The 1957 season was good or bad—depending upon the particular spot in the country. Weather was never more variable. Courses in the East, from Mass. south to Washington, were plagued with extreme drought. This has created an interest and demand for complete water systems. There was too much water in many parts of the Midwest. Chicago and Ind. had several heavy rains of 3 to 6 ins. in less than 24 hours followed by hot, humid weather.

Poa annua took a beating and there was extensive damage in flooded, low-lying areas. The same type of injury occurred in the Minneapolis-St. Paul area. More than the normal early summer rainfall prevailed extending west to Omaha and beyond. Heavy infestations of crabgrass and goosegrass followed in its wake. Parts of Florida were drenched with excessive rainfall. Bermudagrass turf became thin as a result of continuous overly wet soil. Complaints came from California about performance of grass on putting greens and on other areas of thatched grass. Nighttime temperatures were said to be higher than normal. Wilting and localized dry spots must have been responsible for part of the troubles. Both are associated with hot day and nighttime weather.

Supts. in the Kansas City to Philadelphia belt have learned to expect these things every summer. They know how to prevent damage or loss of turf. It would be well for others to learn their secret. When grass turns blue and shows footprinting they promptly apply a little water by hand to revive the wilting grass and to reduce surface soil temperatures. During bad spells of hot weather they watch seven days a week. These supts. have learned the importance of using water lightly at the first sign of wilt. A delay of half an hour can be the difference between saving and losing grass in critical weather.

Learn to Use Aprons

The winter was not too bad in the snow mold belt—north of a line through New York, Chicago, and beyond. Fungicides gave good control. Clubs have learned to include aprons around the greens and adjoining slopes which drain onto the green as parts of the treated area. Tersan, the phenyl mercurials, etc., have been acceptable except in areas where unusually severe attacks can be expected. The trend there is toward the 2/3 calomel, 1/3 corrosive sublimate mixture at 3 to 5 o/s. per 1,000 sq. ft., either by liquid or dry method. In the Prairie provinces of West Canada the use of corrosive sublimate alone is the favorite treatment at 3 to 4 ozs. per 1,000 sq. ft. It is applied dry with sand or dried activated sewage sludge as the carrier to facilitate uniform distribution and lessen grass discoloration.

In eastern Canada, notably in the Montreal area, turf on the greens appeared to have wintered well. The grass got off to an early start. Then there was a cold snap followed by windy, drying weather. The greens at some clubs fared badly. The grass was mostly poa annua. Recovery was slow and did not start until temperatures were favorable for seed germination. At other clubs there was no loss of consequence. Their greens had a good cover of bent grass with very little poa annua. Its loss was not noticed.

Clubs with bad greens blamed the man in charge rather than the grass because (Continued on page 72)
there was no loss at a nearby club. Their greens came through because turf was bent grass. Bad injury was confined to greens which were mostly poa annua. In the areas where there was nothing else, the spots became bare ground when it died. Cold nights retarded recovery by inhibiting seed germination. The permanent cure at these clubs is to secure a uniform cover of bentgrass rather than change supts. The same thing will happen to the new man if nothing else is done.

The contention that poa annua is sometimes biennial or perennial was supported by its behavior in one Montreal green. In June the poa annua on the protected part of the green was in bloom because it survived the winter and got off to an early start. In the spots alongside which were bare ground in early spring, the poa annua was not in flower because it was new seedling grass from viable seed carried over winter in the soil.

The quickest way to change a poa annua green to bent is to strip the green with a power sod cutter and re-lay with new sod from a good bent nursery. Before laying the new sod the surface should be re-shaped, if necessary, to eliminate pocketed areas and provide good surface drainage. There should be three ways at least for surplus water to leave the green by surface run-off.

**Poa Annua Countered**

The only other way to increase the amount of bentgrass at the expense of poa annua is to do some re-seeding, to apply lead arsenate spring and fall to discourage poa annua and use enough fertilizer to make bentgrass more aggressive. This type program made a vast difference in the greens at Blue Hills in Kansas City over a span of three years. At the start there were good sized areas of pure poa annua. It is still present but these spots have a good basic cover of bent turf.

(Continued on page 101)
Irrigation Pipe And Tile Line Ditching

IRRIGATION PIPE LINE DITCHING
Ditchers are completely rubber mounted and can cut a ditch from 12 to 24 inches in width and up to 5½ foot depth.

PRECISION DRAIN TILE DITCHING
Can install drain tile to accurate grade, by giving as little as one inch of fall to the one hundred feet.

UNDERGROUND TILE IRRIGATION DITCHING
We have ten years experience in pipe line and drain tile installation systems, and would be interested in doing this type work in any Eastern state.

RICHARD BRADY, R.D.1, Box 236 (Erie County)
LAKE CITY, PENNA. Phone — Fairview 3293

Sipula can offer liberal allowances on clubs that are traded in because he has developed several sources that take used clubs off his hands. This, and the fact that the Ottawa pro always has carried such a large inventory that he can supply the customer from stock without having to go through the ordeal of sending a special order to the manufacturer, are, Mike feels, the secrets of his success as a merchandiser. Sipula is particularly adverse to having golfers wait for from three to four days to as long as two weeks to get items that have to be ordered. "Too many sales go out the window when that happens," he says.

Near Year-Around Play
As for the length of the season at Pine Hills, there is no set pattern as to when it begins or ends. Ottawa is only a few miles south of Chicago but it isn't uncommon for tournaments and golf outings to be staged there anytime from November through February. A Jan. 1 tournament is an established event, for example. There are perhaps 20 or 30 good golfing days during the winter months, even at this northerly latitude, and Sipula usually has everything in readiness for the surprisingly large number of golfers who want to play at this time. Keeping the course available practically around the calendar has, in Mike's estimation, done a lot in bringing Pine Hills a large following during what is generally accepted as the regular season.

