three-day programs; \$75 for four-day sessions; and \$175 for the eight-day classes. No tuition is charged for college and university instructors.

For more details about courses of instruction, circle (719) on the reply card.

## IRRIGATION UNIVERSITY

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dustry.

Perhaps the best reason for training lies in a simply worded definition which Toro calls "the end result — A properly designed sprinkler system, which, after being properly installed, and is properly operated, applies the exact amount of water over the entire area, will not require excess labor for operation and maintenance, will be economical in first cost, and consists of components that will not require rapid replacement."

Initially, the idea of training developed out of a unique test facility for sprinkler heads which was built behind the company's manufacturing plant in Riverside, California.

"We are dedicated to the basic proposition that it is the manufacturer's responsibility to research, design, test, to find new ideas and better ways to irrigate," says Edwin J. Hunter, vice president and general manager of the irrigation division of Toro. "We must then communicate our findings to those people who, in turn, have the responsibility to utilize our findings in the design and installation of better systems—systems that will be more efficient and will meet the challenge of water utilization and conservation."

Under that premise, Toro opened classes last semester to three groups of people: installers; landscape architects, engineers, sprinkler salesmen, park department employees, department managers, etc.; and distributor salesmen responsible in the total irrigation market. Course of instruction and course length have been altered slightly for this semester. Included for the first time are college and university instructors, golf course superintendents and other commercial turfgrass managers. (See Box, page 29)

The first year of teaching formed the building blocks for this fall and winter series of courses. Thus it would be well to examine the three groups of people who made up the original classes.

**Installers:** this group, more than any other, needed the greatest amount of training. In a business as simple and yet as complex as this, it is not surprising that the turnover rate among new installers is exceedingly high.

A man will become enthused with the idea of underground automatic sprinkler irrigation, invest a small fortune in time and money and then rapidly lose interest because he doesn't understand the total concept of system design, installation, sell-

ing, service, how to run a small business, how to advertise, etc. The course of instruction offered to the industry dispelled many of the fears and unknowns. Combining classroom and field work, instructors gave a highly intensified "cram" course.

**Intermediate:** "Students" in this category usually have had some training. They know the basics, says Bruce Camenga, Toro's professor of irrigation. What they need is additional information in new innovations such as the advantages of low precipitation, electric and hydraulic control, valve-in-head, etc. to understand how special features affect the overall cost of the system.

**Advanced:** Just as the new installer needs to know basics and the intermediate "student" is concerned with reduction in cost through new ideas, the advanced pupil desires greater knowledge of the marketplace itself. An extensive "seminar" was designed for the distributor salesman whose responsibilities in irrigation are market-wide. It was much more advanced, more technical and more market oriented than the other courses.

On the outside, this fall's courses of instruction appear to be a note-

book and pencil affair. Don't count on it, though. "These courses are designed to get the student exposed to the greatest amount of knowledge in the shortest time," says Robert Landesman, director of marketing for the division. "Students actually install an irrigation system in the field. We expect them to physically dig in the ground and get dirt under their fingernails. We want them to completely understand every facet of the operation; to know how to problem solve a situation; to know the shortcuts and the various techniques about the job."

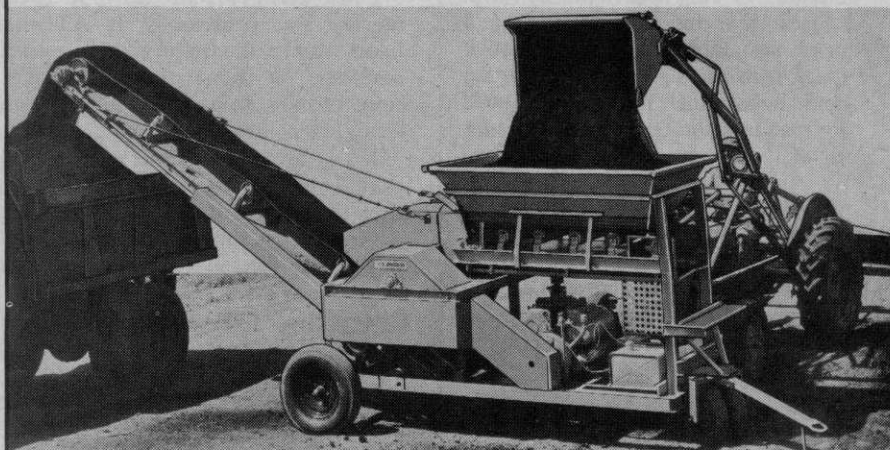
Like the recruit who is subjected to the rigors of military life and later turned into a fighting man, so the curriculum at Irrigation University takes the student and prepares him to accept the challenges of the field. Installers are taught drafting techniques, how to survey, types of sprinklers, sprinkler performance and spacing, application and selection, plumbing and electrical codes, drain valves, hydraulics and many other important concepts. They are then taken to the field and required to use this knowledge in installation of an irrigation system.

