

Testing New Chemicals on Greens

By John Monteith, Jr.

During the summer many greenkeepers will be interested in trying a new chemical, calomel, for the control of brown-patch. This raises the question as to the best desirable methods available to a greenkeeper for testing a new chemical on his greens; whether it be a fertilizer, fungicide or insecticide. Practically all of those which are used on golf courses are likely to be injurious if applied unevenly or in excess. Therefore although a chemical may be regarded as perfectly safe for general use, it may produce disastrous results under certain conditions. An example of this is the common ammonium sulphate which is used on golf greens throughout the country in spite of the fact that hundreds of greens have been badly burned by careless application or unfamiliarity with its use. It seems to be a human failing to believe that if a small amount will produce beneficial results it must necessarily follow that a little more of the material will be more beneficial. It is wise to gain experience with a new chemical on a small scale, for if any mistakes are made the injury is not extensive. If the test is satisfactory, there will be plenty of time later for more general use.

So many times we hear a greenkeeper decide, "Well, I shall give it a trial on number so-and-so." He then proceeds to treat that entire green and to compare results with other greens on the course which have not been so treated. This method gives some information, it is true, but when one considers how much variation there may be between two greens within a hundred feet of each other, this system is obviously not as fair a test as might be desired. If the trial is made so that the treated and untreated turf is on the same green, the results are much more striking and convincing.

One of the best methods for testing a new chemical is that of using only a small square at one side of the green, as is illustrated in Figure 1. Especially for fertilizers or chemicals used against brown-patch this method has several distinct advantages. It takes very little time to mark off such an area and to apply the chemical. If injury results, due to error or other causes, the loss of turf is insignificant as compared with what might have occurred if the test had been made over the entire green. If the effect is beneficial, this plot will stand out distinctly, whereas if the results are not satisfactory, the turf in this plot will not be distinguishable from that on the rest of the green. There will be no need for guessing as to slight differences, for where the plot is surrounded by untreated turf on the same soil, with exactly the same watering, clipping and other care, any differences in appearance must be due entirely to the chemical. Two or more similar chemicals can be compared accurately by placing them on small adjacent areas on one green. A convenient size for such a test plot is an 8-foot square. This gives an area of 64 square feet, which is approximately one-sixteenth of 1,000 square feet. Chemicals for use on greens are usually recommended on the basis of the common unit of 1,000 square feet. In using the 64 square foot plot one simply has to use ounces instead of pounds as recommended for the larger area. That is, if the recommendation commonly made is for 3 pounds per 1,000 square feet the equivalent amount for the 64 square foot plot is 3 ounces.

Another method which is commonly used by greenkeepers in comparing two similar chemicals is that of dividing the green into two equal parts and applying one chemical to one side and another to the other half. This is a desirable method for comparing a new chemical with one which the greenkeeper already has proven to be valuable on his course. Different fertilizers are often tested in this way, using ammonium sulphate, or some other standard fertilizer with which the greenkeeper is thoroughly familiar, on one side and the new fertilizer on the other half. In the cases where greenkeepers have already used some of the mercury compounds, such as Semesan or Uspulun, it would be wise in testing calomel to treat the greens in two sections, putting calomel on one half and the other compound with which they are familiar on the other section. This would be much better than



FIGURE 1—TESTING A NEW CHEMICAL ON A GREEN

By marking off a small square at one side of a green and treating that only, the greenkeeper can determine whether an unfamiliar chemical is of value on his course. If injury results the loss of grass in this small area is of little consequence. On the other hand, if the treatment proves satisfactory it can then be applied to the entire green.

shifting entirely to the cheaper chemical at once or than comparing them on different greens. If clubs will make such tests and report results to the Green Section, they will not only obtain valuable information for their own local use but will help us in drawing conclusions as to the relative values of these chemicals under various conditions of soil and climate. The trials will be even more conclusive if a portion of the green is left untreated, for a time at least, to enable the greenkeeper to observe whether brown-patch develops in the untreated portion and to what extent it injures the turf. Naturally, we do not expect greenkeepers to leave any large area of the green unprotected during a severe attack of the disease, but a small portion can be left as a "check" during the lighter attacks.

In making tests with calomel it must be remembered that this chemical is not soluble. The more finely ground calomel stays in suspension longer than the coarser material, and therefore is more suitable for liquid applications. Much confusion already is apparent as to the distinction between soluble material and that in suspension. Since this difference has a direct bearing on application of calomel, perhaps a more detailed explanation of these terms will be helpful. Ammonium sulphate, for example, is soluble; that is, it is entirely dissolved and disappears in the quantity of water used in applying it to greens. Sand and clay differ in that the particles making up clay are extremely small as compared with the individual grains of sand. If sand is shaken up in a jar of water and let stand, it quickly settles to the bottom, whereas a like amount of clay treated in the same way

