

Pro Shop Nerve Center of Golf Program

By JOHN BUDD

Professional, En-Joie GC, Endicott, N.Y.

The golf shop is the nerve center of the golf program at the club. To serve its best purpose the shop should be directly on the most convenient route to and from the golf course. Such a handy location makes the golf shop a service center for all golf activities. To locate it anywhere else puts it on a side track and slows down the golf program.

The golf shop should embody these features:

1. A comfortable place for golfers to feel at home and lounge; a place where the golfers want to be; NOT A CUBBY HOLE WHERE THEY WANT TO RUSH THROUGH TO SOME OTHER PART OF THE CLUB.

2. Adequate display space for all types of merchandise that are to be carried.

3. Space and equipment for caring for services rendered in the golf shop. These services may include registration of players, collection of green-fees, sale of cart tickets, rental of clubs and a host of other services.

4. Fully equipped space for club repair and cleaning, with roomy storage space for club sets. This space should be large enough to care for carts if this has become one of the problems at the particular club.

5. Storage for the professional's stock of merchandise.

6. Office space for planning the program and caring for all the various detail and record work that must be done. The office is better if private and off the beaten track.

A new approach should be made to the display of merchandise. We have become hidebound in our display of clubs, bags and equipment. Any department store display man can tell us quickly that we should modernize our way of doing.

My idea of the best way to build a new shop is shown in floor plans at the left. From the floor up we have two large drawers for miscellaneous apparel and equipment. The top drawer has a glass display compartment that is reached when the drawer is slightly opened. In this glass space one can show all the apparel, gloves, sox, etc. necessary. When a sale is made the item can be quickly taken from the drawers adjacent to the display.

These drawers will be the top of counter up to about 30-34 inches. On top of this counter the club and bag display rack is built in the same manner that such display racks are installed on the floors of our average shop. This type of clubs and bag display will bring the beauty and symmetry of the new products right to the eye level of the prospective buyer. Such a display certainly would speak out with eye appeal and bring that buying urge so necessary to correct selling in our pro shops. We are trying to build buying urges in the customer.

In summing up the golf shop we can surely say that first and foremost the shop should be the GHQ of the golf program. We should realize that money spent to improve our shop will be returned many times in increased revenue and player interest. We must be forever alert to change and strengthen our pro shop set up. Players take more of an interest in our shops than we think. Let's keep a jump ahead of them and have them expecting changes for the better all the time.

Big Saving in One Idea from a Meeting

By JOSEPH J. RYAN

Supt., Rolling Green Golf Club, Media, Pa.

Discussion about what golf course superintendents get out of their meetings keeps cropping up from time to time. Usually the answer is hard to settle to the satisfaction of everyone. However, if one contributes nothing to a cause he should not expect to receive much in return.

Personally I don't believe I ever attended a meeting that I did not get a worthwhile idea, either from the program direct or from subsequent discussions.

When weather conditions are favorable we sometimes do not pay the attention we should to what may well be our problem at some future date.

In the fall of 1949 we decided to burn off our three worst fairways and reseed. These fairways were originally seeded with Kentucky blue grass. The demand of close cutting eliminated the blue grass and left nothing but poa annua and weeds.

At one of our Association meetings I

brought up the subject as to how severe the burning should be and the number of applications and etc. Bill Mellon of the Lancaster (Pa.) CC asked me if any of the turf was worth saving. I admitted it was pretty hopeless. Bill said, "Make a complete kill of all vegetation; you will get a far better seed bed and use much less seed." We followed his advice and with the turf completely destroyed we prepared a seed bed by aerifying three times. That enabled us to secure a perfect stand of mixed bent sown at the rate of 50 lbs. per acre. The ground was so pulverized that all seed germinated where

it fell and 50 pounds gave us perfect coverage. The saving in seed more than covered the cost of fertilizing that followed later in the fall.

This is just one of the many helpful hints that I have picked up at our local meetings.

