

while other clubs spent thousands year after year for fairway seed without results until they installed an irrigation system.

The following figures are, however, indicative of some of the changes that may be expected:

Club A has never spent a cent for fairway seed since irrigation system was installed in 1922; no money has been spent on fairway top dressing; the same amount (500 lbs. per acre) of fertilizer has been applied every year. Fairways are mowed regularly three times per week throughout the season. Club B reports an average decrease since installation of fairway irrigation of \$200 per year in expenditure for fairway seed and seeding labor; an average decrease of \$250 per year in expenditure for fairway topdressing and a decrease of \$450 per year in fertilizer expenditure. The writer personally knows that this club spent heavily for fairway fertilizer for eight years previous to the installation of fairway irrigation. Club C gives the following figures covering cost of fairway seed, fertilizer and top dressing with separate figures for the labor cost of application:

Before Installation of Irrigation		
Year	Materials	Labor
1929.....	\$3,237.67	\$738.00
1930.....	3,369.66	460.00
After Installation of Irrigation		
1931.....	\$1,429.73	\$206.00
1932.....	433.45	58.00
1933.....	340.45	46.00

The turf on this course has improved until it is the finest in Northern Indiana. There has been an 80 per cent decrease in the dandelion and weed population on the course.

Club D reports a net decrease in total golf course budget of \$3,500 per year since the installation of fairway irrigation.

Club E reports a net decrease in total golf course budget of \$2,000 per year since the installation of fairway irrigation.

## Cost Irrigation Systems

Forecasting cost of installing irrigation systems is dangerous ground because no two golf courses ever have exactly the same problem to solve in installing irrigation. There are no less than 60 variables which effect the total cost of a given job as compared to the composite average cost of a dozen jobs.

Only when an experienced irrigation engineer has developed all the facts concerning the problems of a particular prop-

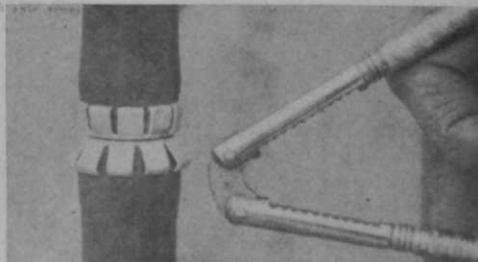
erty can a safe estimate of cost be made for the project.

If extension of city mains are necessary, the cost may be anything from \$100 to \$5,000. Wells may cost from \$500 to \$20,000. Storage reservoirs range in cost from \$500 to \$10,000. Pumping plants may cost only \$2,000 or the cost may of necessity be \$5,000 or \$6,000.

The cost of the fairway piping system will not vary so widely, because the average 18-hole golf course will require about 13,000 feet of pipe for a hose irrigation system and between 15,000 and 16,000 feet for a hoseless piping system. The new investment required for the installation of complete fairway irrigation will depend in large measure upon the value of those parts of the original tee and green irrigation system which will be useful in the fairway system. The ten new systems which have come under the writer's observation in 1933 have cost between \$10,000 and \$30,000 per 18-holes with the average cost, including all power wiring, pumping plants and other items connected with placing the systems in operation, being about \$18,000.

## Nut Cracker Is Handy Tool for Applying Hose Menders

**H**OSE MENDERS are unhandy and inconvenient to get snugly in place when they must be worked with, often in the center of a long piece of hose. Tapping them down uniformly is not always read-



ily done. It is hard to hit one set of prongs lightly without hitting others and still keep the hose end up snugly.

Jam them both in place, hold the hose in any convenient position and simply use an old nut cracker. You do not work against yourself; the cracker is easy to move around the hose and work with while you close the prongs slowly and uniformly. No danger of bulging or squeezing an old hose in spots which allows it to start leaking again.