YOU ASKED FOR IT!

Remember last year when you filled out the above Acushnet questionnaire? You told us what you liked about our balls and our sales policies . . . and what you thought could be done to make them even better. Well, we have taken you at your word. Here's the result ...

HERE IT IS!

1. BETTER BALLS! A new, stronger paint that stays on and stays white! A sharper click, a better feel! 2. MORE ADVERTISING! This year ... Acushnets are in The Saturday Evening Post, Life, Newsweek, Fortune, Golf and Golfing, and Pacific Coast Golfer. Every advertisement tells golfers to buy from the Pro . . . 3. FASTER SERVICE! Several new Acushnet warehouses are ready to fill orders at a moment's notice.

4. PRO-ONLY POLICY CONTINUED! You will have no outside competition on Acushnet balls....

Your prices can't be cut in downtown stores.

Advance orders for spring are pouring in. So far we have been able to take care of every order promptly. But you know what sometimes hoppens ... the rush becomes so great we get behind in spite of everything. So, stay on the safe side. Order today. Acushnet Process

Sales Co., New Bedford, Mass.

SOLD ONLY THROUGH PRO SHOPS ACUSHNET GOLF BALLS,

TITLEIST, 75c BEDFORD, 75c GREEN RAY, 50c PINNACLE, 35c



THERE'S no worse squanderer of money than an old, decrepit lawn mower trying to act young again. Man! The money it can go through! It's pretty hopeless, too . . . trying to patch it up to do a *real* mower's job for another year. Just throwing good money after bad, as a rule! If you're afflicted with some of these old "has-beens," we'd suggest that you stop pampering them and invest in new Pennsylvanias. You'll discover that you're saving money and at the same time getting the smooth, dependable performance for which Pennsylvania Mowers have been famous for over 63 years.





Send for our Latest Catalog!

Pennsylvania Super-Roller Greensmower

1

Greensmower Ball bearing, high speed, 8-blade cylinder sporse a smooth, ribless cut that in-sures a perfect putting surface. Blades of the finest crucible analysis steel— of hardened and tempered. Train of 3 cut gears, running in grease in dust-tight mower. Castor wheels are mounted in hardened steel bushing with alemite lubri-cation. Extra castor wheel for cutting sharply undulating greens. The light uiameter, are interchangeable right or left.

Pennsylvania DeLuxe Fairway

Pennsylvania DeLuxe Fairway Available in both 30-inch and 36-inch sizes. Unbreakable mallcable iron con-struction. 6 heavy crucible analysis steel blades provide a smooth cut. (5 blades if preferred.) Timken roller bearings on cylinder are adjustable, to take up wear. The raised edge lower blade is reversible. Train of machine-cut hardened gears on both sides, protected by dust-proof, grease-retaining cases. Steel roller with hardened retaining cases. Steel roller with hardened steel bearings. Pneumatic tires optional. 30-Inch Model K Fairway is made of cast iron and offered at a lower price.

PENNSYLVANIA LAWN MOWER WORKS Primos, Del. Co., Pennsylvania, U.S.A.





NITROGEN SHORTAGE PROMOTES DOLLAR SPOT

Continuous nitrogen starvation is one reason why some greens are constantly afflicted with dollar spot. Occasional severe attacks are common on others because of periodic, acute nitrogen shortage.

Some clubs economize on fertilizer to lessen need for fungicide. Actually, the opposite is true, because nominal fertilization reduces dollar spot. Hence, fertilizer cost is more than offset by the saving in expenditure for more expensive fungicide. A few clubs purposely starve greens at all times, laboring under the delusion that nitrogen is the sole cause of all turf ills. Despite constant fungicide treatment, dollar spot is their constant companion. Clover and weeds are an added scourge.