Training for intermediate students

(continued on page 34)

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includes some of the concepts above plus additional technical instruction. Factors affecting cost of the system, special features of components, programming, and installation (in the field) at more difficult to irrigate sites are thoroughly covered by course instructor, Bruce Camenga.

The advanced course for distributor salesmen looks in depth at markets including institutional, commercial and residential. It also teaches a man how to call on architects, installers, institutions and golf course superintendents. Special emphasis is placed on pump stations and service operations to which salesmen are regularly exposed. Again, practical field experience is stressed because Toro believes that getting a little closer to the dirt in the field will make a better salesman in the market.

"We believe in educating all those concerned about irrigation in the Green Industry," says Ed Hunter. "In a small way we can improve the environment by educating those who can pass knowledge on to others in the field. Whether they be an installer, an architect, an irrigation

contractor or a foreign student, our goal is to broaden the knowledge of those who have a desire to learn more."

The need for training has already been pointed out. In a larger sense, however, the Green Industry today is confronted with a growing concern about conservation of our natural resources. Preservation of water resources is a big challenge. And industry, distributors and even the public are beginning to face up to the fact that conservation is a cooperative effort. □

## Nine U.S. States, Canada Declare War On Pest

Scientists in nine states and Ontario, Canada, have combined forces in an all-out battle against soil insects that cost farmers and those in the Green Industry millions of dollars each year.

As of August 1, 1973, and for at least four years thereafter, researchers will look for ways to "manage" these pests without extensive use of pesticides.

The Environmental Protection Agency has contributed \$300,000 and the Cooperative State Research Service another \$185,000 to support the research in Missouri, Illinois, Indiana, Ohio, Nebraska, Iowa, Michigan, Wisconsin, New York, and Ontario.

The North Central Regional effort was developed and will be coordinated by Mahlon Fairchild, chairman of the University of Missouri-Columbia department of entomology. "We wanted a regional research project," he said, "because this is too big for one state to handle.

"If we're going to manage pests while minimizing damage to the environment, we're going to have to know more about these pests.

"Right now, our only weapons are pesticides, and many of these are being banned from use. Furthermore, pests are developing resistance to the pesticides we are using."

The value of the regional, interdisciplinary soil pest research effort was underscored by Dr. Richard J. Aldrich, director of the UMC agricultural experiment station.

"I'd much rather see us build a good research base now," he said, "rather than getting involved in expensive crash programs to try to stop problems after they are well underway."

Aldrich and Fairchild believe the projects will give each participant better research information than any could get if they took on the project alone.

"We intend to keep this research

program going beyond 1977 and expand it to a nationwide effort," said Fairchild.

Fairchild started urging the multi-state effort as government regulation of pesticides and more intensified culture of agriculture and ornamental horticulture made pest control extremely complicated.

All 300,000 EPA money for supporting the research comes directly to Fairchild who subcontracts and coordinates with the other states for research programs. The CSRS funding has been split up and sent directly to the states involved.

## Cutrine-Plus Algaecide Registered By EPA

Applied Biochemists, Inc. has introduced a new algaecide—Cutrine-Plus—to its line of aquatic nuisance control chemicals. The product has been registered for use by the Environmental Protection Agency.

Cutrine-Plus is a major improvement from the company which pioneered chelated and complex copper algaecides. The product eliminates sulfates, has increased stability, reduces cost of treatment and is less corrosive.

It is registered for potable water supplies; fish, farm and fire ponds; lakes and fish hatcheries. Introduction of Cutrine-Plus was made in New Orleans at the Hyacinth Control Society meeting and has been featured at trade and consumer shows.

Two recent tests point to the product's effectiveness. While registered only as an algaecide, a Florida test found Cutrine-Plus more than 50 percent effective against the noxious weed hydrilla. In New Jersey, the product controlled curlyleaf pondweed.

It is expected that Cutrine-Plus will be available in granular form for control of chara and other bottom growing algae for the 1974 algae season.

## Southern Ag. Chem. Assoc. To Hold Meeting

The Southern Agricultural Chemicals Association will hold their 19th annual meeting at Callaway Gardens, Pine Mountain, Georgia Oct. 28-31.

Dr. Charles Ellington, director of extension service, University of Georgia, Athens, Ga., will be the keynote speaker.

The main speaker will be J. Phil Campbell, Under Secretary of Agriculture.

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