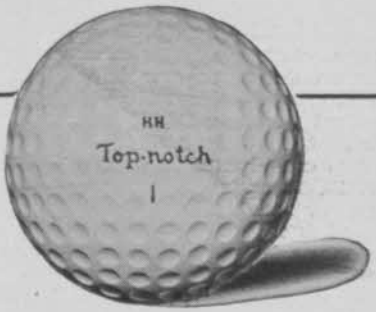
with Wilson



To *you*—this means ready sales and satisfied customers. To keep that faith alive and growing Wilson advertising for 1948 will reach more people than ever before—in national magazines—in newspapers and on coast-to-coast radio broadcasts of outstanding sports classics.

It will pay you to give prominence to displays of golf equipment bearing the Wilson name.

Wilson Sporting Goods Co., Chicago, New York and other leading cities. (*A Wilson & Co., Inc. subsidiary.*)

was still in excellent condition whereas the balance of the fairway which had not been treated in 1946 was virtually void of living grass and revealed a devastating grub population of 110 per sq. ft. A grub count in an adjoining untreated fairway disclosed a high grub population of 206, a low of 85 and an average of 145 per sq. ft.

Toxaphene Results Shown

Rapid development of new insecticides subsequent to the popularization of DDT provided a material chemically known as Toxaphene. It is a chlorinated camphene having insecticidal properties and the approximate empirical formula $C_{10}H_{10}Cl_8$. Using a ten per cent dust the insecticide was applied to five one-eighth acre plots at the rate of 8, 12, 16, 20 and 24 lbs. of actual Toxaphene per acre in 80, 120, 160, 200 and 240 lbs. of dust respectively. At the time of treatment, May 12, 1947, the Japanese beetle grub populations in the plots ranged from an average of 111 per sq. ft. in the 8 lb. treatment plot down to 92 in the 24 lb. plot. Between the fourth and the fifth week following the treatments the per cent reduction in grub populations in the five plots was respectively 67.5, 76.5, 80.4, 75.9 and 79.1 per sq. ft. By September 25 the average number of grubs per square foot of turf in the Toxaphene plots were 0.4, none, 1.8, 0.6 and 0.1 respectively at the same time it was 81.5 in the untreated plots. Egg deposition in all of the treated plots suggested the insecticide was not an inhibiting factor to reproduction.

Benzene Hexachloride

Benzene hexachloride containing 6 per cent of the gamma insomer was applied as a 50 per cent wettable powder at five dosage levels of .96, 1.92, 2.88, 3.84 and 4.80 lbs. of actual gamma isomer per acre. The one-eighth acre experimental plots were treated on May 15, 1947 using 150 gals. of water with the toxicant per plot. An 18 nozzle spray boom with the nozzles in pairs at 16 in. intervals was carried back and forth over the plots at a height of 18 in. from the turf. Pressure of 400 lbs. was maintained by a hydraulic spray rig. Grub populations averaged from 92 to 124.5 per square foot in the various plots. By June 17, one month following treatments the per cent reduction in the plots was 70.1, 67.2, 70.0, 73.8 and 83.2 respectively. On September 25 the average number of grubs per square foot in the experiments was 0.4, 1.8, 0.4, 5.0 and 0.2 whereas in the untreated plots it was 81.5. The presence of Japanese beetle eggs in the Benzene hexachloride plots throughout the season gave no indication of inhibition to egg laying.

Parathion On Test Plots

Parathion (Parathion, O, O-diethyl O-p-nitrophenyl thiophosphate) formulations 0.25, 1 and 2 per cent were first applied to turf on August 22, 1947 for Japanese beetle grub control, at the rate of 1, 4 and 8 pounds respectively of the actual toxicant per acre, in 400 lbs. of dust. Because of the extreme toxicity of the material each experimental plot was sprayed with clear water at the rate of 1600 gals. to the acre to wash the Parathion from the grass foliage into the soil. Two weeks following the treatment the per cent reduction in grub population at the three insecticide dosage levels was 69.7, 91.8 and 95.2 respectively whereas in the untreated plots the grubs averaged 85 per sq. ft. Four weeks later the per cent reductions per plot was in the order of 97.1, 100 and 100 respectively while in the untreated plots the grubs averaged 88.3 per square foot.