Alex G. McKay, veteran pro-gkpr. of Chattanooga (Tenn.) G&CC visiting Scotland this fall. Mac's earned his trip with hard work the past three years converting Bermuda greens on several Tennessee courses to bent greens that have stood up.

Minimum Equipment List for Average 18-Hole Course

FAIRWAYS & ROUGHS

3 Tractors	1 7-Gang Fairway Mower	1 Rough Mower
1 Fertilizer Dist.	1 3-Gang Aerifier	1 Leaf Machine
1 Boom Power Sprayer	1 3-Gang Fairway Roller	1 Seeder

TEES & GREENS

5 Power Greens Mowers	3 Power Tee Mowers	1 Power Sickle Mower
3 Hand Greens Mowers	3 Hand Tee Mowers	3 Hand Mound Mowers
1 Power Sprayer	1 Proportioner	1 Power Aerifier
1 Fertilizer Spreader	1 Hand Seeder	1 Loam Spreader
1 Hand Sweeper	1 Hand Spiker (Aerifier)	

SERVICE SHOP

1 Power Mower Grinder	1 Hand Sickle Grinder	1 Flat Knife Grinder
1 Paint Sprayer	1 Air Compressor	1 Welder Outfit
1 Lathe	1 Arbor Press	1 Drill Press
1 Forge	1 Machine Washer	1 Pipe Threader
1 Band Saw	1 Power (Tree) Saw	

HAND TOOLS FOR THE REPAIR OF

Electrical Equipment	Water Systems	Plumbing
Refrigeration	Plaster	Cement
Roadways	Drains	Sewers
Roofs	Paint	

MISCELLANEOUS ITEMS

Scales	Seeders	Funnels	Gas Cans
Animal Traps	Soil Testers	Soil Samplers	Spikers
Sod Cutters	Sod Edgers	Sod Lifters	Pluggers
Rakes	Shovels	Spades	Forks
Snaths	Snath Blades	Snath Stones	Axes
Adzes	Crowbars	Hose Tools	Wrenches
Hoists	Tree Tools	Jacks	Ladders
Pullers	Dusters	Pumps	Pruners
Burners	Grass Whips	Etc.	Etc.

RECAP OF ITEMS AT TODAY'S PRICES

Fairways & Roughs	\$12,350.00
Tees & Greens	5,945.00
Service Shop	4,600.00
Hand Tools	1,155.00
Misc. Items	3,485.00
General Use Items	7,555.00

\$35,090.00

GENERAL USE ITEMS

2 Trucks	1 Jeep
1 Rotovator	1 Soil Screen
1 Sod Cutter	1 Cement Mixer

(List given in talk of Orville Clapper before one of Prof. L. S. Dickinson's classes at University of Mass. Prices were as of Jan., 1951.)

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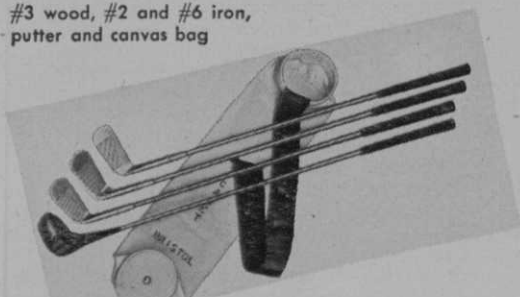
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Modern Maintenance Was Born in Trouble

By JOHN GRAY

Supt., Essex Golf & Country Club, Sandwich, Ont., Can.

Mr. Gray is the only Canadian golf course authority who has become president of the golf course superintendents' national organization which has, with few exceptions, a membership of U.S. superintendents. — Editor.

On the completion of the 25th year of this worthy magazine I wish to declare my confidence in the future of golf course maintenance as bearing even more valuable benefits than the profession has been able to provide in the past when our fellow workers were establishing an important and honored profession.



John Gray

I wish GOLFDOM continually increasing influence in its great work. Joe and Herb Graffis have done a job that would have dismayed many. The success of their journal has been especially impressive in view of the limitations of the field and the handicaps they,

with the rest of us in golf course maintenance, have had to overcome.

