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

it to the limit. He did not do the arbitrary thing his position in the club permitted him to do—that is, top-dress the entire fairway area. That would have created resentment and probably have convinced no one. He did a wiser thing—he selected an area on No. 3 fairway which was even poorer than the average. On June 7 he top-dressed this with about a yard of mushroom soil. The area was rectangular. On all sides was untreated turf. This, he reasoned, would show whether his treatment was sound or not. It did not take many days to prove the soundness of his original proposal. It should be noted here that the soil of the fairways Mr. Read intended to treat is very sandy and the turf composed mostly of red fescue and decidedly cuppy. On June 24, when these observations were made, the turf on the rectangle that had been treated with the yard of mushroom soil was so outstandingly better than the surrounding turf that it attracted the attention even of the least-observant players, and that, to use a common expression, "is going some." If Mr. Read's fellow members are not convinced—but why conjecture? All of them are men of intelligence and know when a point is proved. It was all very simple, and yet the little mushroom-soil-covered rectangle constitutes one of the amazingly few real demonstrations made in the production and upkeep of golf turf. Mr. Read and his greenkeeper realized the value of a check.

Additional Notes on Brown-Patch

R. A. OAKLEY

In the vicinity of Washington, D. C., and elsewhere there has been some very excellent "brown-patch" weather since the June BULLETIN was issued; consequently there has been considerable activity on the part of this turf disease. From the many reports that have been received it is evident that Bordeaux mixture is being very generally used to prevent or control it. Apparently in most cases the dust form of Bordeaux is preferred to the liquid, because it is more easily applied. The control of the brown-patch disease is the most important problem in the maintenance of putting green turf where the northern fine turf grasses are used. Therefore it is believed that the readers of THE BULLETIN will welcome any contribution tending to bring the knowledge of the subject up to date.

A large number of treatments seeking to control brown-patch effectively and practicably are now being tested at Arlington. These treatments include the following: Bordeaux mixture and other copper compounds, mercuric chloride, formaldehyde, lime, lime-sulfur, various alkaline-reacting and acid-reacting substances and compounds, and charcoal. Thus far Bordeaux has clearly shown its superiority over the other treatments and has indicated its efficacy as a preventive of brown-patch when it has been properly used.

As a result of the work at Arlington, it seems at least reasonably safe to draw certain conclusions with regard to the use of Bordeaux mixture in the control of the brown-patch disease of turf. These conclusions briefly stated are as follows:

Bordeaux dust can easily be applied with a dust gun or a machine of the nature of a wheelbarrow seeder, although neither of these is exactly ideal for the purpose, and it is believed that both types of apparatus will