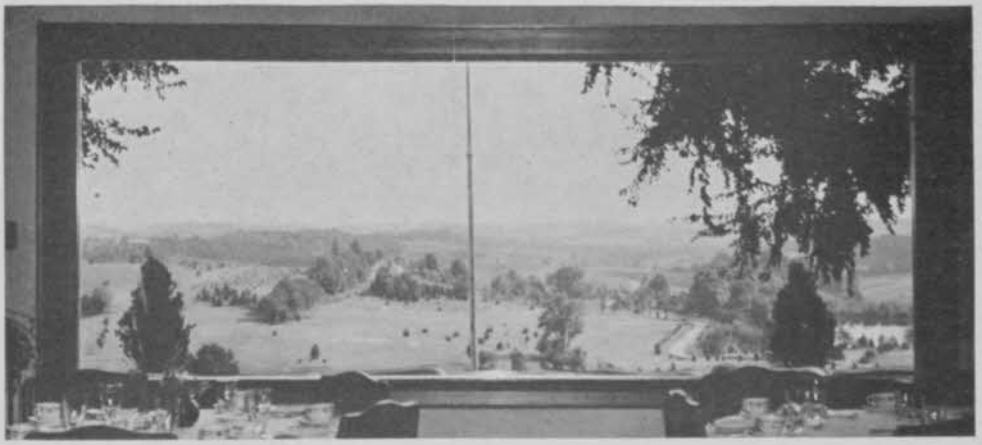
The experiments were repeated on September 17. It was seen that at higher air and soil temperatures prevailing during the summer months the degree of grub mortality was not as rapid as during the autumn when air and soil temperatures were lower. The insecticide is volatile and in consequence when exposed to air at high temperatures loses its toxic action rapidly. At the end of 14 days subsequent to September 17 the reduction in grub population in the 0.25, 1 and 2 per cent plots was in the order of 96.4, 99.3 and 99.7 percent. Parathion is a quick killing insecticide, however extremely poisonous and consequently should be treated with great respect.

Chlordane Shows Results

Chlordane, a chlorinated hydrocarbon insect toxicant with the empirical formula $C_{10}H_6Cl_8$, was first reported in literature in 1945 as "1068." This toxicant is highly toxic to a wide order of insects and other invertebrates. It kills by insecticidal vapor, contact and as a stomach poison. It is reported to be mild in action to warm-blooded animals and consequently it may be used to kill destructive insects of all kinds under many conditions.

Chlordane was first used to combat Japanese beetle grub infestations. In May, 1947, three ⅛ acre plots were laid out at Wepawaug CC. Dosage levels of 8, 16 and 24 pounds of actual toxicant per acre were used, employing a 2 per cent dust for the purpose at 400, 800 and 1200 lbs. of dust to the acre. At the time of treatment on May 20 the over-wintering grub population per experimental plot was 97.3, 76.0 and 102.6 per square foot respectively. Four weeks later the average grub count per square foot was down to 22.0, 13.8 and 4.8 per plot providing control in the order of 88.0, 93.6 and 98.7 per cent. On August 19 the Japanese beetle grub infestation which had developed during the summer months subsequent to the destruction by chlordane of the over-wintering brood displayed an average of 48 grubs per square foot in the untreated plot whereas in the treated plots the population was in the

PRETTY AS A PICTURE



A picture window in the Belmont Hills CC, St. Clairsville, O., clubhouse shows what can be done in remodeling an old clubhouse and using glass to get the value of charming vistas often shut out by the old style "baronial castle" clubhouse architecture. Newer clubhouses all are taking advantage of best possible site locations and a lot of big windows.

order of 0.5, 0.0 and 0.5 per square foot of turf. On September 25 there were no grubs in the chlordane treated plots and 117 average per sq. ft. in the untreated.

Egg deposition in the experimental plots did not indicate inhibition to reproduction by the insecticide. Large numbers of dead adult beetles were seen on the turf in the treated plots indicating high mortality as they attempted to enter the soil for egg laying.

On August 13 a one acre plot in the center of a fairway having an average Japanese beetle grub population of 30 per square foot was treated with 100 lbs. of 10 per cent dust, thus providing actually 10 lbs. of technical chlordane. Fourteen days later the grub count was down to 2.2 per sq. ft. or a reduction of 93.2 per cent in two weeks. On September 14 or four weeks from date of treatment there were 0.7 per sq. ft. in the experimental plot and 87.2 in the untreated. The 0.7 grubs per square foot in the chlordane plot represented mature grubs of the over-wintering 1946 generation. They were at a depth of 3 to 4 inches below the surface of the ground and not in immediate danger from the toxicant. At a later date it was seen that the chlordane had penetrated the soil to a depth great enough to seriously affect these individuals.