In 1921 the National Open was scheduled to be played at the Columbia course in Washington. This course was groomed and in perfect condition as courses always are for such an auspicious occasion. In three days, due to the terrific heat and disease, only a few blades of grass remained on the greens. Drs. Piper and Oakley and several others of the Department of Agriculture and the USGA found and transplanted these few shoots which had withstood the terrific heat and disease. The USGA made grants to the Experimental Gardens to further prevent such a reoccurrence of disaster ruining a golf course. This tragedy marked the birth of our profession as we know it today.

Fewer Men — More Work

With the labor shortage of the boom following the depression the superintendents had to maintain standards with fewer man-hours at higher wages. There was only one way to do it. He had to get better and more equipment and make full use of the findings of the state colleges and USGA research. The superintendents now took their problems more and more to their research men and enlisted the aid of the manufacturers in

developing machinery and materials meeting their needs. This development gave us a fuller recognition by club officials and golfers, and attracted graduates of agricultural colleges to our profession. It is largely due to the efforts of course maintenance men and magazines such as GOLFDOM that the general public has come to realize that a hose, a rake, and a lawnmower zealously applied will not produce an acceptable piece of turf. Let us also remember the various state departments of agriculture which have been so generous in donating the time of their researchers to help solve our problems.

It is an acknowledged fact that chemistry is leading the world today. Our profession is one of the many that has benefited by it, and we expect even greater benefits.

We have found from experience that year to year budgeting not only benefits the club's financial conditions but betters the general condition of the course as capital investments can be made in equipment which would otherwise be too expensive if the budget were to run from month to month. Any cost accounting that does not provide any appreciable investment in equipment will not prove successful.

The chemistry of water, sun and soil is a never-ending mystery but we have made some progress. The Divine Plan does not include a solution of this mystery but as we advance step by step and begin to grasp some of the enormity of the chain reaction of soil chemistry we find, what few other professions are blessed to do, a wholehearted happy life in the great outdoors witnessing every day the magnitude of God's rich blessings. No man can follow this profession and remain an atheist. And it follows as the night the day a group of such men must surely prosper.

Second annual turf conference, sponsored by Central Plains Turf Foundation and Kansas State college, at Manhattan, Ks., Oct. 24-26, has program that looks like educational course at big national meeting. Expect record attendance for Ks., Okla. and Texas.

Brains Pooling Biggest Factor in Maintenance Progress

By HERB SHAVE

In the last analysis the great progress of the past 25 years in golf course maintenance is primarily due to the eagerness of men in the business to pool their observations, discoveries and the actual or promising solutions of their problems.

We've learned to put at least one idea of our own into the cooperative store of brains in our profession and draw forth for the benefit of our clubs the good ideas of all our co-workers.



Herb Shave

During the past 25 years new strains of grasses have been developed and appraised in actual service on courses. This work continues to advance.

The USGA Green Section has done marvelous work of research and coordinating experiment station, laboratory and course scientific endeavor.

The state colleges and state experiment stations have contributed tremendously to research in grasses, diseases, fertilizers, watering and other essentials of fine turf production and maintenance, and have supplied facilities and personnel that have greatly helped the men at the golf clubs.

Organizations Valuable

Formation of the course superintendents into a strong national association has been of immense value to clubs and golfers and I'd like to see for the good of all golf a much larger membership in the national and section superintendents' associations.

Tribute must be paid to the chemical companies whose experts work so closely with the superintendents and the USGA, state and national department of agriculture authorities in striving for safe and economical control of turf diseases and destructive insects. Also contributing greatly to the pool of brains from which the superintendent has been able to draw in progressing in his profession, are the experts of the fertilizer and equipment companies. The successful use of 2,4-D

has accounted for the most apparent revolutionary improvement in golf course conditioning during the past few years, but of similar importance has been the rapidly extending use of aerification in providing conditions that facilitate the close, deep and healthy growth of desirable grasses, leaving but little room for the undesirable weeds.

