depths mentioned are much too deep for your particular course condition. At this moment we are using those figures in our fairway woods, but you professionals are the ones who dictate our specifications — either knowingly or unknowingly. If the voice of the pro comes in to us strong, criticizing the depths of our wood clubs, we then, of course, heed the constructive criticism and alter the depths. I cite this incident to impress upon you that you, and not we in the factory, are the final judges on club specifications.

Precision in the Loft

Let's carry on with this order. He calls for "a little extra loft." "A little extra loft" to Jack Shields, for instance, is 2 degrees. To any one of you it might mean 1 degree or 3 degrees, or it might even mean standard loft. It would have been extremely simple if he had known that the loft on a standard depth driver is 10 degrees, brassie 13 degrees, spoon 16 degrees, and the No. 4 spoon 19 degrees. In this way, knowing that the difference of loft between each club is 3 degrees, he would know what he wanted specifically— 1 degree or 2 degrees more loft than standard. Or, he could quote actual factory terminology by asking for "a little extra loft — make the driver 11 degrees," (incidentally, 11 degrees is the loft most manufacturers use on their deep faced drivers), "14 degrees on the brassies, 17 degrees on the spoons, and 20 degrees on the No. 4 spoons."

As far as I know, there has been no scientific device developed that definitely proves that 10 degrees, 13 degrees, 16 degrees, and 19 degrees are the perfect playing lofts on wood clubs. If enough of you home teaching pros order clubs extra lofted, which would be 11 degrees, 14 degrees, 17 degrees, 20 degrees, or if most of you finally decided that wood clubs should be more under-lofted, meaning 9 degrees, 12 degrees, 15 degrees, 18 degrees — we manufacturers would then heed your advice and change our specifications.

Now, on with the order! He calls for bulger faces. All wood clubs are bulged somewhat, but let's get straight with the factory terminology.

We consider the lateral measurement on the face of a wood club the bulge, and the vertical measurement the roll. Face bulges and rolls are measured in terms of "radius." The bulge which the factory shoots at in most models is an 8½ inch radius. The roll on woods is the same. This pertains to the driver and brassie. On the No. 3 and No. 4 spoon, we shoot at a 9½ inch radius and roll. On some models our standard is 9½ inches on the driver and brassie, and 10½ inches on the No. 3 and No. 4 spoon. With this span we can cover practically all orders. As an example: Jim Ferrier and Cary Middlecoff use a 9½ inch bulge on their drivers, but Harmon and Mangrum insist on an 8½ inch bulge. Now, let's get ito this 8½ inch-9½ inch radius bulge and roll. If you were to take a pencil or crayon and draw a circle with an 8½ inch radius, the arc described by this 8½ inch radius would be equivalent to the bulge of a driver and brassie.

If you were to draw a circle with a 9½ inch radius, as shown in Fig. 1, then the arc described would coincide with the bulge on a No. 3 and No. 4 spoon. Let me repeat, this standard is not necessarily fixed permanently. Dutch Harrison believes that a 7½ inch bulge fits his game. (A 7½ inch radius circle would describe a smaller circle, and

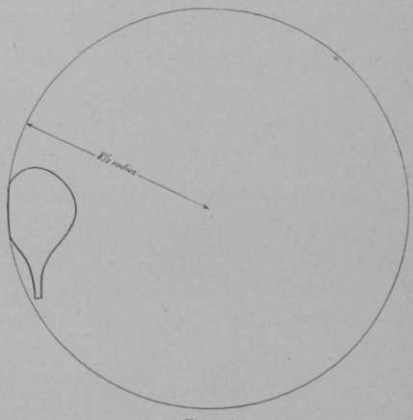

Fig. 1

naturally means more of a bulge.) Sam Snead leans toward a straighter face — closer to 10½ inches. If we were to find that the majority of you insisted or believed that a 9½ inch radius bulge was the most efficient and eye-appealing, we certainly would set that up as our standard.

Fitting the Shafts

Back to the order. He wanted "medium shafts" — not too stiff—about 4½ ounces. The True Temper shaft company has done a great job in helping the golf pro select his shafts. You are all no doubt familiar with their categories: "A" softer than standard, "T" standard, "S" stiff, "X" extra stiff.

