# Bulletin of the Green Section of the U. S. Golf Association

Vol. II

# A MONTHLY PERIODICAL TO PROMOTE THE BETTERMENT OF GOLF COURSES ISSUED BY THE GREEN COMMITTEE OF THE

UNITED STATES GOLF ASSOCIATION

## CONTENTS

Annual Report of the Chairman of the Green Committee	2
Parking Arrangements. E. J. Marshall	7
Sanctity of Formulas	10
Success With Carbon Bisulphide in Controlling Grubs. Arthur G. Hoffman	11
Dixie Grass. C. V. Piper	13
Notable Green-Keepers: William J. Rockefeller	14
Greensand Marl. J. G. Lipman	15
Seed Tests	17
Annual Reports of Golf Clubs Desired	17
Back Numbers of the 1921 Bulletin	17
Tractor and Mower Combination at the Ashtabula Country Club	18
Questions and Answers	10
Meditations of a Peripatetic Golfer	24

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\* Executive Committee member,

# PERMANENT MEMBERS

X

Hugh I. Wilson, Merion Cricket Club, Haverford, Pa. F. H. Hillman, Washington, D. C. W. H. Walton, Washington, D. C. Lyman Carrier, Washington, D. C.

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Address all communications to W. B. Lydenberg, Executive Secretary, P. O. Box \$18, Pennsylvania Avenue Station, Washington, D. C. The Annual Meeting of the delegates and permanent members of the Green Section was held at the Drake Hotel, Chicago, on January 14. The meeting was successful beyond anticipations; keen interest and great enthusiasm were shown. The complete list of the new Green Committee elected at the meeting for the year 1922 is contained on the preceding page. A complete report of the proceedings at the meeting will be given in the February number; in the meantime our readers will be interested in the Annual Report of Prof. Piper, Chairman of the Green Committee, presented at the meeting.

# Annual Report of the Chairman of the Green Committee

#### MEMBERS OF THE GREEN SECTION AND VISITORS:

At this time, when we have completed our first year's work and are holding our first annual meeting, it would seem proper to review in some detail the work which the Green Section has undertaken, the degree of success it has attained, and the prospects and problems which it confronts. It is meet that you should criticize or commend the work of your Committee and the manner in which it was done in proportion as it deserves approval or censure.

#### GROWTH.

The Green Section now has the support of 397 members. At different dates through the year the figures have been as follows:

April 1, 1921	70	members
May 1, 1921	144	"
June 1, 1921	210	50 A. 66
August 1, 1921	294	66
November 1, 1921	368	- 46
January 1, 1922	387	"
January 7, 1922	397	44

We feel sure that our influence has been broader than our number of member-clubs would indicate. Many of THE BULLETIN articles have been widely reproduced. Every devotee of golf is always willing to give his advice to a new and struggling club, and if he has gotten any knowledge or inspiration out of the Green Section we may be sure he has passed it along. We have rarely failed to get a club to join once it understood clearly the scope and objects of the Green Section. In spite of numerous circular letters and much printed matter, it has been difficult to reach the clubs so that they could grasp what we were trying to do. Part of the trouble is due to the very poor business arrangements of many, perhaps most, clubs. As an example, each of three clubs sent in its subscription twice. We were tempted to keep the money. In many more cases we were unable to get any response whatever. This work of securing subscribers has taken far more time and money than we could wish. More and more we hope that our member-clubs will become imbued with the missionary spirit and not feel satisfied until they have induced all their neighbor clubs to join in a good thing. Four hundred clubs in the Green Section is not a large enough proportion of the approximately three thousand clubs in the United States and Canada. We ought to have many more, and I confidently believe our membership can be doubled this year if we are energetic. One unfortunate and regrettable fact at present is that few of the smaller clubs are members, and these can profit relatively far more than the richer clubs. It is little short of appalling to visit some of the small clubs and see how much they need the assistance we can give. To reach these clubs we need the cooperation of all our members. The poor we will always have with us; but in the golfing world, at least, let us not neglect them,

# FINANCIAL REPORT

A clear understanding relative to our receipts and expenditures is a necessary basis for the full interpretation of the chairman's report and for comment on the same. The figures for the year ending December 31, 1921, are as follows:

Receipts.

Membership-fees from 387 clubs	\$6,293.15
Subscriptions for THE BULLETIN other than provided for in member-	
ship fees	113.75
Interest on bank deposit	85.30
Total receipts	\$6,492.20

## Expenses

Twelve monthly BULLETINS, including printing, cuts, mailing, postage,	\$9 697 15
One thousand binders	254.93
Routine clerical services	607.39
Office rent	85.00
Office furniture and equipment	129.50
Membership campaign, including special clerical services, printing, postage, etc.	1,719.73
Postage, exclusive of BULLETIN mailing list and membership campaign	39.88
Preparing and mailing out questionnaires	39.40
Stationery	142.05
Traveling and sundry expenses of committee members	411.73
Postoffice box rental	13.24
Telephone and telegrams	15.95
Subscriptions to golf magazines and purchases of books	16.00
Total expenses	\$5,512.25

## COST OF MEMBERSHIP.

The price of membership was fixed at a sum that would, it was estimated, enable the Green Section to pay its bills if about 250 members were secured. For fear that we might not succeed the first year, we were backed by the United States Golf Association to the extent of \$2,500. We have a certain pride in the outcome. It was not necessary to use permanently any of the \$2,500. As appears in the financial statement, the income and expenditures of the Green Section were not widely divergent. We are definitely self-supporting on our present basis.

There has been a good deal of feeling that the Green Section dues are too high—not in the sense that the services are not worth their cost, but because of the belief that they tend to keep out many clubs that might else join. The Green Committee has considered this matter seriously and often and agrees that it is far better to have one thousand members at \$5.00 each than 250 members at \$20.00 each. In recent conferences it has been deemed wisest to continue another year on the present basis. With the two years' experience it is felt that the data will be available for the satisfactory adjustment of the problem, which, of course, is to secure the greatest good to the greatest number.

## THE BULLETIN

Volume I of THE BULLETIN, now completed, contains 264 pages, to which will be added 8 pages of index to be sent out with the first number of Volume II. Every number of Volume I, after No. 4, contained 24 pages. This number of pages will be continued unless we receive a considerable increase in the way of articles from members. The BULLETIN will be enlarged whenever the need arrives.

How far THE BULLETIN has fulfilled the need for which it was established we can judge only by the letters of commendation received. These have been very numerous and highly complimentary. Thus far no discordant note has come to hand. If there are "kickers" we want to hear from them, because they may have a chastening effect.