Improvement in power course maintenance machinery and watering facilities has come a long way. Some clubs seem inclined to think that almost all maintenance is by machinery and chemicals now, but that's not nearly the case. There's watering, top-dressing, fertilizing, fungicide treatments, mowing and many other tasks, big and little, routine and emergency, in which there is no substitute for the informed and resourceful man.

Making the brains of all of us available to any one of us is the biggest thing that's happened in golf course maintenance during the past quarter century.

GOLFDOM has been of value beyond reckoning in promotion of this phase of progress in golf. Lots of luck to it.

Chemical Advance Greatest of 25 Years on Courses

By LEO J. FESER



Leo Feser

It seems to me that the greatest progress made in turf management in the past 25 years has been the development and application of chemicals for weed, insect and disease control. While admitting that there is still need of much research in control of these pests, I am all for presenting the loving cup to the

people who have given us the chemicals to do a job that was impossible to do in 1926.

While considerable progress has been made in the management of water in soils, I think this phase of turf management rates a poor second to the chemical phase. It appears that the next 25 years will bring tremendous progress in water management in soil, and the men who have given us tools to get air down into the soil are leading the way to better management and water conservation.

A lot of progress has been made along many lines. The development of better machinery and the architectural adjustment of golf courses to the use of that machinery has taken the edge off of the sharp rises in labor costs. National and sectional meetings of turf men have

Herb Shave, supt. of Oakland Hills CC, where this year's National Open was played, is a vigorous, alert leader of his profession at 76, with more than a half century's experience in course maintenance—
Editor.

Mr. Feser, one of the leaders in Minnesota and national superintendents' organizations and educational work, has not only been responsible for the maintenance of Woodhull, one of the best conditioned private courses for more than 30 years, but has maintained and operated a fee course of his own. He is regarded by his colleagues as one of the top practical men in course maintenance. — Editor.

speeded up the average "know-how" of course maintenance.

It is only fair, I think, to express an opinion on what might well be the greatest lack of progress. That is the attitude of average club officials on the value of a capable superintendent. Turf men have failed, I think, in this very important matter. There is little in the way of paycheck prospects to induce young men to train for superintending the maintenance of country clubs, and we have done little to educate officials along this line. As a result we have few young men in the business today, and the golf clubs are bound to suffer a lack of capable superintendents in the next 25 years.

I think that of the thousands of ideas to which I have been exposed because of my fortunate contact with other turf men, the one which has meant the most to me was suggested by Dr. Stakeman of the University of Minnesota Farm School many years ago. In the early '20s I was convinced that if one good variety of bent could be established on all of my greens, the problem of maintenance would be simplified to a routine procedure and my club would enjoy uniform putting surfaces of every green.

Dr. Stakeman pointed out the weakness of this reasoning by drawing a comparison with the experience of wheat growers and their constant battle against diseases affecting wheat. He explained why no variety of wheat remains immune to rust and other diseases, and why it was necessary to breed and test new varieties in the never-ending battle.

It occurred to me that what was true of wheat could be true of bent. I discarded by "single bent" theory and substituted a type for a variety. Since that time many of the old "varieties" have gone bad, but thanks to a constant effort to keep many varieties of similar type on my greens, the average putting surface on all of my greens has been much better than would have been possible had I held to my original opinion.

Quick Use of Research Has Speeded Supt's. Progress

By JOHN MCGREGOR

Joe and Herb Graffis saw the necessity for a national golf magazine, which would cover all phases of golf club activities, twenty-five years ago.

After much hard work with Herb as editor, collecting material which would be of interest to all executives in the business of golf, and Joe as publisher and advertising manager, securing advertisements to help defray the expense of printing and distributing the magazine, the net result was GOLFDOM, a paper which is eagerly looked for and read by the heads of each department. It has truly fulfilled the dreams and expectations of Herb and Joe. Congratulations!