Of course we, as most manufacturers, have some special categories for individual specifications. However, the point is this: When this staff member asked for a "4½ ounce staff — not too stiff" he really left us in the middle. As a general rule, the the stiffness of a shaft increases in proportion to the weight of the shaft, but we have many more factors to consider. It is altogether possible to have a ladies' shaft weighing 4½ ounces, and possible to have an "S" or stiff shaft weighing 4½ ounces. So you see, in ordering a

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Mr. Shave applies "Tersan" in a dry mixture . . . a method he devised for his own use at Oakland Hills. A spray of "Tersan" and water is the usual method for mechanical application.

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shaft by weight, the staff member was not really helping the factory to a marked degree.

In wood club steel shafts we have tip diameters and butt diameters to contend with. The tip is, of course, the narrow end that is inserted into the head, and the butt end is the gripped end. The shafts for ladies' woods have a .270 tip and a .560 butt diameter. The next step up in stiffness is their "A" shaft which has a .580 butt end and a .277 tip. The next grade is the standard or "T" shaft which also has a .277 tip diameter but the butt diameter increases to .600. We then swing into the stiff or "S" shaft which has a .294 diameter tip and a .620 butt.

Starting with the ladies' .270 tip and .560 butt, the ideal weight is 4⅛ ounces. As we move up into the "A", "T", and "S" shafts, each category should increase in weight ⅛ of an ounce, until we end up with our "S" stiff staff at 4⅝ ounces.

Unfortunately, the shaft manufacturers find it extremely difficult to maintain these perfect weights. For instance, it is altogether possible to have a standard "T" shaft weighing 4⅛ ounces, and also a standard "T" shaft weighing 4⅝ ounces. A manufacturer could, and does, have a ladies' shaft — an "A" or soft men's shaft, a "T" or medium shaft, and an "S" or stiff shaft that all weigh 4⅜ to 4-7/16 ounces.

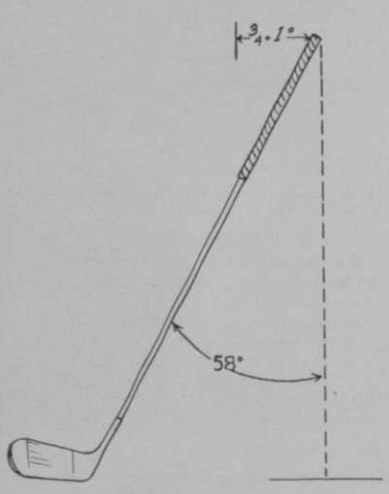
So you can readily understand the impossible situation that this order presents to the factory. Here's an interesting sidelight on this steel shaft for wood clubs picture: Quite often a professional might send in a stiff shafted wood and ask that the factory reshaft it with a softer or medium flex shaft. Being aware of these tip sizes, .294 on the stiff, and .277 on the medium, you can readily see that the only alternative is for the factory to build up the .277 diameter shaft with some foreign substance, until it reaches the diameter of the .294 hole already bored in the head. Cutting off two inches from the bottom of the medium shaft would possibly insure a better fit but in cutting off the two inches from the medium shaft, we once more make it into a stiffer shaft, which was not the original idea in reshafting the club.

Explains Lie Specifications

In asking for his set a little upright, the staff member really left the factory dangling. The lie on our driver is 54 degrees, the brassie 54 degrees, spoon 55 degrees, and No. 4 spoon 56 degrees. "A little upright" might mean 2 degrees or 3 degrees to the professional, and ½ degree to the factory. It it understandable that all professional golfers do not necessarily have to be factory-wise 100% but able to transfer degree measurements into simple, understandable language.