## THE SERVICE BUREAU.

We have been fortunate in securing the cordial cooperation of many specialists both in the Department of Agriculture and in the agricultural colleges. Without this assistance it would scarcely be possible to answer the numerous inquiries about insects, chemicals, and what not that come into the hopper of the Executive Secretary. The Service Bureau is in reality purely an agency to give information promptly on any questions that may be submitted.

There have been requests from many clubs for visits from our staff to look over club problems. Under our present financial conditions it is not possible to accede to these requests, unless the work can be done incidentally to other objects. It is hoped the time may come when the Green Section can support one or more well-equipped men to visit memberclubs.

## LOCAL GREEN SECTIONS.

A gratifying and important outgrowth of the Green Section idea has been the establishment of various local or district green sections. At the present time such green sections are established in Philadelphia, Detroit, New York, St. Louis, Los Angeles, and Providence, and others are contemplated at Atlanta, Boston and elsewhere. The central idea in all of these is the same—mutual help. By meetings from time to time at the different clubs, inspection of the courses, discussions of methods, etc., much is learned by all. The Philadelphia District Green Section recently induced a large number of tractor and mower manufacturers to demonstrate their machines. The Detroit District Golf Association publishes a regular periodical, *The Detroit Golfer*.

In time we may expect such a local green section in every golf center; and there is an ample field of work for each of them.

# GEOGRAPHICAL DISTRIBUTION OF THE GREEN COMMITTEE.

The members of the present Green Committee were chosen mainly to secure men deeply interested in the progress of golf, but not overlooking the fact that it was important to have each section of the country as well as Canada, represented. The plan has worked exceptionally well. The assistance rendered by the members has been generous and ungrudging to the extreme. Each has been very active in adding members to the Green Section. Without doubt it is highly desirable to maintain this system by which each section of the country has its own representative in the Green Section. Unfortunately there is no provision in the mode of election of Green Committee members to maintain such a system. The matter is one, however, that deserves very careful consideration lest we unwittingly destroy a source of strength to the Green Committee. As a satisfactory basis of distribution the following geographical assignments are suggested:

2	members	at large (cl	nairman and one vice-chairman).
1	member	representing	Maine, New Hampshire, and Vermont.
1	"	~ " " –	Massachusetts.
1	**	"	Rhode and Connecticut.
3	**	**	New York and New Jersev.
2	"	"	Pennsylvania.
1	**		Maryland, Delaware, Virginia, and the District of
			Columbia
1	"	"	North Carolina, South Carolina, and Georgia.
1	"	"	Florida.
1	"	"	Mississippi, Alabama, and Louisiana.
1	44	"	Kentucky, Tennessee, and West Virginia.
1	**	<i>44</i>	Ohio.
1	**	"	Michigan and Indiana.
1	66	"	Illinois and Wisconsin.
1	"	"	Minnesota, Iowa, and North Dakota.
1	"	"	Missouri and Arkansas.
1	66	"	Texas, Oklahoma, and Arizona.
1	"	"	Colorado, Kansas, Nebraska, South Dakota, Wyoming,
1	"	"	Colifornia
î	**	"	Oregon Washington and Idaho
ĩ	**	16	Canada
_	· · ·		

## SUPPORTING RESEARCH.

I need scarcely call attention to the fact that methods of growing turf that are wholly satisfactory in one region are often nearly worthless in another. At the present time we know relatively much about turf in the north, but comparatively little in the south and west. There is need of far more experimental investigation. We must get away from many of the traditional and unfounded ideas that still prevail. Some of them are quite as absurd as planting by the moon. There are many experiment stations where valuable work can be done at low cost; but even this will require some financial assistance from the Green Section. When surplus funds shall be available I know of no better way in which to utilize them.

## FUNCTIONS OF THE GREEN SECTION.

When the Green Section was established the dominating idea in the minds of its originators was to help in the problems of establishing and maintaining good turf. Naturally these problems are fundamental to a good golf course. During the first year, however, questions covering a wide range of topics other than turf have been submitted. All of them are legitimate inquiries and all bear on problems that golf clubs must face. You will permit me here to make a personal statement. When I was induced to accept the chairmanship of the Green Committee it was with the clear understanding that I would be responsible for nothing outside the matter of turf. I foresaw part of this flood of other problems and so warned the Committee. Well, questions on all sorts of topics continue to come in, and we have as yet devised no satisfactory plan to answer them. The questions refer to such matters as:

1. Green-keepers' machinery and equipment.

2. Green-keepers' buildings.

3. Golf architecture.

25

- 4. Landscape plantings.
- 5. Costs of course construction and maintenance.
- 6. Budget systems.
- 7. How to finance a golf club.
- 8. The relations of the club to the professional.

These are not all, but they will suffice. To my mind they are all legitimate questions; but some of them will require diplomatic handling. Just how to secure the best information to answer these questions is not clear. You will recall that several contributions to THE BULLETIN have discussed phases of some of these problems, based on experience. An obvious way to secure information is by questionnaires. But the questionnaire method has is weaknesses. We have now a lot of answers to questionnaires on tractors and mowers. Many of the answers are absurd; perhaps they were written by a clerk. It is obvious that an answer is valuable or not in proportion to the knowledge, experience, and judgment of the writer. To make merely a compilation of good, bad, and worthless answers will result in leaving the reader "up in the air." Manifestly the compilation will require the judgment and comments of a well-qualified man to make it of much value. It is difficult to see any escape from using the questionnaire method; at least it should have some reaction on the clubs by disclosing their lack of knowledge. Apart from the experiences gathered by such means, the only other method, and the more valuable one where possible, is that of experimentation. If for example all the tractors for golf courses could be assembled in one place and tested thoroughly by capable men, the results of their findings would be dependable. As yet it is beyond the finances of the Green Section to undertake such investigations. So for some time we shall have to rely on the results of the experiences of our members. One of my friends points out that the real weakness here is the same as that involved in the question "Which is the best automobile?" Nine times out of ten a man will answer by giving the name of the car he himself owns.

It may be well to point out that in dealing with a manufactured article we can not publish the names of the manufacturers in THE BULLETIN. Such information will have to be sent out as *confidential*.

# TRAINING GREEN-KEEPERS.

The need of more and better green-keepers is so notorious as to require no discussion. Various suggestions have been made as to methods to meet this need. One of these was the idea of holding schools for six months, first in one golf center and then in another. Any bright young man of high-school education, should, under capable instruction combined with practical experience on a good golf course, become a fair green-keeper after the six months. The idea is worth consideration.

