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SPALDING SETS THE PACE IN SPORTS

How to Eliminate Mosquitoes From Outdoor Play Areas^{*}

By LINUS C. PALMER

Supt., County Parks & Forestry, Grand Rapids, Mich.

Mosquitoes of various sizes and breeds are found from the frozen regions of the north to the torrid countries of the tropics, some being only a nuisance while others are carriers of some of man's most dreaded diseases.

They can be controlled or entirely eliminated by proper control measures. The success we have had, we owe to the help, advice and encouragement of Professor Ray Hutson and Ex-Professor E. I. McDaniel of the Entomology Department of Michigan State College.

All mosquitoes breed in water and water only. They do not breed in damp grass or shrubbery as is a common supposition of many. The life cycle is fundamentally the same in all groups and the stages of development are practically similar. While there are several varieties in Michigan, the house or domestic mosquito is the most common with the inland-swamp mosquito running a close second.

All mosquitoes hatch from an egg and water is necessary in order to hatch the egg. The familiar mosquito lays her eggs in pools of water, rain barrels, cisterns or any container which will hold water. The eggs are laid in small black masses of from fifty to four hundred each. From the egg comes the larvae commonly called the "wrigglers." It feeds on organic matter in the water and gets its air separately by sticking its long tail-like siphon through the upper surface. The larvae remain in that stage from six days to three weeks depending on the temperature, then become pupa. After remaining in this stage from twenty-four to seventy-two hours it emerges as an adult mosquito.

Any control program to be effective must do one or several of the following:

1. Change the level of the water up and down suddenly.
2. Clean vegetation out of drainage ditches.
3. Drain standing water.
4. Treat standing water in such a way that it will be impossible for mosquitoes to breed.
5. Keep fish in garden pools.
6. Do not overplant garden pools with vegetation.
7. Spray to eliminate adults.

The Park and Forestry Department of the County of Kent, Michigan, has been engaged in a mosquito control program for the past twelve years. During that time we have tried all known methods of control, and have used practically all known materials in our control work. The purpose of our mosquito control program was to make our county parks usable by the public from early spring to late fall without being pestered by mosquitoes. This we have succeeded in doing. We have fifteen county parks, all of which has a mosquito problem, some considerably worse than others but none without the pests during the mosquito season which generally runs from sometime in April to October depending on the weather. In several of our parks, the mosquitoes were so bad at times that it was impossible to use them but for a short period during the season.

Best Method of Control

Our first work was trying to control the larvae or "wrigglers" mosquitoes just out of the egg. For this work we used copper sulphate to control the growth of algae in stagnant pools. We also used oil to cover the surface of standing water. Later we used paris green and also DDT. Wherever and whenever possible we drained all possible spots where water would accumulate and stand for a period of time. By experimenting with different control measures, all of which were successful to a degree, we determined that our best method of control was to let the mosquitoes emerge as adults—then, spray for their control. Our first work was done using a pyrethrum spray. This method was most satisfactory until the war stopped the importation of pyrethrum, all of which was imported from Japan and the Kenya Peninsula of Africa. After the supply of pyrethrum was stopped, rather than abandon our control work, we used a nicotine spray with excellent results, but with considerable inconvenience to those whose job it was to apply it. During the last stages of the war, DDT was made available and we immediately started to use this material. First, as a liquid spray—then, in dust form—the method we are using at present and plan to continue to use. We use this material for control of both the larvae and adults with near perfect results.

As was said before, our first control

^{*}Address at NGS A Convention, Chicago, Ill., Jan. 31, 1951.