The municipal football stadium at New Haven, Conn. was found to be heavily infested with Japanese beetle grubs on September 16, 1947. A population count disclosed the fact that the insects were in the order of 80 per sq. ft. At the time the better color has been seen. It is not known at present what residual toxic action chlor- examination was made the grass displayed some discoloration resulting from grub feeding. Chlordane treatment was made the following day, September 17, using the insecticide as a 5 per cent dust and at the rate of 200 lbs. to the acre. Eight large turf sprinklers were spaced in each of the twelve 10-yard zones at hourly intervals for a period of 48 hours thus providing four hours of actual drenching for each 10-yard zone. The turf was then firmed by a tractor drawn water roller. Heavy rain fell two days after the treatment was applied.

The watering and rolling treatment was designed to provide maximum penetration of the insecticide in minimum time and to assist the turf in recovering before the injured root system dried out completely. Remarkable results were obtained. The grub population was inactivated by chlordane in about 24 hours and reduced to 3 grubs per sq. ft. in 7 days or about 96 per cent control. Although considerable damage was done to the already injured turf by the cleats of football players shoes complete destruction of the playing field was prevented through the timely use of chlordane.

Not only will chlordane act much faster than DDT for control of Japanese beetle grubs but it is also more thorough in ridding turf of its injurious tenants. No injury to grass has been observed where chlordane has been used at stated dosage levels, in fact stimulation of growth and

(Continued on page 111)

Mister... let me tell you!

● I know the Dot. Prescribe Dots for my top-notch players. Been selling 'em (and how!) for years. You and I talk about the Dot's high compression—its true flight and roll —its uniformity. Sure, it was the choice of 3 out of 5 entrants in four big 1947 Championships! Okay, I know all that. But—for *my* money—
here's your punch line—

the Spalding DOT

SOLD THROUGH PRO SHOPS ONLY

is the Greatest Ball in Golf!

Spalding Dot, Top-Flite, Par-Flite, Tru-Flite

SPALDING SETS THE PACE IN SPORTS

Officials are caught by the camera prior to the opening of the annual Turf Conference in Detroit's Book-Cadillac Hotel. (L to R) James D. Standish, Jr., Chmn., USGA Green Section; Hal White, Secy., Detroit Dist. GA; Marshall Farnham, past pres., GSA; Clarence Wolfram, pres., Mich. and Border Cities GSA; Fred Grau, Dir., USGA Green Section; Clive Helferich, Chmn., DDGA Green Sec. Committee; and A. L. Brandon, Secy., GSA.

Advances in Turf Management Reported at GSA Convention

Chet Mendenhall, Mission Hills CC, Kansas City, Mo., was elected pres., Greenkeeping Superintendents' Association, at the greenkeepers' national organization's 19th annual convention, held at Hotel Book Cadillac, Detroit, Feb. 9-13. Mendenhall's administration team-mates are Carl Bretzlaff, Meridian Hills CC, Indianapolis, as v.p., and A. L. Brandon, Box 106, St. Charles, Ill., who was re-appointed by the association's directors to the sec.-treas. position in which he has served for some years so capably.

New directors elected for two year terms are William H. Johnson, Griffith Park courses, Los Angeles; John Counsell, Salem CC, Peabody, Mass., and Norman C. Johnson, LaGrange (Ill.) CC.

L.A. in '49; Boston in '50

The GSA selected Los Angeles for its 1949 convention which will be held Feb. 7-11 and awarded its 1950 convention to Boston where it will be held Feb. 5-10.

The Los Angeles district delegation at Detroit (Wm. Stewart, Wm. Beresford, W. H. Johnson, Tom Hood and Gomer Simms) in making their successful bid for the 1950 convention pointed out that weather conditions would allow outdoor demonstrations of equipment. In making their convention bid they reminded the GSA that the advance of turf maintenance science and practice had outgrown the bonds of sectionalism. Work of the Southern California greenkeepers, the Southern California GA and other organizations in substantially financing a turf research program soon to be inaugurated was cited as another factor meriting recognition of Pacific slope greenkeeping with a national convention.