There have been so many contributing factors in golf course maintenance during the past 25 years that it is difficult to catalog them.

Turf research has contributed much toward the development of fine turf. 25 years ago the Green Section of the USGA contributed nearly all of the research work done. Today many colleges and universities are taking an active part in turf problems, maintaining turf plots and endeavoring to solve the many problems with which the grower of fine turf is confronted.

It is only fair to state their efforts have proved to be of the utmost value. Golf has been benefitted beyond estimate by their continual search for and development of grasses most suitable for putting greens, fairways, tees and rough in the various areas of the U.S. and Canada.

Supt. Hungry for Facts.

The course superintendent is very much aware of the value of research and is hungry for any information that will aid him in providing better playing conditions for those who love golf. Every field day at the experiment stations, wherever they may be held, you will find in ever increasing numbers the practical men who have to produce the finished product. These men are serious students of the profession, and readily absorb the information available and put it to mighty good use.

Control of fungus diseases has developed through the years to the point where "dollar spot" and other fungus diseases are no problem. Intelligent application of the information at hand is without doubt the answer.

Years ago fertilization of fine turf was not given serious thought. We used to apply bone meal, sheep manure or any material which would improve the color of the grass. Soil analysis had not developed to a point where it was of any

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value as a guide toward plant food deficiencies. Today it is general practice to have a soil analysis at least once a year which will show whether or not there is a deficiency of nitrogen, phosphorous, potash or calcium. It is then a simple matter to determine the proper analysis of fertilizer and amount to use to improve the turf.

The control of weeds in those early days was extremely expensive. The whole force each spring spent two weeks at least digging weeds out of the putting greens. The same procedure in the fall was necessary, digging crabgrass.

Dandelions, plantains and other types of weeds were a detriment to the golfer, in fact, very little golf was played for about three weeks in the spring. The seed-heads made it almost impossible to find a ball. Today weeds are no problem. Weed killers have been developed which kill nearly all existing weeds with one application. Insecticides have been perfected which destroy all forms of insects injurious to turf.

The management of labor and the availability of labor on golf courses has undergone radical changes over the years. We can well remember when it was possible to secure reliable and industrious men, who could be depended on to turn out a day's work intelligently and sincerely.

In those days maintenance methods were of necessity mostly manual, requiring 15 to 20 men to keep an 18 hole course well groomed.

Greens and tees were generally mown by hand which was one of the reasons why it was necessary to have such a large force.

Trap maintenance was the most expensive item. Two thirds of the labor budget was spent on traps. With the advent of power mowing equipment and its adaption to modern maintenance methods, the number of men necessary to keep a course properly groomed today has dropped to roughly 12 men.

The superintendent is primarily responsible for the fine condition of our golf courses. He is alert and takes advantage of new methods and equipment and keeps the budget within bounds because increased labor costs, increased equipment and supplies cost, and maintenance budgets have doubled in 25 years.

The golf courses of today certainly reflect what education and modern maintenance methods have accomplished toward near perfection of playing conditions. This perfection has been partly responsible for par-breaking golf. The roughs on golf courses today are little if any hazard to the golfer because of the demand for short cut rough.

Fairway sprinkling systems are being used extensively by private clubs and are

a contributing factor in the development of the fine turf on fairways. The liberal use of water has in many cases developed bent grasses which necessitate close cutting and which on some courses has practically eliminated bluegrass as a fairway turf, as it will not survive long when cut under one inch. The result is re-seeding fairways with bent grasses.

Supts.' Standing Improved

The superintendent has improved his professional standing because of his intense interest in research and its application, reflecting in the improved condition of golf courses. Club officials and players alike have recognized their splendid efforts by increased remuneration and in most cases paying their expenses to turf conferences and field days, because of the benefits to clubs through their superintendents attending such meetings.

If each club would send its superintendent to these meetings, expenses paid, it would be repaid many times.