As you know, Cornell University has now a course designed to train men to be superintendents of parks, of a golf course or a series of golf courses, etc. Such men would not be green-keepers in our present meaning, but rather agronomists skilled in soils, fertilizers, turf-growing, landscape gardening, etc., who would be competent to act as general superintendents. We need such men, and through them we shall get our greenkeepers better trained.

As you know, two copies of THE BULLETIN are sent to each member-

6

club, one copy for the use of the green-keeper. I have been disappointed to find that in many clubs the green-keeper has never seen THE BULLETIN the very man who is apt to profit most by its perusal. This again emphasizes the lack of good business management in too many golf clubs.

# THE INFLUENCE OF THE GREEN SECTION.

It may seem a matter of conceit to speak of the influence of an organization only one year old, but I think there is fairly clear evidence that we are effecting changes for betterment. Many of the golf journals, for example, are giving more attention to the real problems of golf clubs, and therefore less to purely social and personal matters. Many of the men devoted to the progress of golf realize the necessity of rescuing it from the handicap of being a rich man's game. Most of our golf clubs are not well managed; many of them are extravagant. Moderate-priced golf does not necessarily imply poorer quality; but it does necessitate more in-telligent and efficient management. The growth of golf has been considered phenomenal, but it can be greatly accelerated if we can reduce the One of the local green sections is very actively working on this cost. problem, and, broadly speaking, this is the end for which the Green Section must strive. The betterment of golf is not to be measured by the skill of crack players or by brilliant social functions nearly so much as it is by the ordinary golfer taking a broader interest in golf architecture, in the problems of good turf, and in efficient management. Thus far the active cooperation of Hook, Slice, Dubb and the others has not been enlisted to the extent that he takes an intelligent interest in the club and its management. Here, as in human affairs in general, education is allimportant. If the Green Section fulfills even a portion of its functions it must become potent in these fundamental matters.

#### COOPERATION.

Before closing his remarks, the Chairman must express his grateful appreciation to the member-clubs on their cordial support and helpfulness in many other ways; to the members of the Green Committee for their continuous interest and activity; and particularly to the Executive Secretary for his unflagging zeal and efficient work. Incidentally the Executive Secretary has become, on account of his position, "the official goat." For his services as a buffer the whole Committee owes him additional thanks.

In conclusion, I am sure the whole Green Committee will feel amply rewarded for their endeavors if the results of their efforts meet with your commendation.

# **Parking Arrangements**

## E. J. MARSHALL

A great many clubs find it difficult to provide space for the automobiles of members, and it is next to impossible to arrange for the orderly parking of machines. The employment of a man to supervise parking involves more or less expense and does not always bring about a satisfactory result. It will be found that this problem can best be solved by providing a parking space with stalls which compel the orderly parking of cars, and which reduces the parking to an automatic basis, thus avoiding the necessity of





employing a man to supervise, and economizing space. The sketches on pages 8 and 9 show one method of accomplishing this object, with dimensions that have been worked out in practice.

It is clear that it requires less parking space if machines are parked on a sharp angle than if they are parked on a right-angle, as they can be run into the parking space and backed out, and the operation requires a great deal less room.

Where the parking space includes several rows of cars, it will be noticed that space can be saved if the stalls are staggered in the manner indicated in the sketches. If a car is put in one of the stalls on the side, it will be seen that only one front wheel can touch the end of the stall, and that a triangular space is wasted in the front and rear of each car, whereas the cars that park in the center space where the stalls are staggered run in so that both front wheels touch the end of the stall.

The sketches are intended only to illustrate the principle involved. The stalls can be built in a variety of ways. It has been found in practice that it will not do to build these out of planks with concrete posts, as the planks are too frequently broken. It will be much better to build the stalls out of heavy pipe, or with concrete curbs.

Until members become accustomed to the use of such a parking space it is desirable to put up signs directing them to head into the stalls and back out, as in that way they can see what they are doing and avoid injury to the stalls or other cars, whereas if they attempt to back in they cause an unnecessary amount of damage.

# Sanctity of Formulas

Proprietary products, as patent medicines, fertilizers, and especially cure-alls in general, owe much of their popularity to the awe-inspiring force of the unknown. Take any common-place remedy, give it a mysterious origin, advertise it with extravagant claims, and it will be purchased by the credulous. At present the crop of grass-growing nostrums appears to be above normal.

It is not the policy of the Green Section to decry every proprietary preparation. There are many compounds and mixtures used in connection with turf growing which can be made in large quantities by manufacturers more economically than the individual can prepare them in limited quantities at home. When these are honestly made and sold at reasonable prices the Green Section takes great pleasure in spreading information among its members as to the nature of the products and where they may be purchased. But when a manufacturer takes a well-known product and tries to foist it on the public as something never before heard of and at a price much above what anybody need pay on the open market for the materials contained in it, the Green Section will do its best to expose the deception.

The Green Committee recently ordered direct a bottle of worm-killer which is being offered for sale to golf clubs, and received a letter from the manufacturers stating that they would be glad to let us have a sample for a "practical test" but that it must not be analyzed and the formula thus exposed, or that they would be glad to give us the formula provided we would promise to keep it "strictly confidential." As the Green Section is lacking in facilities for keeping secrets, these offers were ignored.

# January 16, 1922] UNITED STATES GOLF ASSOCIATION

Such an attitude towards the buying public as was exhibited by these manufacturers is much out-of-date in this period of pitiless publicity when compounders of proprietary medicines are compelled by law to state on each package offered for sale the ingredients, and in the case of certain specified chemicals the percentage composition contained in the preparation. The situation is not so serious in the case of golf preparations to call for a national law governing their sale, for if a little more discriminating judgment on the part of the buyers is exercised the trouble will be easily corrected.

# Success With Carbon Bisulphide in Controlling Grubs

# ARTHUR G. HOFFMAN

## Essex County Country Club

On page 253 of the December BULLETIN Mr. Alan D. Wilson utters a cry for help for a practical method of controlling grubs of the Southern green June-beetle over large areas and without injury to the grass. Our success with the use of carbon bisulphide here at West Orange, New Jersey, during the past season leads me to write of our experience in the hope that it may in a measure assist in solving the problem brought up by Mr. Wilson.