That excessive nitrogen must be avoided always is an established fact. It produces tender succulent grass, which cannot withstand heavy traffic, or cope with any one of the diseases peculiar to greens. But the opposite extreme (nitrogen deficiency or starvation) is bad also, because it promotes dollar spot attack. This is especially true in cooler regions where dollar spot is the principal disease. Farther south, spring and fall are the likely seasons for attack. In late spring or early summer, dollar spot often hits hard. Attacks are devastating and most likely when inorganic fertilizer only is used in early spring. Rains and irrigation quickly leach-out any nitrogen not taken up by the grass. Then the stage is set for a bad attack. Turf growth slackens and color fades just before dollar spot becomes rampant. Exactly the same situation arises many other times each season when water-soluble inorganic fertilizer is the sole source of nitrogen.

is the sole source of nitrogen. When water-insoluble organic fertilizer (Milorganite) is used in early spring and again in May or early June to supply most of the nitrogen, the danger is lessened. First, because leaching loss is negligible, and secondly, because soil processes furnish nitrogen as needed. Thus, turf is always healthy, so it can resist attack. This is an established fact based on experience at many clubs.

Tell us about your Turf Problems. Write to:

Turf Service Bureau





GREENKEEPERS QUERY THEMSELVES

THESE questions and answers won a trip to the Greenkeeping Supts. Assn. annual convention for Robert Mitchell, supt. of the Edison Club, Rexford, N. Y. A contest was conducted by the GSA for the purpose of securing specimens of membership examination papers. Candidates for membership in the GSA are hereafter to appear before examining boards. Mitchell's paper was considered by the contest judges to give an excellent picture of the scope of a greenkeeper's problems, and one which would form a basis for board knowledge requirements on future GSA entrance qualifications.

QUESTION 1.

- a-List six of the chemical elements necessary for plant growth.
- Nitrogen, phosphorus, potassium, calcium, iron, magnesium.
- b-What are the three elements that most soils are deficient in?
- Nitrogen, phosphorus, potassium.
- c—Tell briefly how a plant gets its food from the soil.
- A plant takes its food from the soil in solution, through its roots, by a process called osmosis.
- d—What things or conditions besides chemicals are necessary for plant growth?
- In addition to chemical elements a plant must have sunlight, heat, moisture and air in order to grow.
 - QUESTION 2.
- a—Describe the ideal soil for putting greens.
- The ideal soil for putting greens is a sandy loam which is well supplied with organic matter.
- b—What effect would the addition of each of the following have to a soil: clay, sand, organic matter?
- The addition of clay to a soil would increase its water holding capacity, make it slower to drain, and make it pack more.
- The addition of sand would decrease its water holding capacity, make it drain and dry out quicker.
- The addition of organic matter would increase the water holding capacity, drain off excess water quicker, and tend to prevent packing.
- c-Explain the meaning of pH when used in reference to a soil.
- pH refers to the degree of acidity of a soil, pH 7 being neutral, above 7 being increasingly alkaline, below 7 increasingly acid.
- d—Of what value are rapid method soil tests to a greenkeeper?

MAY, 1940

SPRING MOUNTED - DOUBLE SUPER-LOW



THERE ARE MANY NEW IMPROVEMENTS IN THE 1940 BULLET

Aided by one of the best tractor engineers in the country, we have been busier than beavers, refining and improving the Bullet Tractor.

You asked for a spring-mounted front end-the new Bullet has it.

You asked for more power. The 1940 Bullet has double super-low power and speed range.

You asked for a power take-off on the back end where it belongs. You're getting it.

You asked for a comfortable seat. Try this one—we believe you'll like it. All of these—plus a 65-inch wheelbase, a turning radius of 4³/₄ feet and a smart looking job from start to finish.

Get full details-our new 32-page catalog is ready.

TORO MANUFACTURING CORPORATION MINNEAPOLIS, MINN.

Established 1914

65 INCH WHEELBASE - RADIUS 43/4 FEET

"DON'T INTERRUPT

Contraction of the second

- Not adding his strokes, but the many money-saving and turf-saving advantages of SpecialSemesan over most other brown patch fungicides!

Contains both chlorophenol and cresol mercury.