In addition to a big draw from west of the Rockies the Los Angelenoes expect many superintendents from as far away as the Atlantic coast to have their programs for winter work indoors well under way so they can combine a cross country inspection tour with a vacation.

900 at Detroit

The Detroit convention had an official registration of about 700, with unregistered men bringing the total attendance to about 900.

Special attention to regional problems was given in the northern and southern section meetings Feb. 12. There was lively discussion following papers in both sectional meetings. Although weather troubles kept southern greenkeeper attendance lower than expected at Detroit the addresses, discussions and progressive spirit manifest in that section of the conference gave clear promise that notable advances in the general standard of southern golf turf, winter and summer, are not far off.

In general session the GSA ruled out proposals for a change in name of the association and new by-laws which would alter the original purpose of the greenkeepers' organization and make it an association for all concerned in fine turf. A move to expand the membership of the association by admitting, in certain classifications, turf specialists other than greenkeepers, was tabled.

Standish Awards USGA Plaque

Pres. Marshall Farnham got the first general session under way after Charles E. Carll, Ford's director of public relations, welcomed the greenkeepers who crowded the convention hall. James D. Standish, Jr., chmn., USGA Green Section, briefly outlined the Green Section's plans, stressing that there was considerable gap between the money available and the section's ambitious plans. Standish mentioned the constantly growing demand for Green Section services based on its substantial past performance, and urged that the greenkeepers cooperate in getting more USGA members. He reminded that the new basis of USGA membership was planned to allow clubs of all sizes to participate in the association's operations.

Standish presented from the USGA a plaque as an award to the GSA's golf champion. The plaque was engraved with the names of Emil Mashie, 1946 champion and Roy Jones, who won the greenkeepers' 1947 championship at State College, Pa. It is to be retained by each year's champion.

Crane Lauds Greenkeepers' Work

Tom Crane, executive sec. of the PGA, spoke on greenkeeper-pro cooperation. He paid tribute to the greenkeepers for the excellence and scope of their educational work and their advances in course management. He told of his own association's publicity problems in having most newspaper and magazine publicity accent the tournament pros to the extent that the club pros were in the shadow. But, he emphasized, the club pro who is on the job knows that the results of the greenkeepers work has a definite, important relation to the pro's income. Hence pro cooperation with the greenkeeper is urgent and sound good business for the pro. The pro also has an obligation, Crane pointed out, to understand enough of the greenkeeper's problem to be able to explain the situation to the inquiring or complaining member.

Crane touched upon the necessity of the pro and greenkeeper working together in making a specific analysis of the members' needs and desires in playing conditions. Referring to playing conditions of tournaments Crane said he'd never heard a tournament player complain about a course being too easy. He mentioned the elimination of rough on public and fee courses as an indication of the trend toward making playing conditions easier. Greenkeepers' comment on this observation was that speeding up play and reducing ball loss during war time probably accounted to a marked degree for the elimination of rough.

Courses Losing Character

Rough, by the way, was subject of informal discussion among greenkeepers. With weed elimination now comparatively sure and inexpensive rough doesn't mean much loss of balls. Rough is an interesting architectural feature and veteran greenkeepers of better courses generally were of the opinion that cutting down the rough has brought some formerly distinctive private courses to the point where there isn't much difference between them and public courses. These old timers believe that the older school of pros in ability and opportunity to play spectacular recovery shots from rough put on a better show for the public than is presented on the roughless courses today.