The grub of the Southern green June-beetle has caused wide havoc in this territory during the past fall. We have, however, been especially fortunate at Essex County, having the grub appear in only one or two places, never on the fairways, but in the rough. From Mr. Wilson's experience at Pine Valley it appears that they were successful in controlling the grub "reasonably well" on the putting greens with the use of carbon bisulphide, "but with great labor and expense"; but, that they have been unable to find any practical method of utilizing this treatment on the large fairway areas. The method of application used at Pine Valley, as described by Mr. Wilson on page 252, is squirting the bisulphide into the burrows with a long-nozzled oil-can, and then plugging the hole with clay to prevent the fumes from escaping. When the grub first appeared at Essex County it was only in one place in the rough. We thereupon immediately examined the whole course with the greatest of care, and after treatment with carbon bisulphide we are convinced that we checked the spread of the grubs at every point. The method we used was the punching of holes in the fairways with a pointed rod about one-half inch in diameter, to a depth of from four to six inches, about ten inches apart, and injecting about half a tablespoonful of carbon bisulphide into each hole, and immediately closing the top of the hole with soil. For injecting the carbon bisulphide a large oil-can with a spring-bottom is used; a funnel is also helpful so the mouth of the oil-can will not become plugged. The carbon bisulphide quickly volatilizes when ejected from the oil can through the funnel, and its fumes, being heavier than air, sink downward through the soil, killing such insects as may be present. We have found that the injection of this quantity of the material in the manner stated exterminates not only the grub of the Southern green June-beetle, but also ants; and in the November BULLETIN, on page 232, in his article on "Fighting the White Grub at Merion," Mr. Wilson reports success with the material in the extermination of the white grub. In this latter case, however, Mr. Wilson adds that

it was necessary to discontinue the use of carbon bisulphide with the white grub owing to the fact that the chemical also killed the grass. In our experiments no killing of grass whatever occurred; and we attribute this to the fact that the depth of four to six inches to which we pierce the turf before injecting the carbon bisulphide, was sufficient to carry the chemical below the grass roots. We are led to believe, therefore, that an injection of carbon bisulphide to the depth we have stated will be successful in killing the white grub, and without injury to the grass. The white grub, it should be borne in mind, is the grub of the May-beetle, and not the grub of the Southern green June-beetle; it is most often just under the sod.

As to the amount of labor involved in our method of treatment, we find that two men can easily make and treat 600 holes in an hour, one man punching the hole and the other injecting the carbon bisulphide by means of the large oil-can and the funnel, and immediately thereafter stopping the hole up. Two men work better than one man. An ideal team, however, is composed of three men working together, the first man punching the hole, the second man injecting the chemical, and the third man stopping the hole. The number of holes that can thus be handled in a given time, of course, depends a good deal on the nature of the soil; but 1,000 holes an hour would not be too much to expect: and if the area affected were of considerable extent there could be two or three teams of three men each. Isn't the experiment one that could very easily be carried out on any course? Take one fairway, and the portion of that fairway that comes mostly into play, namely, the approaches to the greens, and certainly in a day three men could cover a very large area, and then later on the turf could be raised with a spade and the actual results learned. Also, it could be tested on a small portion of the green in the same manner. The point we would particularly emphasize, however, is that if the green-keeper and his workmen are constantly on the lookout for the appearance of the grubs, and the method of treatment we have used is adopted, infested areas will never appear to such an extent that an entire fairway is affected.

The only other methods of exterminating this grub that have been tried, judging from articles previously appearing in THE BULLETIN, are the use of kerosene emulsion and the mechanical killing of the grubs with a steel wire thrust into the hole. These two methods are described on page 62 of the April number of THE BULLETIN, but the caution is added that the use of kerosene emulsion may cause injury to the grass if it is very tender, and in the December BULLETIN Mr. Wilson writes that they have tried this method at Pine Valley but without success.

Some remarks on the habits of the grub of the Southern green Junebeetle in turf, as far as our observations have gone, may be pertinent in this connection. The grub is apparently invariably absent from puttinggreens except around the edges of the green. It is probable that the frequent waterings which the interior areas of a putting-green receive, subject the eggs and young grubs to frequent floodings, which perhaps kill them. The burrows are definitely known to be vertical or nearly so. Further, we have found the grub only in dark, loamy soil, and apparently preferring a soil rich in humus. Further information on the habits of the insect should throw much light on the proper methods of control.

(Where putting-greens are built on soil in which a large amount of manure is intermixed, the grub of the Southern green June-beetle is occasionally very abundant. In two such greens under observation at Washington, D. C., the mounds of these grubs literally covered the greens.—*Editors.*)

# Dixie Grass

# Digitaria serotina or Syntherisma serotinum

C. V. PIPER

Our illustration shows a perennial creeping grass, native, and very common in the South, especially in sandy soils, from Delaware to Florida and Mississippi, mostly within 100 miles of the coast. It is of interest to golfers in the region indicated because it is very often found on golf courses both on putting-greens and on the fairways. The grass makes a dense, low mat, so short that it rarely requires mowing. The short, broad leaves are fuzzy with short, white hairs. On putting-greens it is usually in scattered circular patches a foot or so in diameter; but not rarely



Dixie Grass (Digitaria serotina). 1. A large plant, about one-half natural size. 2. Front view of an enlarged spikelet. 3. Back view of same. As the grass is seen on the putting-green it makes a very dense mat which, from the short leaves, somewhat resembles mouse-ear chickweed.

Dixie grass will crowd all other grasses from the green. Such turf is not at all a bad putting surface, but a little slow. The grass is never cultivated; that is, seed is never gathered, and probably could not be except at high cost. Nevertheless, the grass invades all close-cut turf within its area of occurrence. It is in the main a desirable grass even if it invades other grass and mars the uniformity of the turf. The grass is botanically related to crab-grass, but from every turf consideration is not at all comparable. It has never gained a common name; so we are suggesting to our Southern friends that they call it Dixie grass.

# Notable Green-Keepers: William J. Rockefeller

## Inverness Club, Toledo, Ohio.

William J. Rockefeller—"Rocky," as he is familiarly called—was born in 1864, at Harford Mills, Cortland County, New York, not far from the birthplace of his famous but remote or unclassified cousin John D., and though they have not trod the same path of life we doubt if Rocky would trade his job at Inverness, and the contentment of his home, for all that John D. has.



Mr. William J. Rockefeller, green-keeper, Inverness Club, Toledo, Ohio. Mr. Rockefeller frequently feels the need of a horse to assist him in getting around the course for inspection purposes and supervision of work in progress.