If you have any illusions about the pro-owner operation of a 9-hole course being a nice, comfortable affair where a fellow makes money while working out in the open, Mike Sipula probably will dispel them. But at the same time he'll point out that a fellow could do a lot worse in spite of the responsibilities and long hours. That's what has kept him at Pine Hills all these years.

NOER: 1957 Roundup
(Continued from page 72)

The rate for lead arsenate should be in the range of 5 to 7 lbs. per 1,000 sq. ft. spring and fall. The seeding rate need not exceed 1 lb. of bentgrass seed per 1,000 sq. ft. at any time. Cross aerifying followed by thorough spiking is advisable before seeding. Enough nitrogen should be used to maintain a vigorous growth without causing grass to be tender and lush.

Clamor for a complete water system in places of severe drought is understandable. Frequently important details about the de-
design and operation of the system, and about maintenance problems associated with the use of water, are overlooked. The first necessity is an assured supply of water in an amount that will be adequate to carry the turf through a period of severe drought. Reliance upon the city water supply for all the club’s requirement is dangerous and may be disastrous. The city or water company may place restrictions at a time when water is needed most. The wisdom of installing a well-designed system which will give uniform coverage with a minimum amount of labor is obvious. The system should be capable of delivering enough water so the course can be watered reasonably quick. That is no reason for overwatering. Too much water is bad for the grass and encourages weeds and clover. Scrutiny of the turf and soil conditions should be a part of the preliminary water survey. Where the existing grass is not the right kind for watered fairways, other grasses should be introduced. The maintenance budget must be adequate to pay for the water and its application, besides additional mowing and increased use of fertilizer.

**Bent for Fairways**

In northern regions where cool season grasses are the only dependable ones, bent-grasses form the backbone of permanent turf on watered fairways. Quaker Ridge (N. Y.), Hollywood (N. J.), and Saucon Valley (Pa.), are good examples. Some years ago these clubs renovated with sodium arsenite and reseeded with bentgrass seed. Under skillful management the bentgrasses eventually overpowered poa annua. The change paid off this year. Fairways came through the summer with a minimum amount of water. Club members were proud of the fairways and satisfied with the playing condition of the turf.

The fairways on the new nine holes at Seaview now in play were seeded to a 50-50 mixture of Merion bluegrass and K-31 fescue. The seeding rate for each was about 40 pounds per acre. Ordinarily when Alta or K-31 fescue is seeded with other grasses it is impossible to get a smooth even cut with a reel type mower. The Merion seems to hold the K-31 erect so it can be cut clean. This combination was tested in a plot for four years, so Warren Bidwell had field experience to justify his faith in the combination. These fairways are watered sparingly. They will be worth watching. If the combination succeeds at Seaview, it might be a good one for unwatered courses.

Kentucky bluegrass and fescue continue to predominate on unwatered northern fairways, but may give way to Merion bluegrass alone or in combination with Kentucky bluegrass or K-31 fescue, especially if the current moderate price of Merion continues.

**Revolution in U-3**

A revolutionary change in fairway turf may be in the making in the region across from Washington and Philadelphia to Kansas City. Some of the clubs in that belt are introducing Bermudagrass into the fairways. It is mostly vegetatively planted U-3. Westwood at St. Louis has converted all 18 fairways to U-3 Bermuda grass. The turf was singularly free of crabgrass and goosegrass this season, in contrast to heavy infestations on some courses. Old Warson, Algonquin, Norwood Hills, and other St. Louis clubs are turning to Bermudagrass fairways.

Bermuda turf on an approach at Glen Echo in St. Louis is exceptionally good. It was planted by Bob Foulis more than 20 years ago and has survived winters ever since. This suggests that once Bermuda becomes well established in that area it has a good chance of survival.

Bermudagrass is being introduced into fairways in Kansas City, Louisville, Washington, and Philadelphia. In the western area the Bermuda is machine planted in rows approximately 18 ins. apart. In the East some clubs use 2 to 4-in. plugs, others use the Ryan Power Sod cutter attachments. It cuts a narrow slice of turf. In practice, the slice of Bermuda from the nursery is cut into 12 to 14-in. pieces. They are inserted at 2 to 5-ft. intervals into similar strips cut across the fairway.

**Less Fluff and Thatch**

Several clubs in Washington, D. C. express a preference for common type Bermuda grass from seed. They claim there is less fluff and thatch in the resulting turf. Instead of seeding, they get their planting stick from patches of native Bermudagrass on the property.

Blue Hills in Kansas City seeded the approach on the first fairway with hulled, pregerminated Bermudagrass seed in late May. There was good cover by early July. The area was cross-aerified and cross-diced enough times to prepare a seedbed. Fertilizer was then applied. The seed was mixed with two to three times its volume of Vermiculite and kept damp at a temperature of 70 deg. F for 4 to 5 days before seeding.

**Winter Survival**

Failure to survive the first winter is the common objection to the use of Bermuda seed. Blue Hills intend to let the seeded Bermuda develop 1½ to 2 ins. of growth this fall to check loss of soil moisture by direct evaporation. The fairways will be watered heavily just before winter. They plan to start watering early in the spring if the season is dry and windy.

One objection commonly raised to the use of Bermudagrass is the possibility of invasion into the bent greens. It seems to be less serious than in Texas and Oklahoma because invasion so far has been confined to surface runners. In Washington, D. C., they are cut back periodically. Danner at Richland CC in Nashville has used the Ryan edger very successfully. It cuts around the edge of the green once a week, and the severed Bermuda stems are swept off the green.