

Weighty Topics Are Discussed as Research Men Have Their Day

The theme of the Tuesday afternoon meeting was "Progress in the Field." William H. Daniel of Purdue University spoke on the poa annua problem; Herb Graffis, GOLFDOM's editor, discussed public relations; Eliot C. Roberts, Iowa State University agronomist, talked on the role of nutrition in aiding turf growth; California's research activities were described by Victor B. Youngner of the University of California, Los Angeles; and the session was concluded with a showing of a turf management film prepared by the Milwaukee Sewerage Commission. In conjunction with the latter, a time-lapse motion picture of the movement of water in soil was shown.

Poa Annua — Deny, Ignore or Grow It

Speaking of the poa annua enigma, Bill Daniel said that it can be denied, ignored, or as some supts. do, follow a program for growing it throughout the year. The latter calls for frequent watering, good aeration and fertilization programs and heavy fungicide treatments when disease threatens. But even with all these measures, poa has a way of acting treacherously — it often fails when it is wanted most.

The principal control for poa annua, Daniel stated, is the combination of good management and use of arsenicals that restrict the growth of poa while, at the same time, tolerating the growth of desirable grasses. Tests and observations made at Purdue University, Daniel said, indicate that of the arsenicals, calcium arsenate probably is the most effective when both control and safety factors are taken into consideration.

For fairways, best results probably can be obtained through application of 6 lbs. of calcium arsenate per 1,000 sq. ft. (powder) and 10 lbs. (granular) in the spring and fall, and at a rate of 6 and 8 lbs. per 1,000 sq. ft. of greens. Caution is recommended in the latter applications, recommended to be made twice a year, because light applications develop sufficient toxicity. If lead arsenate has been repeatedly used, the green application shouldn't run more than 4 or 6 lbs.

Manufacturers and experimental sta-



V. B. Youngner



M. E. Bloodworth

tions, the Purdue agronomist said, are constantly trying to improve the arsenicals and in time they probably will come up with products that will give highly effective poa control. In the meantime, if the supt. does not consider poa desirable, about the only way he will be able to come close to controlling it is to set up a program wherein he makes uniform applications of arsenicals on a regular schedule.

Word Is Getting Through

Speaking of public relations, Herb Graffis said that club members still don't have a very firm grasp of what the maintenance dept. has to do to make the course the beautiful piece of property it usually is. "But," Graffis added, "they're learning. Ten years ago about all they knew was that you kept the grass mowed. Now word has gotten through to them that you are well rounded specialists who have a wide knowledge of chemistry, agronomy and several other weighty subjects.

"At this point they're impressed — they stand somewhat in awe of you," the Golfdom editor continued. "The thing for you to do is keep impressing them by giving them more information about the maintenance dept. Of course you have to go through certain channels to do it — through your green chairman or green committee, the bulletin board or the club magazine. But the thing is, keep alert for the opportunity to funnel news about yourself and your dept. to the membership. It's going to work in your favor."

Graffis complimented the GCSA on the excellent way in which it presented its request to the National Golf Fund for an increase in its share of National Golf Day receipts (the request was granted) and suggested that each supt. make his budget request in the same businesslike manner.

"If you give the impression that you need every dollar possible, you'll probably get it," Graffis said, "but if you present your budget request in a slipshod fashion, club officials probably will be so unimpressed that they will look for ways to cut back on you."

Resistance is Best Bet

Eliot Roberts, the scholarly Iowa State research agronomist, expressed the opinion that turf never will become immune to most of the diseases that attack it. "About the only hope," he said, "is for turf to build up strong resistance which, combined with the use of fungicides, will ward off many of the common diseases."

Golf course turf, Roberts commented, is especially susceptible to disease because it is kept so closely clipped. A great deal of its strength is lost in the clippings and what remains becomes a potential breeding place for fungi. Areas that are intensively watered also invite the invasion and spread of disease.

Alluding to resistance factors, Roberts said that beside fungicides, nitrogen, phosphorus and potassium, in proper balance, are the elements best suited to outgrow fungus; phosphorus promotes the manufacture of carbohydrates to counteract the enzymes produced by the various fungi; and potassium also adds to the resistance-growth process. Proper climatic, planting and growing conditions also enable turf to withstand disease.

Much of Roberts' lecture was given with the aid of slides in which it was shown how the structure of cell walls within a plant cause it to fall prey to or resist diseases.

Work Against Ourselves

Roberts' remarks about the deleterious effect of close turf clipping were substantiated by Victor Youngner, who described some of the heat and temperature experiments made in plant growing chambers at UCLA.

"By mowing close and making relatively heavy nitrogen feedings of cool season grasses in hot weather," said Youngner, "we are working against ourselves. Close clipping retards root growth and thus destroys the food storage capacity of plants. Heavy applications of nitrogen under this condition become wasteful because only a small amount of the element is being consumed. We should apply only enough nitrogen in warm weather to maintain a healthy color and supply the plant with the small amount of food it can use. Our tests have shown that it is unwise to apply chemicals other than fungicides in

Comes 6,000 Miles from Germany to Attend GCSA Convention

The distinction of having travelled farthest to attend the GCSA convention went to M/Sgt. John F. Petrie, who came 6,000 miles from Stuttgart (Germany) GC to absorb the turf learning offered in the four-day educational program. Petrie's expenses were partly paid by club members, who raised a special fund to send him to Houston, and by himself.