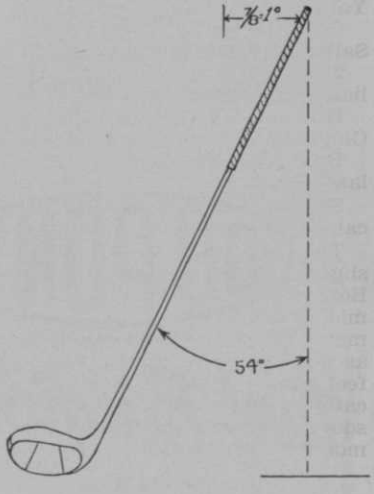
Our staff men now have this simple formula: On a 43 inch driver, each ⅞ inch of deflection, either upright or flatter, is equivalent to a 1 degree change in lie. (See Fig. 2.) Let's put it another way: Take a driver 43 inches long; address an imaginary ball at the club's standard lie; now move the gripped end or hands upright ⅞ of an inch — that new position is 1 degree upright; move it up another ⅞ of an inch — that's 2 degrees upright. The same principle applies to a flatter lie — each ⅞ inch is equal to 1 degree. This varies somewhat on the irons. On a 38½ inch No. 2 iron, which is standard

(Continued on page 70)



2 IRON

Fig. 2



DRIVER

Tests Show Chemicals Control Weeds in Sand Traps

By J. A. DeFRANCE

Rhode Island Agri. Exp. Station, Kingston

A question frequently asked is: "What is a good chemical or method to use for inhibiting or killing weeds in sand traps on golf courses, along roadway shoulders and guard rails, paths, and similar areas?"

This report gives results of a preliminary study designed to answer this question. Some of the chemicals used in this test appear to be quite satisfactory for such purposes.

Materials and Methods

These tests were conducted during 1950 on paths between the experimental turf plots at the Rhode Island Agricultural Experiment Station. The paths were 5 feet wide. Size of the chemically treated plots was 50 square feet. The paths were first cultivated by hoeing to eliminate present weed growth, then 2 days later the plots were treated with the various chemicals.

Chemicals used and their commercial sources were as follows:

Ammate, and 90% Sodium TCA, E. I. DuPont DeNemours and Co., Inc., Wilmington, Del.

Ammonium Thiocyanate, Koppers Company, Pittsburgh, Penn.

Aero Cyanamid, American Cyanamid Co., New York, N. Y.

Borascu, Pacific Coast Borax Co., New York, N. Y.

Common salt (CCF grade), Watkins Salt Co., Watkins Glenn, N. Y.

2,4-D butyl ester (40%), Sherwin-Williams Co., Cleveland, Ohio

IPC and IPC 3-chloro, Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Premerge, The Dow Chemical Co., Midland, Mich.

Sodium Arsenite, The Chipman Chemical Co., Boundbrook, N. J.

The plots were on sandy soil that was slightly moist at the time of treatment. Borascu, common coarse-fine salt, Cyanamid, and IPC were applied dry. All other materials were applied in water solution as a spray at 10 gallons per 1,000 square feet. Table 1 on the following page indicates the chemicals used, amounts per 1,000 square feet, and the weed content 2 and 6 months after treatments were applied.

Results and Discussion

Of the materials that were applied dry, Borascu at the 40 and 80 pound rates per 1,000 square feet, and Cyanamid at 100 pounds provided plots that were entirely free of weeds for at least 6 months. IPC at 3 pounds gave fair control. Common coarse-fine salt did not give good weed control at the 40 and 80 pound rates, whereas, Borascu at the same rates gave complete control. It is quite possible that less than 40 pounds Borascu would be suffcient.

Of the materials applied in solution, Ammate at 10 pounds, Ammonium Thiocyonate at 10 pounds and Premerge at 1 and 2 gallons gave satisfactory control. The other materials including Sodium Arsenite, PMAS (10%), 2,4-D Butyl-Ester (40%), Sodium TCA (90%), and 3-Chloro IPC at the rates used in this test did not produce complete control. It is quite probable that increased rates of some of these chemicals would be satisfactory, however, there are limitations such as cost, danger to humans and other factors that should be considered. For example, PMAS may be practical for treating seedbeds prior to planting turf to inhibit weeds and as a possible protection against disease of seedling turf. Since its period of toxicity in the soil does not appear to be too long, it does not seem practical where soil sterilization is required for a long period of time. Furthermore, PMAS at 1¼ ounces per 1,000 square feet is effective for crabgrass and disease control on putting greens. 2,4-D may be useful at higher rates but caution must be exercised around certain plants and adjacent turf. TCA at 1 and 3 pounds per 1,000 square feet gave indication of use, and it is suggested that more testing be done with this material at higher rates. This also applies to 3-Chloro IPC. Premerge gave perfect control of weeds at the 1 and 2 gallon rates but caused considerable damage to adjacent turf from spray-drift and also from rain-wash. Two days after the Premerge plots were treated, one of the men who was mowing adjacent turf happened to step on the treated plots. Some of the Premerge clung to his shoes and was tracked on the adjacent putting-green turf, causing considerable injury.