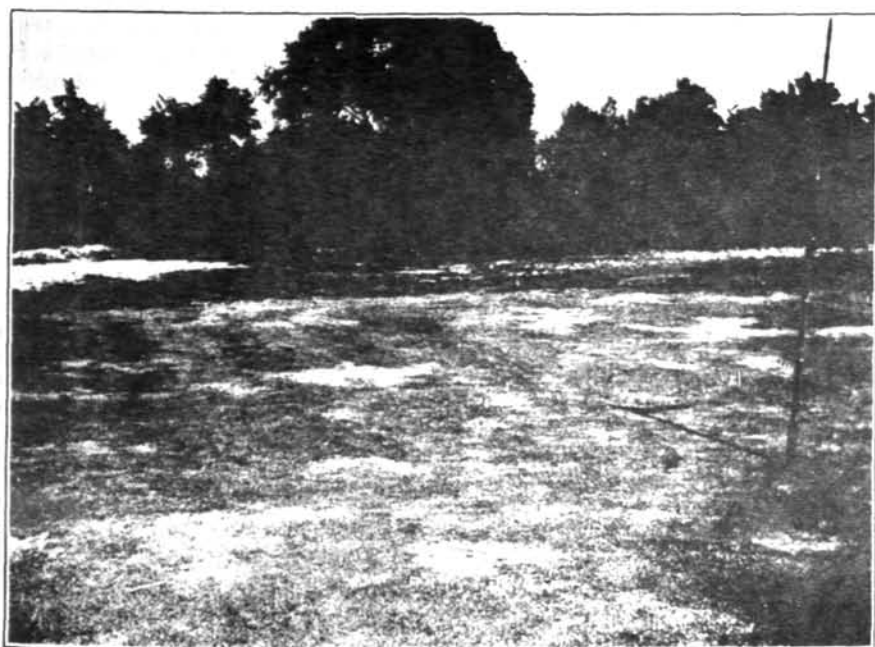


FIGURE 2—"BURNING" CAUSED BY CHLOROPHENOL MERCURY

The light areas represent patches of grass permanently injured by excess of the chemical. On this green the dusting method of application was used; a method which is usually unsatisfactory due to the difficulty in obtaining uniform distribution.

takes perhaps hours to settle out entirely. The clay particles are not soluble but remain suspended in the water for some time. Likewise, the more finely calomel is ground, the longer it will remain suspended in water and the more suitable it is for use in liquid applications. However, even the most finely ground calomel we have been able to obtain contains a relatively large amount which settles out quickly. Therefore, if calomel is used in barrel sprinklers or proportioning machines, it should be constantly stirred to avoid uneven distribution.

The method of applying calomel, which at present appears most practical, is that of mixing it with a small amount of fine compost or sand. This material should not have any large lumps which will be picked up by the mower, for some of the chemical would stick to

them and be removed from the green. The compost or sand simply gives sufficient bulk for even distribution and the amount will vary with the desires of the greenkeeper. Usually one pail for each 2,000 to 5,000 square feet will be sufficient. The calomel, and ammonium sulphate if desired, should be *THOROUGHLY MIXED* with the compost or sand and then broadcast over the green as one would sow seed. This may be done by hand, or it may be possible to adapt the various hand seeders to applying this mixture. The principal objective is to scatter the material evenly. The green should then be watered thoroughly, but care must be taken not to let it wash or puddle. If ammonium sulphate is used, watering must follow immediately.

Whatever method is employed in making the application of calomel, the rate should be 3 ounces for each 1,000 square feet. Larger amounts can be applied with safety and smaller amounts will, no doubt, frequently control the disease, but for preliminary tests we advise this 3-ounce rate. In comparing this treatment with Semesan or Uspulun, these latter should be used at the customary recommendation of 1 pound per 1,000 square feet.

It is perhaps well to give a warning against dust guns for applying any of these chemicals. The dust method of application became general when Bordeaux Mixture was used against brown-patch. It is a rapid method, and for that reason has some stubborn supporters. It is entirely possible to use this method with safety, but the majority of the experiences in dusting with the more concentrated mercury compounds have been disappointing. This is due to difficulty in obtaining a uniform flow of dust and the resulting uneven distribution. The accompanying illustration (Fig. 2) shows injuries produced by one of the chlorophenol mercury mixtures that were much more serious than would have been the fungous damage which it was intended to prevent. The same quantity applied with the liquid or compost method, using any reasonable care, would have caused little or no injuries.

Often a tiny pit placed in just the right spot, so small that it can have little effect upon actual play, can be a mental hazard with tremendous effect upon the morale of the golfer.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF THE BULLETIN OF THE UNITED STATES GOLF ASSOCIATION GREEN SECTION, PUBLISHED MONTHLY AT WASHINGTON, D. C., FOR APRIL 1, 1927.

District of Columbia, ss:

Before me, a notary public in and for the District of Columbia personally appeared G. T. Cunningham, who, having been duly sworn according to law, deposes and says that he is the business manager of The Bulletin of the United States Golf Association Green Section, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, United States Golf Association, 110 East Forty-second Street, New York, N. Y.; editor and managing editor, R. A. Oakley, Washington, D. C.; business manager, G. T. Cunningham, Washington, D. C.

2. That the owner is the United States Golf Association, a corporation organized and existing under the law not for profit and having no capital stock.

3. That there are no outstanding bonds, mortgages, or other securities.

(Signed) G. T. CUNNINGHAM, Business Manager.

Sworn to and subscribed before me this 26th day of March, 1927.

(Seal)
(My commission expires August 6, 1927.)

(Signed) BERNARD CONNOR.