

PROGRAMMED FOR ACCURACY

At the flick of a switch, superintendents will be able to completely water a course on a scheduled, pin-point basis and conserve money, water and equipment

How automatic is automatic irrigation? The harried golf course superintendent could water with an accurately measured amount the windward side of a newly-seeded green while a slight wind was blowing. In addition, he could cycle the watering time at intervals that allow for full absorption of water without runoff and puddling. Then, when watering is completed, he could shut down the system automatically in safe stages that would not cause hydraulic shock to the system.

These are but a few of the advantages of a new irrigation control system called Cyclomatic. The operations outlined above can be performed from one central control panel that can be actuated at the flick of a switch to initiate a 10-day watering cycle that needs no further looking after than that simple flick of the switch.

Such a system sounds as if it might have sprung from the daydream of a tired superintendent, but the system is real. A fully-working pilot model that could be adapted to an 18-hole course is now in operation. This pilot

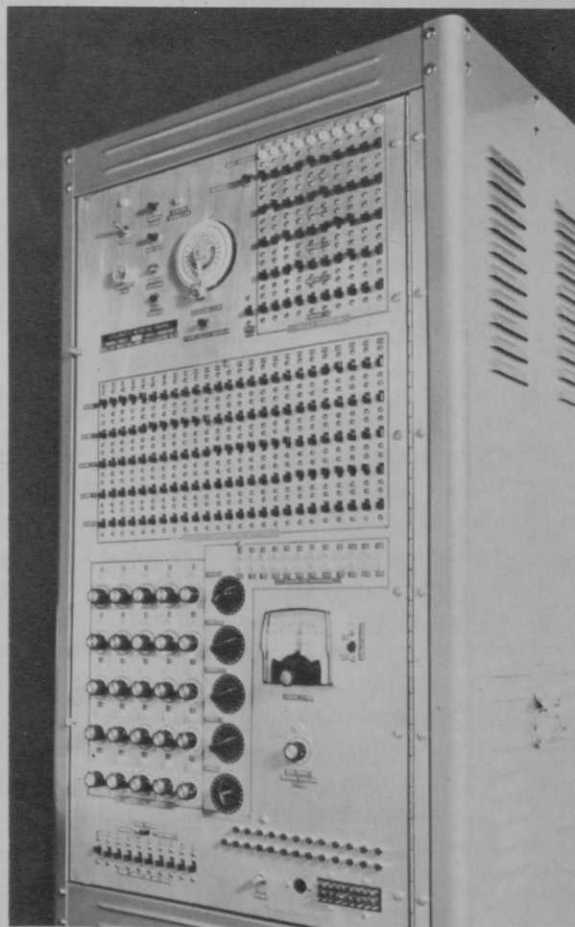
model is hooked up to a mockup layout of a course that shows how it can energize any one of 463 sprinkler heads through electric indicator lights. However, the amount of current fed to the light can actuate a sprinkler head and could if installed at a course.

This marvelous control instrument is the brainchild of Thomas J. Scannell, superintendent at Albany CC in the Voorheesville suburb of New York's capital city, and J. Edward Greengard, an engineer with Heat, Electronics and Technology Company, Inc. Pooling their talents, they designed an electronic control panel that can do everything listed above and then some.

Tom was named superintendent at Albany before the club was opened for play. Albany dates back to 1890, but in the late 1950s, it was forced to find a new location when the state acquired the former site as an additional campus for the State University.

The new club was designed by Robert Trent Jones, and Tom is quick to point out that Jones

continued



The heart of the Cyclomatic is the master control (above) where all programming and timing are carried out.

PROGRAMMED FOR ACCURACY

continued

specified an irrigation system that would provide more than enough water under the most adverse conditions, even in the then drought-ridden area of upper New York state. Water at Albany is supplied by 25 drilled, shallow wells.

Despite good drainage (Tom put much of it in himself) the watering system tended to over-water, causing runoff and puddling, with resultant compaction and other ills. This started Tom thinking of a possible way to more evenly distribute water—a system that would eliminate runoff and puddling and at the same time save wear and tear on pumps and the entire watering system network.