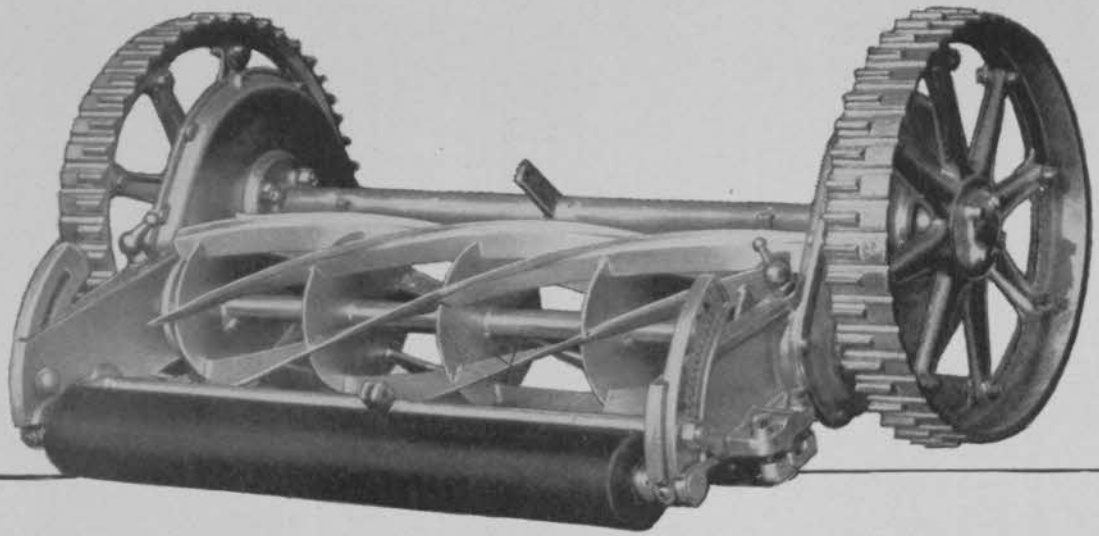
Dr. James Tyson of Michigan State college in speaking on "Importance of Water and Air Drainage in Turf Production and Maintenance" said that about 75% of the trouble on greens was caused by faults in water and air drainage. Low spots where moisture collects and particularly low spots where woods interfere with air circulation are danger spots on courses. Correct soil condition that is not altered by topdressing that stratifies and halts drainage makes the greenkeeper's job less troublesome, Tyson declared. He advised against too much organic matter in topdressing as making the green too soft when wet. The sand, loam and clay proportions in topdressing are a problem the greenkeeper has to solve with caution and certainty or he's building trouble for himself and his successor Tyson reminded his audience.

Tyson said he welcomed the tendency not to topdress as much as formerly because so much of the topdressing had built up trouble by impeding drainage. He advised greenkeepers to depend on putting water from the top rather than figure on water being drawn up from the bottom.

Heritage of Bad Construction

The Michigan State authority remarked that most of the greenkeepers present had a pretty clear idea that faulty water and air drainage bequeathed them by bad construction gave them plenty of rebuilding problems that would have to be solved by not repeating the old errors of drainage and improper topdressing.

Dr. Karl Dressel, Michigan State college Dept. of Forestry, told that there are 862



Rugged Simplicity in the New Spartan Gang Mower

Simplicity is the basic appeal of the new Spartan Gang Mower. Here is a mower that has all the strength and ruggedness, and the good cutting qualities of previous mowers we have built . . . but is so simple that an ordinary workman can take it down without special tools, and do it quickly.

Remove four studs and the wheel comes off . . . by easily removing ten studs from the gear case cover, the entire drive mechanism is open for inspection and cleaning. Overhaul time is reduced almost in

But along with the simplicity you get extreme durability, and such old reliable Toro features as machine-cut hardened steel gears . . . oil tight housings . . . double-edge reversible bed knives . . . large diameter hard tough alloy steel blades . . . replaceable rims on drive wheels . . . riveted reels . . . and the best cutting mower that Toro ever built.

With greatly improved facilities, including the investment of a quarter million dollars in new improved machine tools, production has increased

"THE EIGHTEEN FAIRWAYS AND PRACTICE FAIRWAY WERE MOWE NINETY-FIVE TIMES . . . THE SPARTANS WERE NOT IN THE SHOP FROM SPRING UNTIL FALL."

W. E. UPDEGRAFF, *Wichita Country Club*

"We have just completed overhauling them. The gear covers were taken off to clean the gears and check the parts for wear. We found only one throwout spring broken. The mowers were then cleaned and lapped. That is all the sharpening that was done on them all this year. They are now painted and look just like new," continues Mr. Updegraff.

With the new light-weight square tubular *Universal Hitch,* the Spartan makes a highly flexible combination which provides a big improvement in fairway mowing.

The square tubular steel construction means a lot of strength and durability in service, and a saving in weight. This is extremely important on hilly ground, because it permits the tractor to climb steeper grades and at a considerable saving in gasoline expense.

The new TORO ROUGHMASTER with four blade reels, is also available. It provides a highly improved standard of cutting for golf course rough.