Controls both large brown patch and dollar spot. Costs as little as 21c per thousand square feet of turf. Applied in solution or dry with compost. Needs no watering in after spraying, and only light watering after dry application. Saves labor; saves overtime; saves the spray rig—it is not corrosive!

Five lbs., \$7.00; 25 lbs., \$ \$32.50; 100 lbs., \$125.00. Write for free Turf Disease Pamphlet.

Your supply house also stocks *Regular* Semesan and Nu-Green, still used on many courses. Ask for prices.



DUBAD

BAYER - SEMESAN COMPANY (Inc.) DU PONT BUILDING, WILMINGTON, DEL.



Rapid method soil tests if used over a period of time will show whether acidity and plant foods in a soil are increasing or decreasing and thus the need of changes in fertilizer or topdressing programs.

QUESTION 3.

- a-What does the term "a complete fertilizer" mean?
- A "complete fertilizer" is one that contains nitrogen, phosphorus and potassium.
- b-What is the difference between organic and inorganic fertilizers?
- Organic fertilizer is one made from plant or animal tissue; inorganic from other materials such as chemicals or minerals. Organic fertilizers do not work as fast and last longer than inorganic in the soil.
- c—Name six common materials used as fertilizer—tell whether each is organic or inorganic, what plant food each contains and the approximate percentage of each plant food.
- Nitrate of soda, inorganic, nitrogen, 25%; sulfate of ammonia, inorganic, nitrogen, 20%; superphosphate, inorganic, phosphorus, 16-20%; c o t t o n s e e d meal, organic, N-6%, phos.-2%; muriate of potash, inorganic, potassium, 48%; activated sludge, organic, N-6%, phos. -3%.

QUESTION 4.

- a-What effect on turf would a poorly drained soil have?
- A poorly drained soil would make a shallow rooted turf, a weak, thin turf, and if excessively badly drained would even cause complete loss of the turf.
- b—What advantage does the use of tile for drainage have over the use of open ditches?
- The advantage of tile over open ditches is that it does not cut up fields, causing no inconvenience in use of machinery. If properly laid, needs less upkeep than open ditches.
- c—Give the approximate depth, spacing, grade and size of tile to use in drainage work.
- Tile should be laid from 18 inches to 3 feet deep, lines should be from 20 to 60 feet apart, with a pitch or grade of from 6 inches to 5 feet per 100 feet. Tile less than 4 inches in diameter should never be used. Up to 2,000 feet of 4-inch tile can be used before increasing to 6 inch.
- d—Describe three conditions that call for tile drains.
- Three conditions calling for tile drainage are seepage from a higher area that needs to be diverted, soil that is underlaid by hardpan, a heavy clay soil.

QUESTION 5.

List six varieties of grass commonly used on golf courses. Tell what section of

Worthington Cutting Units give you improved playing conditions at lower mowing costs

Twenty-six years of research and practical operating experience have developed the 1940 Worthington Cutting Unit to the highest state of efficiency and operating economy. Gear housings are dust, sand and grease-proof. Filled to proper level they require checking only once during the season. There are no other places to grease or oil. Hand adjustment of the bed-knife steel is an exclusive Worthington feature-and the quickest of any cutting unit on the market-no tools required.

From the greenkeepers' and operators'

Below is the conventional spiral-type reel. Note sturdy demount-able rims which, when worn or broken accidentally, can be re-placed in a few moments at less than $\frac{1}{2}$ the cost of a new wheel.

viewpoints, there is less fussing and trouble with Worthington Cutting Units and Gang Mowers. The general design is simplicity itself, its construction strong and sturdy to give years of service, and a beautiful cut under all conditions with a cutting range up to 4 inches. Its ground weight is 223 pounds.

Investigate the Worthington 1940 Cutting Unit before your mowing problem becomes acute this Spring, or write us today for complete data and specifications.