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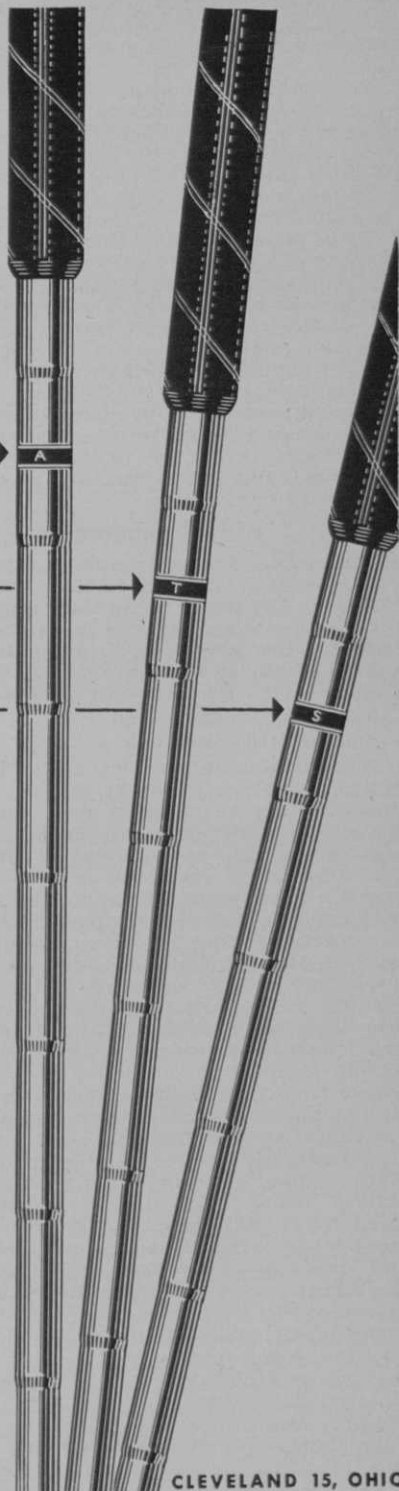
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work was controlling larvae. In this we were successful. However, the time element enters prominently into this work as it must be done before the "wrigglers" have a chance to change into the second stage of development, and all breeding places must be watched closely and sprayed either before the eggs are hatched or when the mosquitoes are in the "wriggler" stage. A few days of neglect will give the "wrigglers" a chance to change into the pupa stage, and thence, into adult mosquitoes. For this work we used a drain oil using an emulsifying agent and water, and also kerosene at the rate of one ounce per 15 square feet. Paris green was used as a dust, mixing five pounds of paris green to 100 pounds of carrier and dusting so that the equivalent of $\frac{1}{2}$ pound of paris green was used per acre. This quantity of paris green is not harmful to domestic animals and foliage. All of our dusting was done with hand dusters as the areas covered were rather small.

Results Obtained

While there are many control measures recommended, our best results were obtained by the use of pyrethrum and DDT for adults and a dusting of paris green or DDT for the larvae. In spraying for the control of adults with pyrethrum we used a spray which was prepared as follows:

Pyrethrum — one pound

Summer Oil — one-half gallon

One ounce of this stock solution to one gallon of water. About 25 gallons of the finished spray was used per acre. Our cost for spraying with this material before the last war was approximately \$1.00 per acre. One application remained effective from ten days to two weeks. This work was done with our tree spraying equipment, using a fog nozzle and spraying from the ground up into the air about fifteen feet. The work then as now was done in the early evening or early morning when there was very little wind, allowing for better drift and longer suspension. Where we had a lot of shrubbery, the mosquitoes were driven from their hiding places with nicotin fumigators. After the use of pyrethrum for several years, the war come on and this material was no longer available. Rather than give up our program, we started using a nicotin spray at the strength recommended for aphids. This method was effective but more expensive, and inconvenient for those applying it as the fumes very often made the operators ill.

Our latest, most effective, and incidentally, the cheapest method of control, is by the use of DDT. We started using this material during the last year of the war. We first used it at a strength of $1\frac{1}{2}\%$ but later changed to 3% which we find most effective. For the control of flies, we use it at a strength of 5%. It was first ap-

plied in liquid form with our tree spraying outfit with excellent results but as this equipment was large and heavy, we were unable to get to all places requiring spraying so we later changed our method of application to dusting. We purchased a Root Model 1ZA1 duster which has a hopper capacity of 100 pounds. This model is a portable machine that can be carried and used on a pickup truck with which each park is equipped.

Time of Dusting

The time of dusting is left to the judgment of each caretaker who with the help of one additional man does the work. By using the duster on a pickup truck, all places requiring dusting can be reached without any difficulty. The work requires only two men, one to operate the truck and the other, the duster. We dust 80 acres or more in about three hours. We have found that one machine is sufficient to take care of all of our work. As said before, the work is always done in the early evening or early morning when the mosquitoes seem to be the worst, and also at that time of day there is very little wind so the dust stays suspended for a longer length of time, and also, we get better drift at these times and do a more effective job. The work is done so that if possible, what little wind there is, is on the back of the operator. As to cost, our cost for the past season on a typical 80 acre area was as follows:

1,000 pounds of dust	42.50
Labor (caretaker 5 hrs.) which includes 2 hrs. transporting machine and materials to and from park	6.20
Helper — 3 hrs.	3.72
Equipment rental, truck and duster, gas and oil	2.50

Total cost for 80 acres

54.92

This makes the approximate cost per acre \$0.69.

Three dustings during the season are generally sufficient to do a good control job, but occasionally when we have a warm fall an additional dusting is advisable.

While our biggest and most important job is the control of mosquitoes, when flies become a nuisance we spray or dust for them using the material at a strength of 5%, which we have found very effective.

Our work in the control of mosquitoes and flies has proven that these pests can be controlled using the materials and methods which I have attempted to describe. Where it is not advisable to use DDT due to discrimination against this material or where it is not advisable to use due to danger to fish life, other materials which I have mentioned can be used with very effective results.



