

ticles, so permanent change takes place more rapidly and completely in sands than in the heavy soils. Repeated application of acid-producing fertilizers may be required to effect marked change of loam or heavier soil.

While there are a large number of methods for determining potential or insoluble acidity, it is the active or soluble acidity which concerns the control of clover and weeds. Portable sets for determining active acidity are now on the market and are all based on the same principle. Certain color indicators when placed in contact with the soil develop specific colors which are characteristic, and depend upon the intensity of the soluble acids. Differences are arbitrarily designated as Ph values. A neutral soil has a Ph of 7. Figures smaller than 7 represent increasing degrees of acidity, and those greater increasing degrees of alkalinity. The progressive changes are in units of 10. Thus Ph 6 is 10 times more acid than Ph 7, and Ph 5 is 100 times more acid than Ph 7 or 10 times more acid than Ph 6. Differences of .2 Ph can be distinguished easily.

Experiments indicate that clovers grow best at Ph ranges of 6 to 8. At about Ph 5 clovers usually are unable to exist, and it is doubtful if they can thrive in the range of Ph 5.5 to 6. In order to secure effective clover control these values should be obtained.

In the next article the effect of different fertilizer materials on soil reaction will be discussed.

“First Aid to the Beginner”

By A. G. Chapman, Chairman, Green Committee, Audubon Country Club,
Louisville, Ky.

MR. CHAIRMAN AND GENTLEMEN:* Being conscious as I am of my inexperience and realizing that the majority of those present today are at least by comparison advanced students of the game, I am fully justified in the embarrassment from which I am suffering at this time. Frankly, I doubt seriously if I can present anything to you worthy of your time. In my business of insurance it is a well-known fact that when an agent is first appointed he feels that the mass of details are almost beyond his power to master; after six months he begins to think they are easy and by the time he has reached the third six months of his service he almost invariably makes many suggestions to the executive officers as to their policy and general conduct of the business.

It is somewhat discouraging to observe the manner in which your work is received by some people of this country who are interested in, or who are supposed to be interested in, the efficient maintenance of golf courses. I think I am correct in saying that you get little support and find comparatively scant interest in what you are doing from my section of the country, where it is too far north to raise Bermuda and far enough south to make bent grass difficult. It is obvious that the folks in my section need your services more than any other.

On behalf of the newly appointed green chairman everywhere, and particularly in my section, I plead for your great patience and consideration. Please bear in mind that with most of us it is a matter

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of learning our multiplication table before we can comprehend your geometry.

The new chairman, as a rule, takes his work at the beginning of the fiscal year, with scant knowledge of what is expected of him. Somehow, it seems that the clubs give no more thought to the selection of the green committee that is going to spend \$20,000 of their money than they do to the brand of cigars that the steward sells at the cigar counter.

Take my case for instance. I have been chairman for about twenty months. When I was selected, and I have sometimes wondered how it happened—what I did not know would comprise all that could be written. I had never attempted to grow anything; knew nothing about agriculture, and the little smattering that I once had of chemistry had long since been forgotten. I did not know that there was such a thing as an experimental turf garden or a Green Section of the United States Golf Association.

It is quite likely that if I had had some little knowledge of my work I would have missed, through the conceit of little learning, the opportunity of taking the opinions of those connected with the Green Section as law and gospel. Very likely I would have injected some of my own ideas and in either case I am quite sure that I would not have been as far advanced in my efforts to learn how my work should be done as I am today. Scant knowledge always has a tendency to develop that terrible malady—a closed mind. By the way, in speaking to you gentlemen, I should like to submit that when a closed mind is pried open by your sound reasoning and logic the first result is usually a flood of disturbed waters and it takes some little time for thoughts to settle and become sufficiently clarified to be understood. I mention this in support of my plea to you for patience and consideration.

I was proud to accept an invitation to be on your program today—not that I have any message of interest to you gentlemen, even though the commanding generals are sometimes interested in the opinions of the privates in the rear ranks, but I do have a message for the newly appointed green committees wherever they may be located. I wish that science had gone far enough that I might with an amplifier make every one of them hear this statement: No matter how good a greenkeeper may be, nor how much experimental work he has done, there is valuable information for green committees in the United States Golf Association Green Section. Furthermore, I have found by experience and know that the committee is not only willing, but inspired by an unselfish interest to help the cause, is anxious to help green committees do their work more successfully, and I venture the statement that there is not a green chairman, regardless of his experience, who cannot be materially benefited by keeping in close touch with what is being done at Washington.

I have had a most interesting time in the last twenty months *boring* new friends and acquaintances for a little light on the subject of maintaining a golf course. The chances are that most everything I have managed to pick up is well known in all of the details by the majority of those present here, but on a chance that some of it might be new and with the possibility that I might justify your patience, I will try to bring out one or two thoughts that may be new.

In Washington last August at the meeting of the greenkeepers

I made it a point to talk with as many different greenkeepers as I could and in this way I developed conversation with a gentleman who has charge, I think, of a golf course in Pennsylvania. He gave me a tip concerning tee markers and I am genuinely sorry that I did not make note of his name.

