good maintenance? or, When is maintenance good? or, What must be done to have good maintenance and what may be omitted? For the present only an Irishman's answer can be given; that is, we must ask those who inquire about what the cost should be, the question, What *is* good maintenance? Certainly good maintenance is not the variety exhibited on a few *ultra* courses which are kept in championship form every minute of the season. By good maintenance we mean such as permits and requires good golf to be played. It is just as important to have conditions such as to compel good golf to be played as it is to permit it to be played. The game does not contemplate absolute freedom from bad lies, but it is expected that they shall be unusual or uncommon.

To make a start toward an answer to our most-frequently-asked question, we have done a little in the way of working up a system of cost keeping, and to go further we ask, What, in the opinion of our readers, constitutes good maintenance?

The Value of Opinions Based on Experience

C. V. Piper

A famous skeptic once remarked that every idea in this world resolves itself into a matter of opinion, and, so far as he was concerned, "opinion be damned." That is all very well for a metaphysician; but we must play the game of life with the equipment nature has furnished. The mere fact that this equipment enables the race to live and multiply bespeaks at least a partial efficiency. It is of course clearly recognized that opinions based on observations and experience differ, and this applies to practices in growing turf as well as to other things. In the culture of grass turf, there are rather wide divergences of opinion in regard to such matters as watering, mowing, top-dressing, spiking, etc. The conclusion resulting from experience or even from critical experiments at any one place or on a particular soil type is no definite criterion that the conclusion will be found true elsewhere. Therefore the opinions of any one man at a particular place based only on observations and experience are to be taken with a certain measure of allowance.

On the other hand if a number of men each report their conclusions based on observation and experience and there is a considerable degree of accord in their views, the points in which they or most of them agree are to be regarded with great respect. Therefore symposiums on such subjects as mowing, watering, etc., are of high value. If there be practical unanimity of judgment on the value of a certain practice, this judgment may properly be considered a *fact*. Technically it is empirical truth, that is, based only on experience and experiment, but lacking clear explanation.

As to the explanation of any particular fact, it may be relatively easy to advance a dozen hypotheses or guesses. Only by means of critical experiments can the truth or falsity of a hypothesis be tested. It usually requires a relatively enormous amount of evidence to establish the probability or reasonable certainty of a hypothesis, which then advances to the dignity of a scientific theory. If a scientific theory remains valid under all experimental tests, it may be considered established or true. Furthermore, from such a theory various considerations or consequences may be formulated,

and if these are found valid the probability of the truth of the theory is increased. Thus the theory that nitrogen, phosphorus, and potassium in soluble forms are the most important foods of plants and that these are likely to be present in soils in less than the most desirable amounts, has brought into use innumerable substances as fertilizers because they contained one or more of these elements. The theory has been justified by its application.

An hypothesis is at first a mere guess, sometimes a very wild or improbable one. It must be tested critically before it can be considered even a probable explanation. Consider the weird guess that brown-patch is caused by spider webs covered with dew drops acting as burning-glasses to cook the grass. The near approach to absurdity here is indicated by the consideration that if true it ought to affect all grasses similarly, but blue-grass, white clover, crab grass, and Bermuda grass are never affected. Besides, brown-patch occurs in continuously shaded spots. Any established theory is a very valuable asset; but in the absence of any such theory it is wise to stick to methods that in general experience give good results.

The Value of a Check Plot

R. A. OAKLEY

Time and time again a thing is done in the production or maintenance of golf turf and certain results are attributed to it without positive knowledge that the particular treatment, whatever it was, actually deserved the full credit given it. Why? Because a similar portion of the course was not left untreated. In other words, there was no check plot or control with which to compare the treated area. It is a perfectly safe assertion that thousands of dollars are spent annually on unprofitable practices on golf courses simply because none of the practices has been put to the proper test.

The first principle of experimentation involves the use of the check or control, and this must be fully appreciated by the experimenter before he undertakes to conduct an investigation. In many kinds of demonstration as in experimentation a check or untreated area with which to compare the efficacy of the treatment under consideration is an absolute necessity if the result is to be convincing. If you are responsible for the greens of your club you should not be afraid to put each of your treatments to a test. It is only fair that you should do so. Try them out on parts of a green or fairway typical of the conditions you intend to meet or correct and leave similar adjoining parts untreated or treated by the means or methods you propose to discontinue or partially replace. The efficacy of your treatments will show itself, and if you are successful you will cut the ground out from under your critical and skeptical members.

Mr. H. K. Read, of the Atlantic City Country Club, and his greenkeeper, Mr. John Hodges, realized the value of a true demonstration when they proposed to top-dress the fairways of the course with mushroom soil in June. A number of influential playing-members objected. They disliked the inelegant material on the grass, and besides they said it would be useless to apply mushroom soil in June. They admitted, however, that the turf was poor and that anything that would improve it would be worth while. Mr. Read had confidence in his judgment and was willing to back