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Women's Apparel New, Big Sales Feature for Pros

By HOWARD SCOGGINS

When we entered the sportswear business with retailing outlets being restricted to golf professional shops we thought only of the sales of golf apparel items for men. It wasn't long before our observation and experience, and that of alert pro merchants, convinced us that there was a large potential market at pro shops for the sale of women's golf wear.

The astonishing development of the women's golf apparel sales at pro shops now has this class of sales volume in many cases as large as the apparel sales to men are, despite the fact the men patrons of these pro shops far outnumber the women. This is one of the most significant sales showings in all golf merchandising and it must be credited to the wives of pros who recognized selling opportunities and prevailed upon their husbands to start out with such standard items as golf blouses, jackets, hats and caps. Judicious



This sweater shirt is among the new fashions worn by smart women golfers in the south last winter and which will be sold by pro shops exclusively this year.

selection of those starting items got the women's business soundly based.

The pros had suspected they couldn't alter the trading habits of women golfers who had been accustomed to go to depart-

ment stores and specialty shops for golf apparel, but the pros' wives convinced their husbands that in numerous instances the pros not only could meet the competition but could present such attractive buys they would alter the customary practice of purchasing. By having excellent judgment of materials, prices and design for smartness and utility the wives of pros guided the buying of women's items for the pro shops and established the most rapidly growing department of pro retailing.

The pros' wives suspected that the pro shop mark-up would be less than that of the usual fine type of store in which women buy golf apparel, consequently the pro shop could make a very strong bid on a price-for-quality basis. The pros' wives had the right hunch there but neither the pros or men members of our organization realized what powerful selling propaganda that discovery of pro shop retail price edge would be. The women golfers talked about it and their husbands overheard the story with the result that this women's business has been about as effective advertising as the pro shops ever got.

When our field representatives made a special study of women's apparel business in the pro shops we found from pros and their wives that quite a number of better women golfers were buying some of our items designed for men in their search for something comfortable and smart for golf.

Popularity, Sales, Come Quick

We ventured further and designed a few items that would have the smart feminine fashion air yet the same sort of freedom for action that characterized the men's numbers. Pro shops somewhat cautiously stocked these new numbers for women and by mid-season, 1950, the pros and we found that these items sold far beyond the expectation of any of us. The buying surge was spontaneous as there had been no particular sales push behind the items other than that of the usual attractive and well-located displays at the properly operated pro shops.

Acting upon that clear and extensive evidence we put into our operations an entirely new women's department which is functioning on as large a scale as our men's golf wear business. Designers who

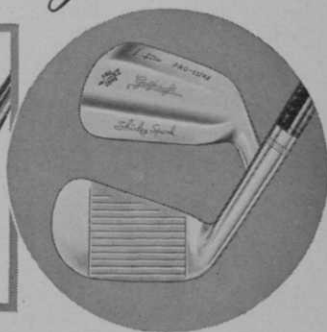
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Shirley Spork is one of America's up-and-coming golf stars who will hit the tournament trail this summer for the first time. Along with her tournament work she will give exhibitions and conduct golf clinics. At present, Miss Spork is an instructor of Physical Education at Bowling Green State University in Ohio.

Many pros who have seen Miss Spork declare her game is educationally and professionally sound and predict a brilliant future for her.

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are low handicap women golfers made extensive checks of their own ideas with those of star, average and high handicap women golfers and produced items that bring into women's golf wear a very profitable combination of charming sports styling for playing comfort and excellent, often exclusive, materials.

The endorsement of these new items by professionals, their wives and the women golfers who've seen the advance showing at our showroom at Dunedin, has been remarkably enthusiastic. Orders placed for spring delivery gave plain evidence that women's apparel volume will hit a record high in pro shops this year. Pros who, not long ago, were rather casual in their attitude toward apparel business and began paying attention to it only when wartime shortages of clubs, balls and bags forced them to look around for volume, have seen a new multi-million dollar sales volume come into the pro shop and stay. The men's golf apparel business at pro shops has grown so we have on our books many pros who sell between 400 and 500 pairs of men's slacks alone each year.

The women's business in pro shops will enlarge that picture of profit. In a few years as the good pro businessman looks at the profit on his women's volume he will wonder why the profit escaped him so long, particularly as it represents satisfied customers and more golf play by women. It probably is the case, more than many pros realize, that lack of attractive and comfortable golf apparel has been a handicap to the growth of golf among girls and women.

Now we doubt that sports can show any more attractive women's wear for ease and comfort in playing than some of our new items, especially a new women's golf's skirt and knee-length shorts, an all-purpose golf dress, new jackets and shirts, new shirts, sweaters, shoes and headwear. It will add new interest and prestige to the pro shop, too, to be identified as a fashion center for the latest in women's smart wear for golf.

