

with depth of pipe is not shown on the original and for lack of revision, fairways are torn up in search of pipes ruined by frost; all because the information of such details was not properly filed. Have you a really accurate plan of the drainage systems operating on the course; have you detailed information on the construction of each green; are you keeping a diary of the happenings on every green, fairway and tee, and the rough; do you score the greens at given periods to compare their condition throughout the season; do you check the number of players on the course with its condition?

These facts and many more, are worth while items to put on record, where they can be later analyzed to the profit of the club and as a guide to future operations. Commercial clubs especially, cannot have too much information of this sort, because it all has such a direct bearing upon net revenue.

A Valuable History

And in addition, records of this nature provide a chain of continuity, a valuable

history, to be passed to succeeding committees and officials. They give the newly appointed committee something to work from and in greater degree it assists the new superintendent to grasp quickly the essential facts regarding his new work.

To keep a log of this is not a heavy imposition. The greenkeeper should be required to hand in to the office each day a summary of the work done, materials used and itemized, repairs, etc. together with simple observations on weather, general conditions and unusual happenings. This may be typed out with further information gathered by the manager, as, number of players who teed off and criticisms on course conditions, etc. Three copies may be made; one for the office, one for the green chairman, and one returned to the greenkeeper. Postings from this day sheet may be made to the individual pages for each tee, fairway and green. The cost of this in comparison with the total outlay for the season would be negligible and the information gleaned from a proper discernment of the facts tabulated, would yield handsome dividends.

How to Wage Battle Against Mosquitoes

MOSQUITOES are a nuisance about any country club. They not only annoy the members in the evening, but frequently are just as annoying during the daytime, particularly on the moist, windless days of late summer.

Many a member has refrained from playing his usual number of rounds because of the discomfort he knows he will suffer from the mosquitoes, and it is not uncommon, during the height of the mosquito season, for a course to be almost deserted for many days, with a consequent loss of revenue to the club.

In fact, the prevalence or absence of mosquitoes is frequently the deciding factor between an operating profit and an operating loss, and therefore a subject which should be of keen interest to country club officials responsible for running expenses.

Are mosquitoes a necessary evil? Positively not, unless your club is surrounded by swamps and, even then, the case is not hopeless.

On the contrary, the pest can be elim-

inated, or at least greatly abated, by any club willing to follow a few simple preventive measures, for the mosquitoes of a given area are for the most part hatched from eggs laid in the immediate vicinity. In its lifetime, the mosquito rarely travels far from its birthplace, for it is a notably poor flyer. From the viewpoint of the country club, therefore, the problem of eliminating the mosquito amounts to no more than adopting the necessary precautions on the club grounds.

Mosquito's History

It is well to consider the salient details of the mosquito's life history. The eggs are deposited in any available body of stagnant water. A day or so later they hatch into larvae or "wigglers," as popularly called. These wigglers feed on the bottom but must come to the surface periodically to breathe. As the days pass there are some unimportant changes in the wigglers' appearance but within ten days, generally less, the adult mosquito forms. Thus it can be seen that during the course of the

summer there will be many generations of mosquitoes in a given area, and such preventive measures as are adopted must be persisted in if the mosquito population is to be held at a minimum.

The most simple and effective method of control is to abolish or render uninhabitable the haunts of the wiggler. In golf and country clubs, the most fertile source is very liable to be the water hazards, particularly if these hazards take the form of still ponds. Wigglers cannot live in running streams, but if there is any still water on your course it is the natural birth place of millions of mosquitoes, and the proper mosquito-proofing measures should obviously be directed at such ponds first.

The old standard treatment was to oil the surface with kerosene, thus forming an oil film which suffocated the wigglers when they came up to breathe. But there were objections to this treatment. The odor of the kerosene was unpleasant; the film collected dust which later soiled the grasses at the edges of the pond; and, most important of all, a golf ball hit into the pond could not easily be recovered.

The better method of treating water hazards is to deepen the edges of the pond, remove the vegetation that grows along its margins, and then stock the pond with either goldfish, silver fish or "top minnows." These fish will soon rid the pond of wigglers. It is necessary to deepen the edges and to remove the vegetation so that the fish can reach all parts of the pond. Otherwise, if the edges taper gradually off, the wigglers can develop into adults in water too shallow for the fish to reach them.

It should be noted that kerosene and fish cannot both be used, as the oil-film will suffocate the fish just as it does the wigglers.

A Wiggler Preventive

As a supplementary preventive to make sure that the pond is kept free of wigglers, it is recommended that a mixture of one per cent paris green and 99 per cent road dust or fine sand be prepared and a few handfuls of this mixture be sprinkled in the pond at frequent intervals. This mixture will kill thousands of wigglers but is too weak to hurt the fish or vegetation.

After the water hazards have been mosquito-proofed attention should be turned to ornamental pools about the grounds, fountains and the like, and these pools should be stocked with goldfish.

Located near each green on most golf courses are sunken boxes where the sprinkling hose is stored. The bottom may collect stagnant water. Examine your hose boxes, and if water is found to remain in them, make such changes as are necessary to insure prompt drainage.

Next examine all other necessary accumulations of water about the club house, including cess-pools, septic tanks, fire buckets, water tanks, and the like, all of which, if exposed to the air and un-screened, will encourage the breeding of mosquitoes.

If the cement is cracked even slightly around the rim of the cess-pool cover or septic tank, have the break repaired. It is amazing how slight a crack will furnish the necessary passage way to allow the female mosquito to enter and deposit eggs in these ideal locations, where breeding can go on unchecked. Make sure, when examining these spots, that the covers themselves fit tight and firm.