The Worthington Golf Chief and the Worthington Multi-gang with 7 cutting units, cutting a width of 16 feet is, we be-lieve, the fastest, most flexible, most efficient and economical gang-mowing outfit in the world.



extra equipment.

life of the reel.





the course they are suited to, what kind of soil they prefer, and as light, medium or heavy their fertilizer and their water requirements.

Creeping Bent—greens, sandy loam, fert. heavy, water heavy; Velvet Bent greens, sandy loam, fert. medium, water medium; Kentucky Blue—fairway, clay loam, fert. heavy, water heavy; Chewings Fescue—fairway, sandy loam, fert. medium, water light; Redtop—fairway, sandy loam, fert. medium, water medium; Colonial Bent greens, sandy loam, fert. medium, water medium.

QUESTION 6.

- a-Name three common diseases of turf and briefly describe their appearance, tell what causes them, and give the methods of controlling them.
- Large brown-patch—appears as circular patches, 6 to 15 inches in diameter, brown in color, worst in hot, humid weather. Controlled by using bichloride of mercury, calomel, or a mixture of the two, applied to the turf at intervals of from 5 days to two weeks, depending on the weather. Caused by a fungus, made worse by over-fertilization.
- Dollar spot—appears as brown spots the size of a silver dollar; caused by a fungus. Controlled by the use of calomel. Snow mold—circular areas about the size
- Snow mold—circular areas about the size of brown-patch, but found only in the winter or spring and is gray in color. Caused by a fungus that works at low temperatures. Controlled by the use of bichloride and calomel applied late in the fall.
- b—Name three insects or animals that injure turf—describe the injury and give the methods of controlling them.
- Earthworms—injure turf by the casts about the size of a half dollar which they deposit on the greens. They are controlled by applications of arsenate of lead.
- Japanese beetle—cause injury by feeding on roots, turf in large areas turning brown and being loose can be lifted up like a rug. Controlled by arsenate of lead treatments.
- Moles—cause injury by burrowing just below the surface and thus making ridges in the turf. Controlled by cyanogas, trapping and poison bait.
- c—Name four weeds that are troublesome in turf—tell in what part of the course they are most troublesome, and give the methods of controlling them.
- Chickweed—troublesome in greens, controlled by application of arsenate of lead to the patches.
- Dandelions—troublesome in greens and fairways. Controlled by hand weeding in greens, generally not controlled in fairways, although sodium arsenite has been used in some sections.

MAY, 1940

NEW and IMPROVED IDEAL Greensmower

FIRST PRODUCTION SCHEDULE

SOLD OUT BEFORE APRIL FIRST!

Early in the season, it became apparent that the sale of Ideal Power Greensmower was going to exceed all past records. Before the first of April, we received orders in excess of our first production schedule, and found it necessary to practically double our requirements for engines and material. We are meeting this increased demand with Greensmowers of highest quality and performance and can make shipments of your requirements, immediately. Catalog and prices upon request.



- Plaintains—troublesome in greens and fairways. Control same as dandelions. Wild carrot—troublesome in short roughs
- wild carrot—troublesome in short roughs as blossoms are white. Controlled by frequent mowing to keep from developing seed heads.

QUESTION 7.

- a-What are the reasons that you topdress greens?
- Greens are topdressed to smooth them up, to cover the runners or joints of creeping bents, to build up a suitable layer of topsoil in some cases, and to use the compost as a fertilizer carrier in some cases.
- b—What methods and materials do you use in preparing compost for topdressing?
- A good method to prepare compost is to spread all the material in thin layers so that it can be mixed with plows and harrows. The materials consist of topsoil, sand, sod, grass clippings, manure, etc., in proper proportions to make an ideal soil (sandy loam, high in organic matter). After mixing, cover crops may be grown on the beds and turned under until the compost is to be screened for use.

c-What are the advantages and the disadvantages of sterilizing compost?

The advantage of sterilizing compost is

that it kills a great percentage of the weed seeds. The disadvantage is that the cost of sterilizing may be more than weeding costs if the weed seed were not killed.

QUESTION 8.