Following his suggestion, I went to the ten-cent store and purchased half-a-dozen tin funnels and a supply of big nails and washers. By using the funnel as a mold we have made a very attractive concrete marker that can be dipped in prepared whitewash every month or so, thus allowing us to have two bright, tiptop markers at each tee the year around for practically no cost. The nails cost a dozen for 5 cents; the washers, 20 for 5 cents; the cement, 80 cents per 100 pounds; so that the total cost of this tee marker is a fraction less than one and one-half cents. I do not count the labor cost because a half-dozen tee markers can be made in approximately the same length of time that it takes to play a game of solitaire on a cold rainy day in winter when all of the inside work is about cleaned up.

Culled from general information I have made up a control sheet covering my operating expenses. The Board of Directors appropriated a specific sum of money for pure maintenance and a sum for machinery with an additional amount for permanent improvements, such as building fences, planting trees, extraordinary sewers, etc.

These amounts were allocated by months under four items: labor, including the salary of the greenkeeper; seeds and fertilizers; machinery and major equipment; and repairs, flags, sand, poles, cups and incidentals. By estimating these expenditures monthly, which is not a difficult task, we have a fairly accurate sheet from which we can tell how we are running at any time during the year. On the first of August the sheet showed that we had spent \$343 more for repairs and incidentals than we had anticipated. The greenkeeper checked over the items spent to see what caused the increase and was a little more careful regarding the future. Each month thereafter we were able to reduce our deficit under this subhead so that at the close of the fiscal year we were \$9 under our estimated expenditures for the item. This not only gives you a check, which is only good business, but it adds interest to your work, developing that pride of achievement that helps you to put up with the thoughtless and unreasonable criticism that usually is directed at the green committee. There are many advantages to this. We were in a position to put the club on test as to the amount of money that we would need at any given time. Furthermore, it is pretty convincing when you go to the board for appropriations and some watchdog of the treasury insists that that is too much money; then you pull out your sheet and you say, "Do you want me to cut this labor item? It will reduce the general care of the course; the grass will not be cut so often." When you get through, they will usually say, "Go ahead." It is very beneficial in several ways.

Another system that I have installed is the daily memorandum to be filled out by the greenkeeper every night and kept on file in his office for his own reference so that the committee can see at any time what the crew is doing, and what work is contemplated. I give him a pad, perforate it with a holder, and each day he fills out his memoranda noting the temperature, the weather, the men on the payroll, treatment of the greens, working time in the nursery, etc. I do not

think my greenkeeper liked this idea at first, but now I am quite sure that if he went to another club he would immediately adopt the system. It is valuable in that it causes him to definitely plan his work several days in advance. (You know how much more definite any idea becomes when you reduce it to writing.) It also gives the whole committee an opportunity to better understand the problems of the greenkeeper. Perhaps its greatest value, though, will come by comparing one year with another. If something happens to a green the records will show just what treatment it has received and the trouble can be better analyzed.

It is not always easy to get a successful greenkeeper to really study the articles written in *THE BULLETIN* and the scientific ideas advanced. In order to get this point over I have from time to time caused extracts to be copied, mostly from *THE BULLETIN*, and now have a loose leaf book of 52 pages, a copy of which has been given to the greenkeeper and another to his assistant. He is instructed in writing that he must do nothing on the golf course contrary to the method prescribed in this book, unless and until he has first given the prescribed method a thorough trial and even then he is not to disregard the advice given without consultation with the chairman of the green committee.

We had a man build a few greens for us last year who had experience and was familiar with Washington bent grass. In watching the work as it progressed, it was noticed that he did not pay much attention to watering the green before planting the stolons and then he used about two and one-half yards of soil to cover the stolons. There was a prolonged drouth following the planting of the green and in order to get sufficient water to keep it damp he again ignored the teachings of our little bible by sprinkling instead of keeping the soil moist with mist.

I called his attention to these things and I suspect he would like to have asked me just how many greens I had built and how many years of experience I had had that I should presume to give him instructions. Nevertheless, I was persistent and on the next green constructed I insisted that he follow the book. The result was almost immediate, and while I did not expect him to come forward and admit it, nevertheless he said enough to show that with all his experience he learned a good lesson and that he now has a more wholesome respect for the teachings of the Green Section than he had before.

I repeat that in my humble opinion the best greenkeeper and the best posted green chairman in the United States of America can be benefited by consulting, or, if you choose, exchanging ideas with the United States Golf Association Green Section.

How Glen View Waters Fairways

By Ed. Haupt, Greenkeeper

Our water mains are of cast iron pipe, from 2 inches to 6 inches in diameter, operating at a pressure varying from 65 to 75 pounds. These pipes are laid at the edge of the rough, just off the fairways, with outlets rising to the surface at intervals of 125 feet. These risers are of 2-inch pipe reduced to a 1-inch hose nipple. All hose in use is of the 1-inch size.

We use sprinklers, 7/16-inch nozzle, 1-inch hose, having a capac-