The water tanks necessary for drinking water, or shower baths, should be screened, whether these tanks are indoors or out. Mosquitoes get inside of buildings and they breed and lay eggs just as readily indoors as out.

If there are fire buckets about the club house and the other buildings on the grounds, instruct the employee whose duty it is to keep these buckets filled to empty the water from them and refill at least once a week during the mosquito season. Thus the water will be changed before sufficient time has elapsed to allow the mosquito wiggler to mature.

Examine the roof drains of every building on the grounds and clean out any pipes stopped up by leaves or debris. Frequently such places hold water for many days after rain and are, therefore, ideal breeding places. This is particularly true where trees overhang the roofs or where ornamental vines have grown up over the porches.

Attention should next be directed to the club dumping ground because here old bottles, tin cans, dishes, cooking utensils and boxes accumulate and with each rain collect water. Even a very small amount of water such as these articles will hold is sufficient to breed many thousands of mosquitoes. Accordingly, the club employee who hauls waste material to the dump should be instructed to examine it periodically and turn, mouth down, all receptacles

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tal rating and for bringing out the most boys.

The award for bringing out the most boys is not only to increase the number of caddies available but to discourage the older boys' "combination in restraint of trade." These older caddies, wanting to get all possible "doubles" are fighting away youngsters who are anxious to caddie at some of the Chicago District clubs.

Waging Mosquito War

(Continued from page 10.)

where water has collected or is liable to collect.

If there are open drainage ditches on the grounds make sure that they are deep enough to allow the free flow of water, and any spots about the course where turf has recently been removed, especially in clayey soil, should be treated with oil if water tends to remain in such spots after rains.

It should be understood that, whenever possible, potential breeding places for mosquitoes should be abolished, as the elimination of the sources, once and for all, saves the expense and annoyance of subsequent attention.

Community Co-operation

Many golf courses are located near swamps, or are near a number of ponds just off the club property itself. In such cases seek the co-operation of the community in combating the mosquito pest. This co-operation is generally easily obtained and the expense of the preventive measures over these larger areas can be prorated among the interested parties.

If your golf club is surrounded by farms, favorite breeding places for mosquitoes are the semi-swampy pastures where farmer neighbors keep their stock, and where mosquitoes will breed by the thousands in the water which accumulates in the hoof prints of the horses and cattle. Secure the assistance of the owner in such cases and obtain his co-operation in installing sufficient drainage ditches to dry out the pasture.

All of the above preventives are directed as may be observed, against the natural breeding places of the mosquito wiggler. To combat the adult mosquito, erect a number of martin houses and attract colonies of these interesting birds to your grounds. Each house can be built to contain from 20 to 100 pairs of martins, and a number of such houses should be erected on tall poles near the club house. These

Government Discovers Easier and Cheaper Way to Control Brown-Patch

After experimenting with ordinary Brown-Patch remedies and 15 or 20 different chemicals, the United States Department of Agriculture found that Calomel was the most effective of all.

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Best results depend upon the fineness, bulkiness and mercury content of the Calomel used. **CALOGREEN** (Mallinckrodt's Special Finely Powdered Calomel) is by far the most finely powdered Calomel on the market. It is more than twice as bulky as ordinary Calomel and contains 84.9% mercury.

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birds will destroy thousands of mosquitoes daily, for the pest constitutes a large part of their food supply.

Analysis of the preventive measures suggested in this article will show that neither are they expensive nor will they take a disproportionate length of time to carry out. Try fighting the mosquito for one season. The fewer the mosquitoes, the more the members will use the club—which means increased attendance and therefore increased revenue.

Trying to Make Bent "at Home" in Florida

By DR. M. B. HERLONG,
Commissioner in Charge Jacksonville (Fla.) Municipal Course.

MOST of Florida's many golf courses have Bermuda grass for both fairways and green. Within the last four years some courses have been planted to carpet grass. This grass does well on low, black and moist soil. Bermuda is about the only grass that has a record of growing on light, dry and sandy soil here. Of the two grasses, carpet grass has proved the better because it forms the denser and more resistant turf.

On the municipal course at Jacksonville where we have 500 to 600 players Saturdays and Sundays, and many of them beginners, carpet grass fairways have been our salvation. These newcomers to golf give the fairways terrible punishment and we place a great deal of value on a grass that withstands these onslaughts.

Carpet grass is native to the low, black soil of the south's flatwoods country. I have seen some wonderful growths of it wild in spots that have been stumped, broken and leveled for fairways, with resultant destruction of this fine turf.

Our experience with bent has been interesting, but in the case of the Jacksonville course, not extensive or successful. With some stolons I brought here from Long Island where they were growing well, I established an experimental nursery the latter part of October, 1925. It did nicely at the start. I was able to divide it twice and was beginning to be hopeful of success, but when June came this bent died just as Italian rye does. We have the ambition of being able to acclimate some bent to Florida and this strain with which I experimented seemed the most promising. I believe that if I had furnished a shade for my nursery during the summer that,

Charles R. Murray endorses *Fulname*

Mr. Murray is professional at the Royal Montreal Golf Club. He was twice Canadian Open Champion and seven times Quebec Champion.

Mr. Murray finds *Fulname* reduces ball stealing.

* "During all last season I had not one complaint of ball stealing from any member of my Club who owned a *Fulname* Die."

Mr. Murray finds *Fulname* Marking pays.

* "It takes a little time to mark the balls but the Pro is well paid for his trouble as he will find the members will buy **all** their balls from him when they can have them marked. So his ball sales increase."

When *Fulname* benefits the club, the players, the pro, and the caddies, can there be a valid reason for further delay in installing and supporting it? It is not expensive. Details upon request.

*From a letter dated May 23, 1927

The Fulname Company
707 Southern Railway Bldg., Cincinnati, Ohio