- a—Approximately how often and at what rates should fairways be fertilized?
- Fairways should be fertilized at least once per year, using from 1/4 to 1/2 ton of fertilizer per acre.
- b—What are the advantages and the disadvantages of a fairway watering system?
- The advantage of a fairway watering system is that it allows you to keep a soft green turf in spite of dry weather. The disadvantage is that the maintenance of the fairway, because of more mowing, more fertilizer, etc., in addition to the watering, is higher.

QUESTION 9.

Write, briefly as possible, an outline of greens maintenance for an entire year.

Spring—As soon as frost is out of ground and greens are solid enough to walk on, they should be cleaned of all accumulated trash such as brush, leaves, etc. They should then be rolled. As soon as growth starts they should be mowed. When growth is well started they should



MAY, 1940



9

For a deeper grass root system on your greens and approaches use

TAT VITAMIN B1

the most amazing "growth substance" discovered in a generation!

Nature creates Vitamin B₁ in the TOP of grass which we constantly cut away. That's why TAT B₁ is so necessary for deeper roots and luxuriant top growth. Has produced wonders in shady areas. For ease of application, use

T A T SYPHONETTE

Merely attach Syphonette to water faucet and garden hose. Equipped with rubber tube to draw out solution in correct scientific proportion. Ideal for

any soluble fertilizer, arsenate of lead, etc. Kit contains

TAT B: (enough for 800 gals.) and SYPHONETTE\$2.25 Order a kit and do your own

experimenting.

TAT ANT BAIT

TAT MOLE & GOPHER CONTROL

Raw peanuts impregnated with Thallium Sulphate (the only tasteless and odorless poison) introduced into holes and tunnels bring about quick control. Guaranteed.



1 lb. can \$1.10 10 lb. can-\$10.00

CHINCH BUG SPECIFIC

Liquid insecticide kills by contact. Dilute I to 300 and flood turf for instant results. May be applied through Syphonette. Write for full information.

SOILICIDE LABORATORIES



be topdressed and fertilized, using a complete fertilizer. In this district it will be late April before the topdressing is done. They should be topdressed and fertilized again in May and June. The applications for brown-patch should be started in the last half of June if we have normal weather.

- Summer—The greens will be topdressed and fertilized lightly in July, and also in August if it is a dry season. If a very wet season, the fertilizer and topdressing will be omitted in August. Treatments for disease (brown-patch) will be continued through July and August, the time between applications depending on the weather. Hand weeding for dandelion, plantain, etc., and arsenate of lead applications for chickweed will be done during the entire season from late spring to early fall.
- Fall—In September the greens will be fertilized and topdressed heavily, using a complete fertilizer. Arsenate of lead for earthworm control will be applied at this time if needed. Any poor or thin spots will be seeded at this time also. Mowing is continued as long as there is any grass to cut, which ordinarily is until the middle of October, but sometimes until the first of November. Just before hard freezing, applications of fungicide are made to the greens which are subject to snow mold (usually the middle of November) and the cups are placed on temporary greens to remain there until growth starts the next spring.
- Miscellaneous—greens are mowed at heights varying from ¼ to ¾ depending on the kind of grass, soil and weather. Watering is done mostly at night, the amount applied depending upon the kind of grass and type of soil as well as on the weather.

QUESTION 10.

List the major equipment needed for an 18-hole golf course.

- 1-11/2-ton dump truck.
- 2-Light tractors.
- 1—Set 5 or 7 unit mowers for fairways, plus one spare.
- Set 5 or 7 unit mowers, with high roller brackets, for roughs, plus one spare unit.
- 1—Sickle bar mower—suitable for use with a tractor.
- 2—3 unit power greens mowers, plus one spare unit.
- 2-Sets unit for use on tees, with the above, plus one spare unit.
- 1-Spike roller, suitable for use with the power greens mower.
- 1—Topdressing and fertilizer spreader (for greens).
- 1-Fertilizer spreader (for fairways).
- 1-Tractor sod cutter.

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