

Cut and dried

OF THE many novel ideas which find their way into the news columns of sportsturf magazines few will ultimately end up as standard turf management practices. So often the rigours of practical use under severe conditions in the field identify weaknesses in an initially hopeful and promising proposition. One idea, however, which appears to be gaining popularity and standing the test of time is "sand slitting"—a technique for dealing with waterlogging in turf.

To describe it as a new theory would perhaps be inaccurate for it is said that the Romans did it—and who knows where they got the idea? However with an intervening gap of almost two thousand years credit must be given to those who latterly have built around the idea a sound scientific basis of design and established the sophisticated technology necessary to make the technique widely available for sportsturf application.

An early installation in this country, reported in the Journal of the Sports Turf Research Institute No. 46, 1970 was carried out at Twickenham by Mr. H. E. Clark in 1966. Research into the design and functioning of vertical drainage channels, or slits and the development of scientifically based systems for sportsturf use has been assiduously conducted to the great benefit of all concerned with turf management, by Dr. Victor S. Stewart, Head of the Soil Science Unit, University College of Wales, Aberystwyth. He, with his colleague Dr. W. A. Adams has led the vanguard of opinion and development in this new field. Early successful work completed at Cardiff Arms Park and elsewhere attracted the attention of Chipman Ltd., of Horsham, Sussex, a firm already offering products and services to the sportsturf market, who were keen to develop these ideas commercially. This firm is now providing a comprehensive contract service in turf drainage based on the new principles established, and prominently featuring schemes for golf courses.

Basically the object is to overcome

waterlogging in soils so finely textured or lacking in structure that they are incapable of transmitting water at an acceptable rate to the drains. If water cannot be removed through the soil itself some means must be provided to shed it from the surface. Here is where the sand slits come into play by intercepting excess water at the surface as it falls and conveying it laterally to the drains. Obviously it is important that the sand slits should intersect clean backfill over the drains so that they can discharge the collected water rapidly and a continuously permeable link can exist between the surface and the drain-pipe. From a knowledge of the hydraulic conductivity, or water flow rate, of the materials used in backfilling a target design rate for the whole scheme can be arrived at. This is part of the technical service which Chipman are giving. They survey the site, checking levels and the condition of existing drains, sample soils for detailed mechanical and chemical analysis, and then prepare a comprehensive report and proposals. Slit dimensions, layout and intensity are all calculated in relation to materials employed and drain spacing to quantify the potential discharge rate suiting rainfall conditions and frequency of use.

Having the right machine for the job is vital and Chipman own the exclusive U.K. rights to a patent pending on the technique of "sand injection", developed initially by Cambridge Soil Services Ltd., by which a number of

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sand slits are "injected" simultaneously into the turf, without the need for spoil removal, and with minimal disturbance of the turf surface. They operate nationally with teams carrying out installations by contract in all parts of the country and many first class professional soccer clubs have taken advantage of the service. Machinery for use on the fine turf of golf greens is already available, and many greens, as well as fairways, have been successfully drained.

Chipman stress the importance of sand slitting as part of an integrated system of drainage consisting of "cut-off" drains where necessary to isolate the site from extraneous water, an intensive pipe system with correctly selected grades and depths of permeable backfill, and the slits giving the final close grid of interception channels at the surface. Sand slits can only be used alone where the subsoil is sufficiently permeable to function as an effective soakaway—a condition rarely encountered, or if they can reach through to a permeable raft featured in construction.

Unlike so many traditional drainage systems based largely on agricultural principles unsuited to compacted soils under turf, these schemes appear to really work. Maintenance has to be directed to keep the slits open to the surface, that is not capped by soil, and so receive water swiftly. Two ways are suggested: The first is to top-dress annually with fine sand, and the second is being worked on by Chipman at the moment; that is a device to instal a very close series of shallow "mini-slits" at right angles to the main slit system so as to remake the contact between the slit and the surface when renovating worn areas.

This is one new idea which may well earn itself a permanent place in golf course management techniques.

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