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species of trees in the U.S. and each one it seems has to be treated almost as an individual. They grow by elongation of limb and expansion of girth. They contract with cold and expand with heat. At 6 A.M. they are at their largest diameter and at 6 P.M. shrink to their smallest diameter of the day. Most tree growth is during 20 days in spring. The balance of the year is spent in hardening. About 2/3 of tree growth occurs at night. The roots start growing earlier in the spring and continue later in the fall than the above ground part of the tree does.

Dressel advised caution in drainage operations that might interfere with roots of tap-rooted trees.

Golf at Army Posts

Col. W. N. Baird, Ft. Leavenworth (Ks.) GC in a sparkling address that gave the greenkeepers a lot of laughs along with sage observations from an accurate perspective, talked on the value of golf at an army post. Col. Baird is a pioneer in army golf and was prominent in planning the army's wartime golf program which was especially valuable to the GIs in camps near small towns where there were not enough girls or other entertainment to go around. The result of the program that was patterned after Baird's experience has been to bring hundreds of thousands of ex-GIs into golf as ardent addicts.

Col. Baird in summarizing his experience with army golf noted that golf facilities at an army post have very favorable influence on morale, relaxation, physical and mental development of all the military personnel. Golf is a medium of public relations, interplay and competitive sport at an army post. Tournaments and play by military personnel are also arranged between outside civilian players and clubs.

Every army post course is maintained only by the players. Upkeep of army post links is not paid for by taxpayers. Enlisted men do not pay to play on army post courses.

The setup of post courses is: Commanding Officer is the President of the club. This is largely an honorary position. He in turn has a Golf Director, usually an officer of the post, sometimes a civilian. If the Golf Director is a turf maintenance enthusiast, he is the best to have. In turn he is assisted by a pro golfer and a greenkeeper—each with his own, distinct responsibilities. Col. Baird said his experience had impressed on him that as long as the greenkeeper is doing his job he should be let alone. Ninety-nine times out of 100 the man can perform his job, the 1%, (often serious) is when Nature plays pranks.

All types of turf maintenance and their related problems are found at an army post, such as airfields, lawns, park areas, play and parade grounds, cemetery and golf. The man on a post who knows turf, especially if he is a greenkeeper, is the best one to have in control of all turf upkeep.

Maintenance budgets are best not set up on the yearly basis, but on a 3 months term ahead.

Post golf club membership is always changing, often 50 to 100% turnover in a year, due to transfer of officers and men, Col. Baird said. A suggestion box is a good thing to have at an army post course. If anyone has a complaint, suggestion, etc., he is asked to write it out and put in the box. This automatically eliminates 50% of bellyaches, as the guy has to put it in black and white—not often a good thing to do voluntarily in the army.

The Colonel remarked that the difference between a wise greenkeeper and a stupid one is the wise man understands things the second man only sees.

Mott On Air and Moisture

Emil Picha, Oak Ridge CC, Hopkins, Minn., was chairman of the northern turf section and presided over the section meetings.

In his address on Aeration and Moisture Relationship in Turf, Dr. G. O. Mott, Exec. Secy., Midwest Turf Foundation, and the Purdue University faculty said the largest share of turf problems go back to soil structure and related factors. He noted that there has been confused thinking regarding aeration. The water holding capacity and texture of soil are important. Look for trouble in the soil profile caused by layers of different textured soils.

Plant roots die from lack of oxygen supply. Oxygen is important as a nutrient and is tied up with other elements. The oxygen supply can be cut off by a compact or wet soil. Oxygen is important for respiration in the plant as well as the animal kingdom. A plant starved for oxygen will not absorb potassium, even if the latter is plentiful in the soil. Saturated or compacted soil will cause a plant chlorotic (yellowing of leaves and stems) condition if potash is not absorbed due to oxygen supply cut off. Shallow root growth is caused by lack of soil oxygen. If oxygen is present, soil iron will be in an oxidized condition. A ferrour-ferric iron test to show if the soluable iron is oxidized can be made to indicate oxygen or its lack. It is not necessary to tear up a green if it needs aeration. Hand forking and mechanical aeration to make holes—the closer together the better, can be resorted to in extent and frequency required. In regard to topdressing to refill aerated holes, if the material is not right it may aggravate the

(Continued on page 96)