Although calcium cyanamide gave 100 per cent control of weeds at 100 pounds per 1,000 square feet it is considered that it has other uses on golf courses and elsewhere that are more advantageous and

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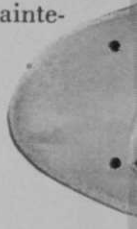

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Table 1. Results of Weed Control with Chemicals on Fallow Areas. Rhode Island Agricultural Experiment Station. 1950.

Material	Rate per 1000 sq. ft	% area covered by weeds After treatment 2 mos.	6 mos.	Weeds that grew on the treated plots were as follows: [1]
Ammate	5.0 lbs.	1.0	2.0	Chickweed
Ammate	10.0 "	T[2]	0.5	Chickweed
Ammonium thiocyanate	5.0 "	T	7.5	Chickweed, spurry, Poa annua, plantain, creeping bent
Ammonium thiocyanate	10.0 "	0.0	T	Spurry
Borascu	40.0 "	0.0	0.0	
Borascu	80.0 "	0.0	0.0	
Common salt	40.0 "	8.0	14.0	Spurry, Poa annua
Common salt	80.0 "	3.0	5.0	Spurry, Poa annua
Premerge	1.0 gal.	0.0	0.0	
Premerge	2.0 "	0.0	0.0	
Check (No treatment)[3]	.....	78.0	91.0	Spurry, chickweed, crabgrass, Poa annua, dandelion, creeping bent, quackgrass and plantain
Cyanamid	50.0 lbs.	1.5	3.5	Spurry, chickweed, crabgrass, Poa annua
Cyanamid	100.0 "	0.0	0.0	
Sodium Arsenite	1.0 "	15.0	63.0	Spurry, chickweed, crabgrass, Poa annua
Sodium Arsenite	2.0 "	12.0	38.0	Spurry, chickweed, crabgrass, Poa annua
Sodium TCA 90%	1.0 "	1.5	5.0	Spurry, chickweed, crabgrass, Poa annua
Sodium TCA 90%	3.0 "	1.0	2.0	Spurry, chickweed, crabgrass, Poa annua
PMAS 10%	2.0 "	16.0	37.0	Spurry, Poa annua
PMAS 10%	4.0 "	8.0	26.0	Spurry, Poa annua
2,4-D butyl ester 40%	0.5 "	7.0	27.0	Poa annua, chickweed, spurry
2,4-D butyl ester 40%	1.0 "	1.0	16.0	Poa annua, chickweed, spurry
IPC	3.0 "	1.0	2.0	Chickweed, spurry, sedge, dandelion
IPC 3-chloro	0.05 "	11.0	17.0	Poa annua, crabgrass, chickweed, creeping bent
IPC 3-chloro	0.10 "	16.0	28.0	Poa annua, crabgrass, chickweed, creeping bent
IPC 3-chloro	0.20 "	9.0	12.0	Poa annua, crabgrass, chickweed, creeping bent

[1] Weeds are listed in order of abundance.
[2] T=Trace, less than 0.10 percent weeds.
[3] Check=average of 4 check plots.

economical. For example, Cyanamid at 50 and 75 pounds used on turf seedbeds prior to seeding has produced weed-free seedbeds. Cyanamid is high in nitrogen and lime and after the toxic period is passed, a soil treated with Cyanamid is in a high state of fertility. Also, Cyanamid at 13 pounds thoroughly mixed with 1 cubic yard of screened compost is the method developed and used at the Rhode Island Agricultural Experiment Station for providing weed-free compost.