Golfers Ask "Fair Deal" on Green Fee Tax

Southern California Public Links Assn. heads a protest against proposal to put a government tax of 20% on green fees. Other golf associations are being asked to campaign and get golfers to register their protests.

The case as set forth by Gomer Sims and Cecil Hollingsworth in crystallizing Southern California golfers' opinions is based, in one respect, on belief that such a tax is illegal inasmuch as such a fee would be a service charge because those who pay fees are paying for the privilege of using

facilities. The players use their own equipment and entertain themselves and are not in the same status as theater customers who pay to see and hear entertainment.

Another point, brought out in letters Southern California Public Links Golf Assn. members are sending to members of Congress, is that there's a rank inconsistency between government urging that citizens physically and mentally condition themselves for the defense effort and putting a tax on such conditioning by means of golf.

It's set forth in the protest letter that taxing the golfer by green fee is comparable to taxing the player of baseball, football, basketball, swimming, etc., for their participation in sport.

George A. Heap, pres. Southern California Public Links GA, expresses confidence that other golf organizations will register their protests with congressmen and protect golf against an unwarranted increase in cost of the game.

Alameda (Calif.) Studies Muney Course Operations

Twenty-three California cities, varying in population from Mill Valley (6,119) to Los Angeles (2,008,500) replied to the questionnaire circulated by a citizen's advisory committee of Alameda, Calif. to secure information on municipal course operations.

Land used for courses varied from 35 acres in Pacific Grove to 380 acres at Pasadena, with an average of about 150 acres per course. Original costs of the courses showed wide variations. Costs of improvements generally were between \$50,000 and \$100,000. An average of 15 men is employed in operating the courses. Revenues varied from \$11,000 in Antioch to \$171,000 in Pasadena. The report noted "revenue information obtained was not too useful as some cities gave a net revenue statement while others used only their gross revenue figures."

The summary of the survey, by Harry L. Morrison in Recreation magazine, concluded: "this facet of city service and finance can be of more service with improved recreation and greater municipal revenues."

Central Plains Foundation Field Day June 12

Central Plains Turf Foundation sets date for its annual field day June 12, at Manhattan (Ks.) CC. The Foundation's Fall turf conference will be held at Kansas State College, Oct. 24-25-26. Turf plots for the Foundation's work have been secured near Kansas State College campus and planting has started on the plots.

University of Mass. Turf Meet Staged as Work Conference

By GEOFFREY CORNISH

A workshop conference important in the history of Turf Maintenance was held at the University of Massachusetts on March 8 and 9.

Dr. Ralph A. Van Meter, President of the University, greeted 180 delegates. In his opening remarks the President stated that some people criticize "Business as Usual" in this time of crisis. "However, we pass from crisis to crisis," he said, "and if we are to maintain our way of life, 'Business as Usual' is a sane and essential policy, provided of course it is not allowed to interfere with the defense program. The role of golf courses in a crisis is obvious, and it is important they be kept functioning."

The conference was held at the conclusion of the 21st Annual Ten Weeks Winter School for Turf Managers. Nineteen candidates representing ten states successfully completed the course and were presented with certificates.

Conference subjects stressed production methods, pertinent to the present time. There were no speeches. Discussions were held and policies formulated in open meetings. For each subject a board of six or eight men was chosen from delegates by drawing of names. The subject was introduced by the chairman. The Board discussed the topic on the stage before the audience. A policy was formulated and the audience was then invited to comment. A strict time limit was observed for each subject.

At the conclusion of the conference

President Homer C. Darling presided at the annual meeting of the New England Turf Association. Election of officers was postponed until July 1 to coincide with the State fiscal year.

In addition to discussions and as a substitute for speeches, nine printed papers prepared by staff members of the University of Massachusetts were given to delegates. The subjects were as follows: Bermuda Grass for Massachusetts; What About Grubs?, Mosquito Control for the Golf Course, Tree Work on the Golf Course, The Oak Wilt Disease, Walks for Golf Courses, Cut Flowers for Club Houses, Temperature and Humidity Observations on Bent Turf, Soil Organic matter.

Subjects discussed in open meetings together with main points are given below:

The Buyers Expectations and Practical Production, Chairman, Professor Lawrence S. Dickinson.

Professor Dickinson showed a graph presenting his impressions of changes in the last thirty years in players' expectations, greenkeepers' knowledge of grass, their salaries and prestige. His graph indicated that much more was required of greenkeepers in 1950 than in 1920. In the same period the greenkeeper's knowledge of grass had increased tremendously. However, his wages had not increased in proportion, and his prestige had barely kept pace with his wage increase. Professor Dickinson stated that the green



Delegates attending the University of Mass. two-day workshop conference on turf management.