Then he met Ed Greengard and discussed with him what he had in mind for an automatically controlled system. Ed countered with the idea that such a system should not only solve Tom's problems, but problems of other superintendents as well.

They sought suggestions from other superintendents, and after lengthy discussion narrowed down the list of characteristics they wanted in the system, but it still ran to quite a roster. They were, however, in complete agreement that all possible elements to make a truly automatic system should be incorporated in the design of the control panel.

Eventually, it was determined that the master panel should be able to start all watering programs automatically; have a dew wash cycle; a greens syringe; a setting for instant modification of any program already in progress; the option to water or skip selected areas; a turn-on system that would eliminate hydraulic shock loads in the piping network and an option to set up any manual program desired without disturbing automatic programming.

Tom wanted a system that would meet the current thinking

among turf people that prefers applying large volumes of water infrequently rather than daily watering. Such a watering cycle, he states, has many advantages and very few disadvantages. It discourages growth of *Poa annua*, crabgrass and other undesirable grasses and weeds. It also lessens compaction and encourages deep root growth, producing a more wilt-resistant turf by not stimulating the abundant production of stolmata.

This led the team to the basic matter in their projected design—a control unit that would be able to water at desired intermittent short periods and that would allow time for complete absorption. Any combination found to be right for the course that used the system is possible with Cyclomatic, they point out.

Ed Greengard states it simply, "All the electronic components required for such a system were available. We had to come up with a definition of what was needed, which we did, and then implement it by incorporating existing technology into a control system."

Complete control from a central location could be achieved by wiring all sprinkler valves to the central location, but this would be both unwieldy and expensive. The solution the designers reached would be to have satellite controllers, each operating a number of control points in sequence, placed at convenient positions on the course with a group of sprinkler valves connected to each controller.

In this setup, a single power line would run to each satellite unit from the central location. This technique, theorized Ed and Tom, offers a substantial saving in the cost of buried wire. The means of burying this wire without major excavation and disturbance to turf are at hand. According to Ed Greengard, telephone companies have a technique of burrowing and burying cable, the

same type needed for Albany's installation. The burying device used by the phone companies is called a "mole." In the Cyclomatic arrangement, less cable is used than with other control systems, they say.

The satellite or slave units are placed on the course with the master control panel maintaining complete control of all sprinkler heads through the satellite stations. Then, by dividing the course into a number of zones, sprinklers can readily be turned on and off in related sequence so that no more than three or four sprinklers will be energized or de-energized at one time, eliminating shock loads.

From the master panel, compensation can be made for rainfall by merely changing the setting of single repeat cycle selector. The master board has provisions for up to 24 cycles and with this number of settings, it is possible to use a number of very short cycles rather than just a few long cycles.

Individual timers determine the watering intervals for each sprinkler and a selector switch determines the number of cycles that will be run through before shutdown. The system at present provides four separate watering groups—greens, tees and fairways in two sections. It can, however, according to Ed Greengard, be modified to provide any number of groups.

Whatever number of groups are desired can be preset 10 days in advance, and the program will repeat all cycles without any further attention unless modified. At the time determined by the clock on the master control panel, the only clock in the system, the watering program will start and operate each selected group in turn, each for the number of cycles pre-selected by its cycle repeat selector.

On the master panel is a separate button for a dew wash cycle that can be activated independent-

continued on page 60

PROGRAMMED FOR ACCURACY

continued from page 50

ly of any regular watering program. A push on the dew wash button operates all sprinklers for one minimum cycle. Each zone is turned on sequentially and the system shuts down sequentially utilizing full pump capacity without shock to pump or system.

Automatic control of the pumping station is also built into the control panel.

The system, according to its designers, is capable of almost infinite expansion with one master control panel operating as many satellite stations as desired. This makes completely integrated control of a second course entirely possible without the need for a

second master panel.