If club officials could be induced to attend monthly meetings of the superintendents, they would then have a better understanding of what their superintendents' problems are and I feel sure they would be more cooperative.

There is much yet to be done in the development of fine turf through research and its intelligent application.

It has been my contention and belief for many years that if the future superintendent will be able to pursue his education in a university or college, including in his curriculum "Agrostology", the growing of fine turf, he will be qualified to fill a position as superintendent after combining his classroom, laboratory and test plot work with experience in actual golf course work.

Florida-Georgia Turf Men Organize

The Florida-Georgia Turf Assn., designed to foster better turf conditions in the North Florida-South Georgia area, was organized recently at a meeting at Timuquana CC, Jacksonville, Fla.

Attending the inaugural session were superintendents of golf courses within a radius of more than 100 miles of Jacksonville, as well as turf management personnel from surrounding U.S. Navy installations. Norman Johnson, course supt., at San Jose CC, South Jacksonville, was elected temporary president. L. N. (Buddy) Clark, supt., at the Ponte Vedra (Fla.) Club, was named temporary secretary.

Host at the meeting was Pat Deavy, superintendent of greens at Timuquana.

The new organization plans to invite

all persons in the area who are interested in better turf conditions to join the association. This includes representatives of cemeteries, parks, landscape gardeners and home owners.

It is expected that at its next session, at which Johnson will play host, the association will name a permanent slate of officers, and authorize a program committee to plan a year-round series of events in the turf-improvement field.

Progress in Maintenance Has Influenced Course Design

By CHESTER MENDENHALL

Supt., Mission Hills CC, Kansas City, Mo.

When we read in GOLFDOM that October 1951 marks the completion of 25 years of its publication, we look back and think of the advance in the field of turf during this period.

One of the first things that comes to my mind is some of the equipment, either horse-drawn or by an old iron wheel tractor. The fairway units were only enlarged lawn mowers. The greens mowers were pushed by hand and the old barrel cart was used for applying wet chemicals to the greens. At that time help was plentiful and most courses were operated with a large crew of men doing all the trimming with hand mowers and scythes.

Today the high cost of labor necessitates the use of fast moving power equipment which reduces the man power needed and at the same time gives the golfer a better playing condition.

Large power equipment has had its effect on course design. The old high steep faced bunkers have given away to the more gentle slopes that can be easily cut with power equipment. The size and number of sand traps have been reduced and a number of sand traps along the sides of fairways have been converted into grassy hollows. On other courses trees have been planted through the roughs creating a permanent hazard for the golfer who strays from the fairway.

There has been a rapid advancement in new chemicals for the control of turf diseases, insects and weeds.

Twenty-five years ago bichloride of mercury and calomel were the stand-bys for disease control. This required very careful handling or the effects of the control might be worse than the disease. Today's chemicals can be applied with very little danger of injury to the person

applying them or to the turf. The same applies to insect and weed controls. Not until rather recently have we heard of chlordane or D.D.T. for insect control, or of the herbicides that are playing such an important part in weed control.

There has been a big change in turf maintenance education. Twenty-five years ago turf research work was being carried on by the USGA Green Section and a very few colleges. Today turf research work is being carried on at some college in most every district in the United States. This work is correlated through the Green Section and the results of the work are being brought to the golf clubs and the golf course superintendents by a number of bulletins and periodicals. The oldest strong influence in this respect is GOLFDOM. I wish to express my thanks to Herb and Joe Graffis for the part they have played during these 25 years in the advance of golf and its business with GOLFDOM.



"Chet"

Pride in Fine Courses A Spur to Supts.' Progress

By CLARENCE W. STROUSE



C. W. Strouse

My introduction into the golf business was in 1913, as one of the grounds crew. After two years I became superintendent.

During the years following World War I, I saw many changes in golf course maintenance, such as going from horse-drawn equipment to motorized, from plain grass greens to bent and from cow-pasture fairways to a more modern turf.

In the early 20's the greenkeepers began to gain recognition as professional men and by 1925 the National Greenkeepers Association of America was founded.