Having been raised on a farm, he tired, after twenty-three years, of the job of wringing a livelihood out of an unwilling soil, and set out for the bright lights, and for about sixteen years earned his bread and tea as an upholsterer, musician, pharmacist, and later as general-utility man at Binghamton. New York, and Toledo, Ohio, hospitals for the insane.

When Inverness was started, in 1903, it was an easy step from the asylum to a job which involved the care and happiness of "golf bugs"; and there he has been ever since. He is looked upon as an institution at Inverness—as a part of the place, as much as the greens and traps he has built. Every inch of Inverness was built by him; and he has brought it along, through several reconstructions, to its present place as one of the great courses of the country in point of maintenance as well as design and construction.

His green-keeping practice is founded on the common sense of good farming; and though progressive, he is not much given to large-scale experimentation, and he believes he should get a dollar's worth of results for each dollar spent. Though a left-handed player (the lowest form of animal life), he lays claim to having been a player of some class and consequence in his time, and points to a row of cups on his mantel as the evidence, including a cup won at Midlothian, which proclaims him as left-handed champion of the Middle West, or something of that sort. Without a doubt, his love for the game and his study of its requirements have given a quality and style to his construction work that is not frequently found; it meets the practical test of the green-keeper as well as the spirit of the game. Inverness is regarded as a hard but perfectly fair test of golf. A player gets full value for good shots and what he deserves for poor ones. And no one but a golf player could put that quality into a course.

Rocky lives alongside Inverness in a capacious house he bought for a song when Inverness Club was too poor to buy an extra foot of ground. The editors of THE BULLETIN will gladly certify that no small part of Rocky's success is due to the care and good cooking of Mrs. Rocky.

The pet aversion of Rocky is the so-called expert who knows it all and always has something to sell; and though Rocky is frequently called upon to advise respecting other golf courses in the Middle West, his first statement always is that he is no expert—just a plain green-keeper.

# Greensand Marl\*

# J. G. LIPMAN

# New Jersey Experiment Station.

Inquiries have recently come in relative to the value of potash in greensand marls. The correspondents wish to know something about the composition of the material and about the availability of the plant-food contained in it.

Greensand marl is the name applied to deposits occurring in New Jersey, Delaware, Maryland, and Virginia. These deposits in New Jersey are found in a strip of land extending from the Raritan Bay, where it

<sup>\*</sup> This article appeared in *The Pennsylvania Farmer* of November 12, 1921. It is now submitted by the author as a contribution to THE BULLETIN of the Green Section of the U.S. Golf Association.

is widest, to the Delaware River in Salem County, where it is narrowest. There are distinct beds of marl in this area; some of the beds are very thick, up to one hundred feet. The material contained in them is called greensand, because of the nature of the dark green grains of the mineral glauconite, a mineral of sea origin and containing potash and also a small proportion of phosphoric acid. The best grades of marl found in New Jersey contain six to seven per cent of potash and less than one to as much as two per cent of phosphoric acid.

From the beginning of the Nineteenth Century until about 1875 marl was extensively used by farmers in New Jersey and States farther south. Its nearness to the surface, the ease with which it could be dug, the absence of more concentrated and more soluble fertilizers and the cheapness of labor all made the use of greensand marl quite common. Farmers in these States just named marled their land more or less regularly, using as much as 20 to 30 tons per acre and seldom less than 5 to 10 tons per acre. The boys on the farm were expected to be up early during the fall and winter months and go to the marl pits-often miles away-for the daily quota of marl. Thanks to the continued use of this material many of the lighter sandy and gravelly soils along the coast were improved and to this very day the effect of this improvement is seen in magnificent crops of potatoes, tomatoes, berries, grapes, tree fruits, etc. Where marl was used freely clover appeared and grew luxuriantly. Nitrogen was thus accumulated in the soil, and, thanks to the potash and phosphoric acid present in the marl, the crops were able to obtain a maximum supply of mineral plant-foods. Some grades of marl had deserved fame because of their high content of potash and also because of their content of shells, furnishing both phosphoric acid and lime. The Squankum marls were known for many miles in Monmouth, Burlington, Ocean and Middlesex Counties of New Jersey. Other wellknown deposits of greensand marl were developed in the vicinity of Woodbury, Mullica Hill, Pemberton, and Mount Holly. It was estimated by Cook that in 1875 and 1876 the consumption of marl in the State rose to about two million tons per annum.

With the introduction of more concentrated and more readily soluble fertilizers, the use of greensand marl was gradually discontinued. More recently, however, the question as to the possible utilization of the marl deposits has come up again. The development of new processes for the manufacture of soluble potash salts has raised the question as to whether greensand marl could be used as a raw material for the manufacture of high-grade potash salts. The Eastern Potash Corporation, whose plant is located on the Raritan River, near New Brunswick, is planning to produce a large tonnage of muriate and nitrate of potash, using greensand marl from Monmouth County as the source of raw material. This, of course, is entirely legitimate, and the value of the product will be determined entirely by the market price of soluble potash in commercial fertilizers. If the Eastern Potash Corporation is able to compete with the potash imported from France and Germany, it should have no difficulty in finding a market for its product. One the other hand, little could be said in favor of the efforts of individuals or companies to market directly greensand marl without further treatment.

It is not difficult to determine just what the marl as dug from the pits may be worth. Assuming that a high-grade greens and marl contains 6 per cent of actual potash and 2 per cent of phosphoric acid, we have a total

of 120 pounds of potash and 40 pounds of phosphoric acid per ton. The potash in the marl is, at best, only half as available as the potash in muriate of potash. In other words, we cannot assume that more than 60 pounds out of the 120 would be available within a reasonable time for crop growth. Actual potash in muriate can be bought at about five cents a pound. Hence, 60 pounds of available potash in marl would be worth \$3.00 per ton. The phosphoric acid in the marl is also about 50 per cent available. Assuming that available phosphoric acid is worth  $4\frac{1}{2}$  cents per pound, we have in greensand marl, let us say, 20 pounds of available phosphoric acid at 41/2 cents, or 90 cents per ton. It is evident, therefore, that \$4.00 to \$5.00 a ton would be about the maximum value that may be assigned to greensand marl. Even at this figure, purchasers might hesitate to use greensand marl if the distance from the nearest freight station is more than one or two miles and the roads not in the best of condition. It goes back, after all, to the same question of concentration as well as solubility of plant-food. Under existing conditions, low-grade materials containing a small proportion of plant-food, and that but of a low order of availability. can not and should not compete with the more concentrated and more soluble fertilizers. Exceptions will be justified only where such low-grade materials can be had at a low price and so very near the point of consumption as to make the cost of transportation and handling quite low.