An Army veteran of 18 years, Petrie has spent the last nine as a course supt. From 1951 until 1954 he was stationed in Japan where he helped maintain or build courses in Yokahama and at Camp Zama. From 1954 until 1959, he was supt. of the Ft. McPherson (Ga.) CC.

Petrie was transferred to Stuttgart early last year. He maintains Kentucky Blue fairways and greens of Colonial bent and creeping red fescue. Greens are large there, averaging 8,000 sq. ft. German civilians and GIs work under Petrie's direction in maintaining the three year old Stuttgart GC. U. S. equipment is used on the course but fertilizers, seeds and chemicals are purchased locally.

The large club membership is made up of officers and enlisted personnel. Play is heavy from April through October, often touching 300 rounds a day on weekends.

hot weather, and watering should be controlled so that there is no likelihood of saturation."

Numerous interesting theories have come out of the growing chamber experiments made at the U of C agronomy station, Youngner said. At this point, agronomists there feel that the duration of daylight may have a much more important bearing on plant growth than temperature influences. Observations of two *Zoysia* strains, for example, showed that both grew three or four times as much when exposed to 16 daylight hours as compared to eight. Temperatures in both cases were a constant 70.

For both warm and cool season grasses, according to UCLA findings, temperatures for root growth can be slightly lower than for top growth. This has been confirmed by field as well as hothouse tests. In warm weather it has been found that top growth increases and root growth slows down. The process is reversed in cool weather. UCLA scientists also have observed that the range of growth temperatures are nar-

rower for warm than cool season grasses. Minimum temperature for the growth of common Bermuda is 50 degs., for Tifgreen it is slightly less than 50 and for Meyer Zoysia, 60.

Water Movement Film

The third session was concluded with the showing of a color film prepared by the Milwaukee Sewerage camera duo of O. J. Noer and Charles G. Wilson. It was largely devoted to maintenance methods with emphasis on the care and building of greens and traps and irrigation installations. New and easier ways of handling maintenance jobs, improved by supts. and persons working under them, also were featured.

Following this, a time-lapse motion picture of water moving through soil was shown. Painstakingly filmed, it proved to be a convincing argument for the school of turfmen who contend that topsoil has to be homogenous in texture to insure deep and healthy root growth. The film, which took about 20 minutes, showed the progress of water droplets through a layer of topsoil about 12-inches deep and how this progress was very visibly retarded when the droplets reached a layer of dissimilar material.

Fourth Session

Supts. Detect Some Shortcomings In Course Construction

Fred V. Grau of Nitroform Agricultural Chemicals was moderator of the Wednesday morning program which had as its theme, "Construction Concepts of a Course." He presented George Cobb, Greenville, S. C. architect; Warren Bidwell, supt. of Olympia Fields (Ill.) CC and Charles Danner, supt. of Richland CC, Nashville. A question and answer period, which followed the speeches by these men was, as it usually is, interrupted too soon by the bell. The morning's program was concluded with a film by the well travelled team of O. J. Noer and Charley Wilson which showed how Mel Warnecke built several greens at Atlanta's East Lake course last year.

Wants Supt. on Job

Architect George Cobb emphasized that he insists on two things when he designs

a course. One is that a supt. be on hand in at least the final construction phase so that he can oversee the building of greens. A second is that the contractor follow the design down to the last contour section on the blueprint.

The Greenville architect said that the secret of design is the adhering to the natural features of the site on which the course is to be constructed. The only departure from this time-tested method should come when it is seen that a succession of holes have so many similarities in appearance that they become monotonous, or when it is apparent that the layout of some holes will be decidedly unfair for the fellow who is classed as a struggling golfer.

As for built-in characteristics, Cobb stated that he is most conscious of good air circulation around greens and efficient water drainage. His fairways are built with a one per cent grade and herringbone style drainage systems are installed under all his greens, usually at a depth of about 10 inches.

Golf Jobs Are Fill-ins

"Too many courses are being built by general contractors who take on golf jobs to fill in during slack times," Warren Bidwell declared. "Perhaps this wouldn't be so bad," he added, "if the supt., who is to take over when the course is completed, were on hand to see what's going on during the time the course is being built. But usually this is not the case. As a result, numerous clubs are finding it necessary to spend important money to correct mistakes made in the original construction, or, if not, they are often disappointed with the mess they have on their hands after the course is completed.

"Perhaps," Bidwell continued, "we shouldn't be too sympathetic with them. As far as we supts. are concerned, they are being penny wise only with us."

Construction sins that are being committed every day, Bidwell said, are: building of greens that are too small; contouring so that cupping areas are too small; burying of debris such as tree stumps under tees and greens; and cutting out of trees or leveling of knolls and slopes that have strategic importance so far as playing conditions are concerned.

Bidwell's conclusion: If clubs want to get their money's worth, they should insist on having their courses built by contractors who know something about golf course construction and are not mere earth movers.