Golf course maintenance from this point on became a more serious business. The development of beautiful creeping bent greens closely clipped and methods of watering fairways were two of the earlier details of progress.

To help the man who wanted to further his knowledge of care and betterment of golf courses the book on "Turf for Golf Courses" by Piper and Oakley was published. The USGA Green section began experimental projects all over the country, agricultural colleges began short course work. The organizing of district turf associations in connection with the national association brought the men close together so they could exchange viewpoints, Bulletins issued monthly by the

Green section, and articles written by many practical authorities were published by GOLFDOM and played a very large role in the educational program. The ever-growing demand for finer turf caused the manufacturers to develop better and more economically operated equipment, the fertilizer men to develop better and more efficient fertilizers, the chemical companies to develop insecticides and weed control and means of applications.

During these changes and developments it was very necessary to keep in constant contact with your green chairman and other club officials so that they could understand the progress in golf course maintenance. It also became necessary to start keeping a set of records so you could show what was done and why.

With the development of chemicals and the danger in applying, it was necessary to be very careful in selecting men and training them for this work.

During the constant changes and developments of golf course maintenance it was found necessary for the superintendents to make a study of landscaping so his course was a place of beauty as well as sports ground.

Through the years there has been a lot of long hours of hard work and planning, but the enjoyment of seeing your efforts develop into a place where many people could have a club to which they were proud to bring their friends has more than offset the worry and strenuous labors and headaches.

After 38 years at the same club I have severed my connections. The club was purchased for a fee course operation and maintenance to the exacting standards of highest type private course operation is deemed impractical. In a way that's a tragedy to one who has spent almost four decades in striving to perfect and beautify a course. But the case is not unusual among superintendents who love their work and are proud of their courses. The veterans have raised the standards so the ordinary conditions of courses today are better than existed at many high ranking private clubs 25 years ago.

I wish to extend my most sincere appreciation for the many interesting topics which the publishers of GOLFDOM have supplied to the superintendents and club officials in keeping them abreast of progress.

I know there are many fellow superintendents who have gained as much as I have in the 25 years of GOLFDOM and I feel sure that they will continue to be of great help to the younger men who are coming up in the ranks to take over as the so-called "old timers" approach the retirement age.

Five Major Developments In Course Improvement

By JACK PATTERSON

Congratulations to GOLFDOM on the completion of its 25th year. It has been the guiding hand of many of the improve-



Jack Patterson

ments made on golf courses with timely and well selected articles. I would like to present to its readers at this time a few observations of an "Old time Pro-Greenkeeper."

There have been five major developments in the past 25 years that have been the means of making golf courses the places of beauty they have become. I list them in what I consider their order of importance.

First: Machinery: I well remember in the early 20s at Midlothian all the power we had were men and horses. The rough at that time was allowed to grow to the late spring, then cut, and the resultant hay was allowed to cure, then raked up, stored, and used as fodder for horses.

Those were the days that the rough was the golfers' nightmare. The rough of today is only rough because of the comparison between the perfection of today's putting greens and fairways which would have been impossible to obtain without all the present-day equipment; gangmowers, power mowers, spray machines, etc. But in spite of the lack of equipment Midlothian, in that earlier period, was recognized as one of the best courses in the country. Golf has come a long way since then.

Second: Elimination of Worms and Grubs.

The problem of worm casts on greens today is rarely encountered. In the early 20s it was one of the greenkeeper's heartaches. With the help of good old bichloride of mercury and, at a later date, Mowrah meal, we were able to present a reasonably clear putting surface. Then came arsenate of lead. I am happy to say that I was one of the first to use this for worm and grub elimination and got quite a thrill at the time when greenkeepers from far and wide visited Midlothian to inspect the wonderful results obtained. Chemical control is the reason you see no worm casts on putting greens today.

Third: Fairway Watering.

In the early 20s it was no picnic to walk on fairways by the time the 4th of July arrived. The fairways were not only