(Dr. Lipman's article is written from a standpoint of broad agricultural application. The fertilizing constituents of greensand marl (potash and phosphoric acid) are of comparatively minor value in the production of turf, and care must be exercised not to use them to excess, which would encourage invasion by weeds. The discussion on page 203, Vol. I, of THE BULLETIN is of value in this respect.—Editors.)

# Annual Reports of Golf Clubs Desired

The Green Committee is very desirous of securing a copy of the Annual Report of each golf club that issues such a report. If you have such, will you kindly send a copy at once to the Executive Secretary?

The Green Committee of the U. S. Golf Association is always glad to publish items showing how work around courses can best be done.

#### SEED TESTS

The Green Committee will be glad to examine samples of grass seeds submitted to determine whether or not they appear to be as represented. It is, however, found impossible for the Committee to conduct germination tests. Indeed, the germination test can be just as satisfactory, and much more promptly, conducted by the clubs themselves. In the matter of the examination and testing of seed, attention is invited to statements on page 16, 38, and 214 of the 1921 Bulletins. The Committee will discuss the matter of testing seeds for germination more fully in the February number of The Bulletin.

## BACK NUMBERS OF THE 1921 BULLETIN

The Green Committee can furnish to member-clubs back numbers of the 1921 Bulletin at 20 cents per copy. There is on hand a fair supply of most of the numbers, but not of all.



Tractor and mower combination used by the Ashtabula Country Club, Ashtabula, Ohio. Mr. Amos F. Hubbard, Secretary of the club, writes, "A bar of wood is attached by bolts to one triplex mower, extending four feet beyond this machine, for the attachment to the trailing triplex. The triplex mowers are attached by any old buggy poles. It gives flexibility in making turns and hitches close to the power. The system of attachment is simple and cheap."

# **Questions and Answers**

All questions sent to the Green Committee will be answered as promptly as possible in a letter to the writer. The more interesting of these questions, with concise answers, will appear in this column each month. If your experience leads you to disagree with any answer given in this column, it is your privilege and duty to write to the Green Committee.

Southern green June-beetle not affected by top-dressings of sand.— I notice that in Question 8, on page 263, of the December BULLETIN, the suggestion is made that greens regularly top-dressed with sand are immune to the ravages of the Southern green June-beetle. The editors invite clubs to contribute their experience on this point. I wish to say that a number of the old greens at Pine Valley were built on sand and have little else in their composition, and the grub of this beetle seems to like them first rate. Also, at Pine Valley in the rough, which is nothing but sand, there are thousands of places where these grubs are working, and from this it would seem that top-dressing with sand would in no way affect them.—Alan D. Wilson, Philadelphia, Pa.

1. Grass mixtures for tees; hard fescue; meadow fescue; yarrow.—In regard to the grass mixture for tees, you advise 4 pounds of Kentucky bluegrass to 1 of redtop. The ———— Company's formula is 60 per cent Chewings fescue, 10 per cent hard fescue, and 30 per cent redtop; the ————— Company's formula is 30 per cent meadow fescue, 40 per cent Kentucky bluegrass, 28 per cent Chewings fescue, and 2 per cent yarrow.—(New Jersey.)

There is no particular objection to either of these mixtures nor is there any particular merit in either of them, and each will cost far more than the bluegrass-redtop mixture and not give any better results. Chewings fescue is rather expensive and usually low in germination. There is no hard fescue seed on the market; everything sold under that name is sheep's fescue, which is a damnable grass to put on a tee. Meadow fescue is a good grass for meadows and pastures in the Northern States, but has no particular merit on fairways or tees. We do not see any particular advantage in the varrow. A general rule which may be advantageously followed in order to ascertain what will make satisfactory turf for your tees and fairways is to note what kind of grass commonly makes up the lawns and pastures of your immediate region. That is the grass for you to use. It does not make any difference in a bluegrass region what seed you sow, as you are going to get bluegrass. In a Rhode Island bent region you can sow anything you please, but the end results are going to be Rhode Island bent. We therefore have recommended the two grasses which are most generally satisfactory in your region, namely, bluegrass and redtop, the redtop being comparatively short lived but the bluegrass long lived.

2. Ground oyster shells in grub extermination; undesirability of lime.—I am enclosing a letter from the \_\_\_\_\_ Company urging us to use their ground oyster shells to rid our turf of grubs, through the counteracting of the soil acidity which will result from applications of the ground shells. Your advice will be appreciated.—(Pennsylvania.)

Ground oyster shells are comparable, agriculturally, to ground limestone, the two being of equal value. Where it is wise to use lime agriculturally, there is no question as to the merits of ground oyster shells. We would add, however, that there is absolutely no evidence, and we think practically no likelihood, that the use of ground oyster shells, or any other form of lime, would have the least effect on grubs. In regard to the general use of lime on golf courses, our present judgment, based on our experiments and much experience, is that for the grasses desired on golf courses the use of lime is practically money thrown away.

Compost as a putting-green top-dressing; preparation of the compost; hydrated lime, burnt lime, and peat in the compost.-We plan to use the following compost as a top-dressing for putting greens: 6 inches of peat mixed with lime, 2 inches of sand, 12 inches of barnyard manure; repeat and top the pile with 4 inches of natural top-soil; turn after 2 months, and thereafter every 4 to 6 weeks. Our soil, generally speaking, is heavy clay. Peat, sand and loam were used in making the top soil for the putting-greens.

Can you suggest any improvement on the above, relative to our conditions?

What quantity of lime should be used? An article in the March BULLETIN entitled "The Use and Abuse of Lime" advocates using about 10 per cent with peat; another, in the April BULLETIN (page 55), commenting on formula No. 2, suggests 25 pounds of lime to a ton of peat.

Our peat or muck is taken from the top soil of cultivated land. If, by testing it in a shallow box, grass seed should grow and thrive in this muck, would it still be advisable to mix it with lime in the compost pile? If lime is used, should it be mixed in with the peat before composting, or

could it be applied as a layer directly on top of the peat?

The suggestion is made not to allow the lime to come in contact with the manure. Under our formula the pile is to be broken down and turned after a 2 months' period, which would bring lime and manure in contact. Would this produce an ill result?

Is hydrated lime the proper form for this purpose?-(Indiana.)

The compost you plan to use as a top-dressing for putting-greens appears to be satisfactory.