Added features, that will be offered as options on the setup, are a communications and paging system, made possible because satellite stations are controlled by audio tones similar to the touch tones heard on certain telephone calls. Such tone signals, when transmitted through a loudspeaker, could warn players when a watering is about to take place or page someone out on the course. When the sprinkler system is inoperative, it could also be used as a communications system between members of the groundskeeping staff by providing plug-in telephone units for direct talk communication.

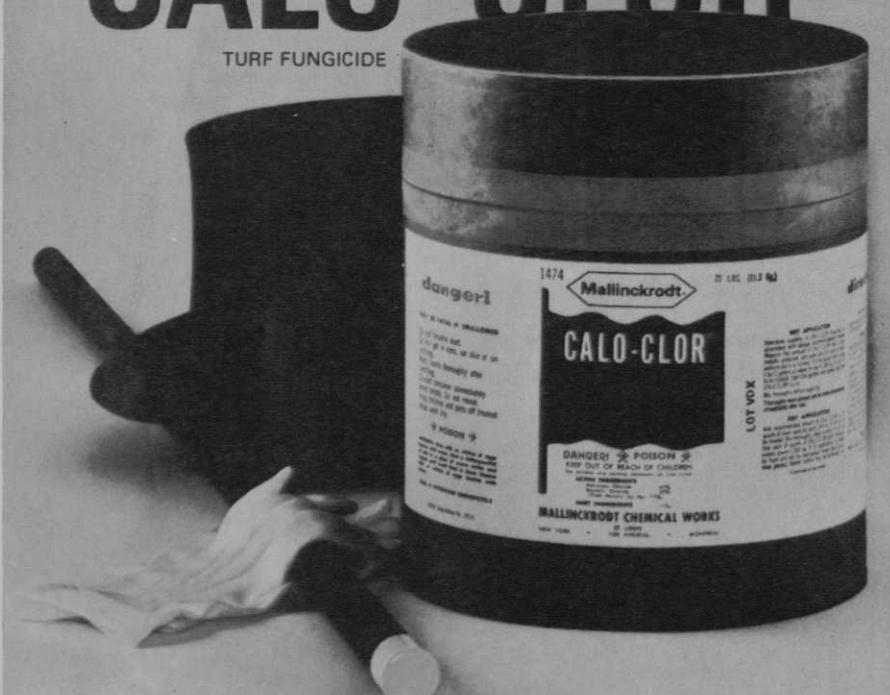
Satellite units are installed in metal boxes that are locked, durable and sturdy enough to prevent tampering. They are plugged into power and communication outlets with a "fool-proof" plug. A simple unplugging will remove the unit for winter storage. The master panel has a test position and test light for checking the operation of each satellite unit before installation at its course position.

The simple-to-operate master panel is in actuality an electro-mechanical computer that can be programmed for correct and thorough course watering in a minimum number of days. Watering problems confronting the superintendent mean that he must restrict the watering of certain parts of the course to set hours, in many instances this requires a man to be in attendance at night; this is an additional labor cost that can be eliminated with the 24-hour programming possible through Cyclomatic.

Cyclomatic is adaptable to all makes of sprinkler and irrigation equipment available today, according to its designers. In short, it does nothing but activate sprinkler heads in a pin-point fashion at a time and for an interval that can be pre-selected and allowed to run for days on a 24-hour basis. □

has never been topped!
CALO-CLOR®

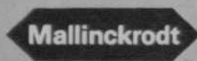
TURF FUNGICIDE



Still the **GREATEST**
after 40 years!

It's tops "as is" for summer turf disease control . . . "tops" as the mercurial additive for that "extra" effectiveness in any turf fungicide program! Be ready before disease attacks . . . Always have at least two drums on hand! Order from your Mallinckrodt distributor today.

Always spray turf chemicals with the **SPRAY-HAWK (TM)** mobile turf sprayer.



MALLINCKRODT CHEMICAL WORKS
Turf Products
St. Louis • New York • Los Angeles

For more information circle number 192 on card