The weed content of the plots consisted mostly of annual bluegrass, creeping bent, crabgrass, quackgrass, spurry, both field and mouse-ear chickweed, plantain, dandelion and purslane. Annual bluegrass, spurry and chickweed were predominant. As shown in the table, the untreated plots were covered by from 67 to 85 per cent weeds at the end of 2 months and with 86 to 94 per cent weeds at the end of 6 months, whereas some of the treated plots noted were entirely weed free. The results of these tests are a guide for further testing and suggest rates of materials that should be useful for the purpose of weed control in sand traps and other areas.

At the rates used and under the conditions of this test it appears that Borascu, at 40 pounds or less, Ammate, or Ammonium Thiocyanate at 10 pounds or less have definte use in the treatment of sand traps on golf courses, for paths, roadway shoulders, and near guard rails and similar areas to inhibit weed growth. Premerge gave perfect control of weeds at 1 gallon per 1,000 square feet.

The other materials used in this test such as Sodium TCA, IPC, 3-Chloro IPC and Sodium Arsenite undoubtedly have value for the purpose of eliminating weeds if used at higher rates.

It appears that one of the main objectives in the control of weeds in sand traps is the use of a material that will not track, blow or wash, or be driven by "explosive-shots" on to the fine turf of putting greens and cause damage there.

For the purpose of more specific directions regarding effective materials and amounts for the control of weeds in sand traps, tests should be made in sand traps adjacent to greens, or under similar conditions. At various intervals the treated sand should be applied to the turf in amounts similar to that caused by "explosion shots", to test the toxicity of the

(Continued on page 69)

Trillora, swank 9-hole estate course at Sands Point, Long Island, once the pride and joy of the Guggenheims, joins the private club ranks on a lease arrangement by Spencer Murphy, professional at nearby Glen Oaks CC.

Taxes Change Estate Links to Private Clubs

By JOHN M. BRENNAN

In the New York Metropolitan area the impact of taxes is yielding courses on which fabulously wealthy citizens used to dig divots on their own estates.

Latest of the exclusive estate courses to be transformed into a private club is swank Trillora, once the pride and joy of the Guggenheim brothers, Isaac and Edward, the copper tycoons, at exclusive Sands Point, overlooking picturesque Long Island Sound.

Trillora, in its heyday, used to have Willie Macfarlane as professional and only the invited guests of the Guggenheims were permitted to traverse the manicured fairways. After Willie won the national open at Worcester, Mass., in 1925, he quit to take over a job at nearby Westchester and the Guggenheims employed guest pros, among whom were the tops in the business.

With the passing of Isaac Guggenheim at the age of 87 years, Trillora became a tax burden to his widow, who disposed of the vast 450-acre tract soon after his death. Realizing the dearth of private golf courses, dynamic Spencer Murphy, pro at the nearby Glen Oaks GC in Great Neck, leased the Trillora layout, including its sumptuous 70-room mansion, surrounded by some of the loveliest of Long Island's gardens.

Trillora, a sprawling 3,750-yard nine-hole golfing paradise, rated one of the better tests from tee to green in the east, will eventually be supplemented by another nine holes, probably next year, according to Murphy, whose brother, Ed, is general manager of the latest addition to the Murphy golf business interests.

Gets Waiting List Quick

The Murphy freres, it will be recalled, during the last war, when Glen Oaks was compelled to relinquish its vast clubhouse and shifted to Lakeville for three years, operated the Glen Oaks course on a fee basis. As soon as word leaked out that Murphy had leased Trillora, he was besieged with applications for membership. A month after his announcement that Trillora would join the private club ranks, the club was forced to close its roster and had an imposing waiting list of applicants.

Long Islanders previously acquired a handsome estate course, the private Otto H. Kahn estate layout at Cold Spring Harbor, once the outstanding showplace of the area. The 75-room Kahn mansion, with its fabulous indoor swimming pool, gold-fixtured bathrooms and other out-of-this world sundry embellishments, is still unoccupied, but the course, surrounding the chateau-styled Kahn home, which cost some $5,000,000, is being used by the Cold Spring CC.

Cold Spring CC has played host to several championships during the past year, including the Metropolitan PGA and the