We suggest that you limit the amount of lime added to the peat to 25 pounds of lime per ton (about a cubic yard) of peat. We are becoming more and more convinced that much of the weed trouble on golf courses is due to the injudicious use of lime. We are not ready to condemn the use of lime entirely, but we know that there has been much more lime used than is good for growing fine turf.

If grass grows in your test-box of muck, without any sign of turning vellow or killing, we do not believe that lime would be of any advantage whatever to the compost pile.

The lime could be used in either manner just as satisfactorily, except that it would require more labor to mix it with the peat.

The small amount of lime we recommend would probably result in no loss of fertilizing elements from the manure. It is true that lime mixed with manure causes the loss of nitrogen, which is liberated in the form of ammonia, but there is little danger of this in a compost pile, as the ammonia is absorbed about as fast as it is made. As to the time of turning the compost pile, this depends altogether on whether fermentation is rapid or not. If the pile begins to heat up (which can be determined by feeling it with the hand, or by its beginning to "steam"), it should be turned over immediately, as there is a considerable loss of nitrogen from fermenting manure. Another method of keeping the heat down is to turn on the hose and wet the pile thoroughly to cool it off.

Either hydrated lime or ground limestone is suitable for mixing with the peat. Burnt lime could be used if allowed to slack before mixing.

## January 16, 1922] UNITED STATES GOLF ASSOCIATION

4. Putting-greens and tees: reseeding; remodelling; grasses for.—Our greens were well designed for surface drainage and there is little evidence to indicate that the underdrainage is not all right. The soil is a rather stiff clay loam and produces fair farm crops. The greens were built with thin top-soil and no particular treatment given to the sub-soil. Mushroom soil has been added for the last two years. At the present time (December) the greens are in only fair condition. All but one green consist mostly of redtop with some bluegrass, bent and fescue. One green built like the others was sowed with almost pure bent, and it is really a fine green, showing that bent will do well in this soil.

bent and fescue. One green built like the others was sowed with some binegrass, bent and it is really a fine green, showing that bent will do well in this soil. The difficulty of obtaining good bent seed and its present cost prohibit a heavy sowing of this seed. With, say, 600 pounds of bent divided between spring and autumn sowing, with approximately the same amount sowed each year, do you believe it can be established in a few years so that it will crowd out most of the other grasses?—(Pennsylvania.)

We have rarely seen any results follow the putting of additional seed on a green. If you do it, we would advise using relatively small amounts to each green; and fall seedings are preferable to spring seedings. Where there is already a reasonably good stand of grass on the green, fertilizing by top-dressing or otherwise will usually stimulate the grass sufficiently so that it will cover all thin or vacant places. Grass seedlings have very little chance in competing with established grass.

### What seed would you advise for sowing new tees?

The problem of tees is a difficult one, particularly where crab-grass is bad. We would think, however, that a mixture of bluegrass and redtop would be as satisfactory as anything under your conditions. If your tees are bare now, the best plan would be to sod them in the spring, as in seeding a tee the grass gets little chance of becoming really established under teeing conditions.

One green will have to be remodelled. Would you advise lifting the turf and building up the green as early in spring as possible?

In remodeling a green, we certainly would advise lifting the turf, building the green in the form you want it, and then relaying the turf. You will find two articles on this subject in THE BULLETIN, pages 33 to 36 and 132 to 136, of 1921. After your turf is relaid, it should be lightly rolled and then top-dressed. At the time you remake your green every effort should be made to get the top 6 inches of soil on the green an ideal loam.

We expect to seed a green this spring for clock-golf and practice putting. Would you advise red fescue or redtop, or a mixture of the two? We want to use all the bent seed we can for the regular greens.

We would advise the use of bent if you can possibly secure it. If you cannot get bent use straight fescue. You ought to get good results from straight fescue, but not when the fescue is mixed with other grasses. Red-top is decidedly inferior to either bent or fescue.

5. Preparing for an experimental grass garden; grasses for putting-greens and fairways.—We are preparing a plot 100 by 150 feet for the purpose of trying out a few of the various grasses in order to find those most suited for our course, and would be pleased to get your suggestions in detail, also a supply of seed of absolutely pure strain. The piece of ground we are using is in the center of the rough between two fairways. The soil is a good dark loam with a sand and gravel subsoil. We figure on plowing under a carload of manure, about 25 tons, and letting it lie for the winter, working it up as soon as the frost is out of the ground next spring. We thought of laying out 36 plots 8 feet square for various seeds, and on the other 100 by 125 propagating vegetatively creeping bent if we could get the stolons next spring.—(New York.)

We shall be glad to send you vegetative material to plant your vegetative garden in early spring, of the area 100 by 125 feet. In regard to seeds for your 36 small plots 8 feet square, let us know what you want and we will endeavor to supply as many as possible and advise you where to get the others. We would suggest in a general way, however, that for putting-green purposes you are practically limited to redtop, German bent, Rhode Island bent, and Chewings fescue; and for fairway purposes to bluegrass, redtop, white clover, meadow fescue, and of course any of the putting-green grasses. There are various other grasses which might be of interest to you to test in these small plots just to see how good or how bad they are. Let us know your desires more in detail.

6. Grasses for gravelly places; sheep's fescue as a fairway grass.-Would sheep's fescue be good on some gravelly patches we have on our fairway? It has done wonderfully in the rough where the top-soil has been skinned off.-(New York.)

Sheep's fescue is not very desirable on the fairway unless mixed with some creeping grass that will fill in the interspaces. The tufted habit of sheep's fescue makes it certain that it will give you cuppylies, which are undesirable. Both sheep's fescue and red or Chewings fescue grow very well on gravelly soil, and we would suggest you mix seed of the two and plant on the gravelly spots of your fairway. It would do no harm also to mix in a little redtop, as this frequently does very well on gravelly soil. We feel sure that with this mixture you will have satisfactory turf on the gravelly parts of your fairway. If the areas are not too large, it would be well also to top-dress such areas with a quarter or a half inch of soil.

7. Improving drainage.—How can we make the fine grasses grow on the low parts of our putting-greens, which are quite undulating and have not good surface drainage and are easily flooded? The water seems to leach out of the soil everything that is of value, so that only the coarse grasses will grow. We covered those parts with mushroom manure this fall. What better could we have done?—(Illinois.)

We do not think you will ever be able to grow good grass on the greens you speak of while they are in their present condition. The only thing to do with such greens is to build them up so that both surface drainage and underdrainage are good. All greens in low soggy ground should be built up so that the back of the green is 3 to 5 feet above the moist surface and the green slopes down to the front, which should be at least a foot above the surface of the moist soil. Many putting-green troubles are due to insufficient drainage, and the remedy is to provide better drainage even if it means entirely new construction.

8. Waipu brown-top.—I received a sample of seed from New Zealand called "Waipu brown-top," which I understand is a species of bent. I would be pleased to know if it is of sufficient value for putting-greens.—(Kentucky.)

"Waipu brown-top" is a new name to us, but the seed is that of Agrostis tenuis, harvested in New England under the name of Rhode Island bent and in New Zealand under the name of Colonial bent. It is an excellent grass for putting-greens, scarcely inferior to the South German mixed bent.

9. Reseeding putting-greens and fairways.—We seeded our new fairways and greens at \* \* \* in August and the first part of September. In the

fairways we used 60 per cent of New Zealand fescue and 40 per cent of redtop. There are many bare spots now (December) or sparsely germinated spots through these fairways. On the greens we used Rhode Island bent; they likewise do not show good germination. As this work was done under the direction of Mr. \* \* \*, we have asked him what was the cause of the poor germination, and he states that as both seed had been tested and proved satisfactory the poor results were due to lack of rain. He advises that early in the spring we should clean up the sparsely grown areas and reseed them. We ask for your advice as to whether we should use again the Rhode Island bent for the greens and the above proportion of fescue and redtop for the fairways, or should we use some other seed?—(Rhode Island.)

We would advise you to reseed the bare spots and the thin places just as early as frost is out of the ground in the spring. It might be well to rake the spots lightly, but it will suffice if you simply seed on the surface and then cover with a light top-dressing. This last method would certainly be preferable on the putting-greens. We would advise you to use exactly the same grasses as you used previously.

10. German bent vs. Rhode Island bent.—Please tell me the difference between German bent and Rhode Island bent. Would you advise us to buy Rhode Island bent in preference to German bent, or vice versa?—(Minnesota.)

Rhode Island bent is all Agrostis tenuis. German bent usually consists of 50 to 60 per cent Agrostis tenuis, 10 to 25 per cent velvet bent (Agrostis canina), and a very small percentage of creeping or carpet bent (Agrostis stolonifera). The Rhode Island bent seed harvested in this country is good in quality, but not well cleaned. However, there are no troublesome weeds in the trash mixed with the seed. Other things being equal, we should somewhat prefer the German bent.

11. Grasses for northern putting-greens; bents and redtop.—We have everything ready and are about to change two of our putting-greens. We find that we can not get any South German bent anywhere, but can get some Rhode Island bent. The only thing we can see to do is to sow the greens early next spring to Rhode Island bent and redtop in the proportion of two parts of the former to three parts of the latter, with the idea of raking the greens thoroughly and sowing South German bent as soon as we can buy it.—(Maryland.)

Under the circumstances we think the wisest thing for you to do would be to seed your putting-greens to straight Rhode Island bent. Redtop is not so bad as a temporary expedient, and particularly in view of the fact that it will not remain in your putting-greens longer than two years.

12. Alkaline soils and bent grasses.—Would it be advisable to sow bent grasses in soil of an alkaline nature provided I can convert its chemical nature to an acid condition through the use of ammonium sulphate applied to the soil when being prepared and with subsequent applications from time to time? We are to build a course in Montana, where most of the soil is very alkaline, which naturally is adapted to bluegrass and redtop.—(Montana.)

The bent grasses have a wide range of tolerance from acid conditions to alkaline conditions, and we have little doubt that they will succeed on your soils, if bluegrass and redtop succeed. We think it would be wise for you to use ammonium sulphate as your fertilizer, as this would tend to reduce the alkalinity, while the use of nitrate of soda would tend to increase it. It takes a very long time to change even a neutral soil to an acid soil with the use of fertilizers, and of course it would take much longer to change an alkaline soil.

# **MEDITATIONS OF A PERIPATETIC GOLFER**

The word "green" in the phrase "The Green Committee" has relation to grass and its culture. In many cases, however, judging from some committees we have met, it truly has the other meaning, "callow."

A wise old saying is, "One year's seeding may mean seven years' weeding." And there are lots of putting-greens over seven years old where the weeding has not been well done. They were all probably seeded to "mixtures" guaranteed to give that beautiful velvety turf.

A golf course covered with snow! How beautiful that hemlock tree in the clump of trees, all but it bare and leafless!

A solid sheet of ice an inch thick covering a putting-green. Don't worry. It will do no harm if the drainage is good. If the drainage is bad it could never be a good green anyway.

A course with fairways so close that there is practically no rough, necessarily the case where there are 18 holes on 75 or 80 acres. 120 acres is about the minimum for a really good 18-hole course.

A lovely green framed in a semicircle of trees. A frame for the picture the green makes is never undesirable.

Beautiful, bubbling springs, each in attractive rock or concrete work. Much better than the old 19th hole of the bibulous age.

Bird boxes in the trees. Fine idea. Every golf club should have the spirit of the Audubon Society and encourage the birds.

A green covered with patches of veronica, selaginella and galingale sedge all of them lovers of soggy soil. The plants can tell us a lot about soil conditions.

A sluggish creek with oozy mud at the bottom across a fairway, making a grave for hundreds of balls. Why not clean it out and cover the bottom with gravel and coarse sand?

Jim says blind holes are fine. They save the profanity that would be used if he could see where his ball landed.

A putting-green of Poa annua, beautiful in color and texture and perfectly true. In some places this grass is certainly a fine thing to have; besides, it is doubtful if you can get rid of it if you should want to.

Sheep's fescue on putting-greens. Ye gods! Somebody evidently bought Maginnis' Mysterious Mixture to seed his greens.

Grassy hollows about the greens instead of sand bunkers—much prettier and quite as difficult. Must we always try to imitate coast-dune conditions, regardless of expense, even when we are on black prairie soil?

Carpet-grass, where it is adapted, makes perfect fairways. A lot of our southern friends ought to become better acquainted with this grass.

Some genius has developed a new way to mark the location of a blind hole. He floats a toy balloon high enough from the top of a bamboo pole. Fine idea!

The farmer is a wise guy. See him hauling that manure to where it will be needed over the frozen ground. Green-keepers may well profit by his long experience and haul sand for bunkers, manure and compost for future top-dressings, and take care of similar drayage work when the hauling is easiest and does least damage to the course. Besides, it saves a lot of time for the busy season in spring.