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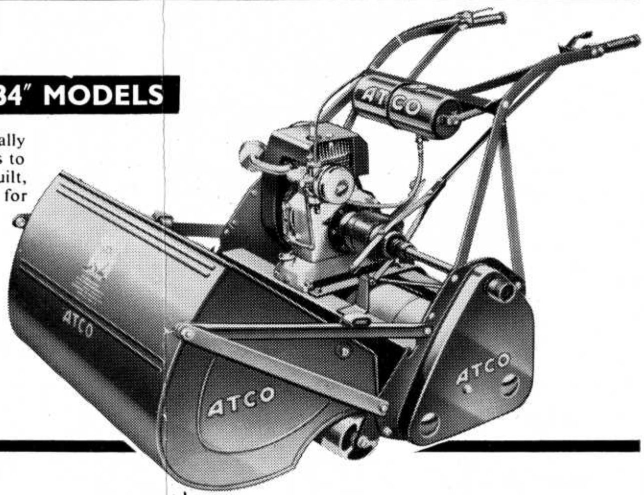

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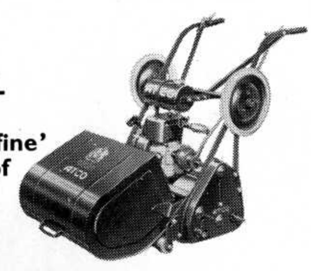

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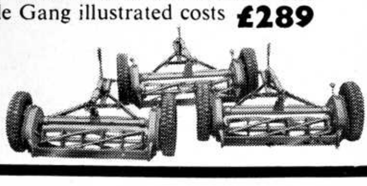

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HON. EDITOR: F. W. HAWTREE.

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The Association is affiliated to the English and Welsh Golf Unions.

No. 239 New Series
FEBRUARY 1965

It took man millions of years to emerge from the trees, but just one golf stroke to put him back.

SIDNEY BRODY.

JANUARY CONTENTS

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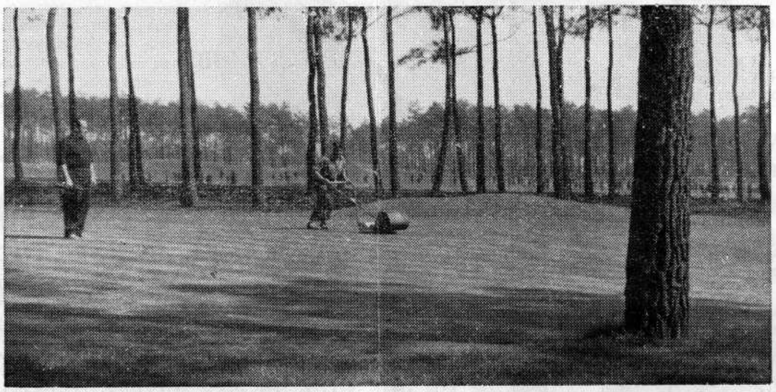
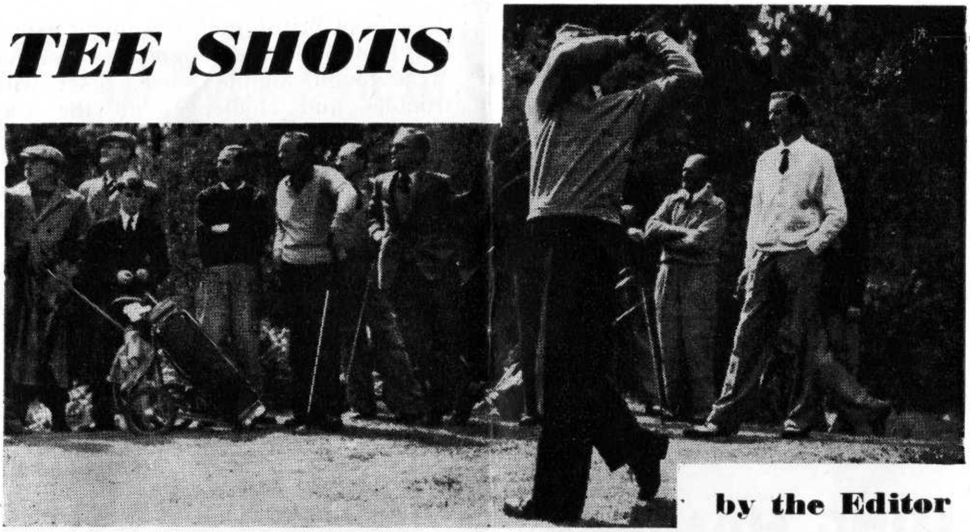


TEE SHOTS



by the Editor

J. Drew Smith, who was with the Sports Turf Research Institute for eight years, called back again last month to help with the revision of "Fungal Diseases of Turf", an S.T.R.I. publication which has now established itself as a standard reference book in this field. Since leaving Bingley, Mr. Drew Smith has been in Aberdeen and in New Zealand working on mycology and is now off to Canada to do research into diseases of forage crops. The new edition of "Fungal Diseases of Turf" is now with the printers, so those who have had to wait after the sell-out of the first edition can expect their copy soon.

* * *

Over 453,000 rounds were played on ten of London's municipal courses last year compared with 380,000 in 1961. Bromley with 9 holes had 46,258.

* * *

From next month our magazine will be printed in Edinburgh by Messrs. Lindsay & Co. Ltd.

This is, therefore, an appropriate moment to thank the Herald Printing Press at York, who have produced it ever since Mr. George Philpot edited the first issue. The unfailing quality of their printing and their patience with Mr. Philpot's unprofessional successors have earned the gratitude of the whole Association and of the Editor in particular.

A COURSE FOR THE LONG HANDICAP PLAYER

by

JOHN STOBBS

I hope the Editor will forgive me if I turn aside this month from American trends in greenkeeping to look at an unusually interesting topical point in course design over here. Unusually interesting, it seems, simply because that difficult-to-arouse lot, the golf writers, found it so, and because of the reaction their articles brought from golfers in general: on the subject of the new course opened for Harlow New Town at Canons Brook, and designed by Henry Cotton.

Thinking of Cotton's career, and the calibre of golf and courses upon which he has made his reputation as our greatest modern player, over the last three decades of British golf, you might expect that he would have designed a very devil of a tough, tight, course, beset with troubles and challenges all the way along: the sort of course to suit his own game, in fact, with its long straight driving, impeccable iron play, and craftsmanlike pitching. But, No! Cotton has done just the opposite.

He has, of course, recognised the needs of the sort of golfer who'll do much of the playing upon a New Town course. But he's then carried that approach to design right to a logical conclusion.

The four major features which stick in the mind about Cotton's design are:

1. There's no rough at all, to speak of.
2. He's placed bunkers hazarding tee shots, in general, out of range of the beginner or longer handicap golfer, so that they don't affect him on his drive at all.
3. The greens are enormous.
4. The challenge to the low handicap player consists essentially in the full and testing length of the holes, and in the more aggressive bunkering around the greens.

Theory

The theory is that the beginner, rabbit, or middle handicap man can thus play easy, relaxed golf around Canons Brook, can open his shoulders to try to hit his longest ball without worrying overmuch about keeping it straight, and, however long the slog may seem to him up the longer holes, once he gets in range he finds a large green to aim at. He should thus be able to develop his game in as pleasant a way as can be offered to him —and he may also be expected to get round the course in considerably less time than he would take on a more traditional layout, quite an important point for a course likely to be much used, and often crowded.

The low handicap man, pro. or amateur alike, is still going to have a tightish job to get round in a good score. This is because the hazarding to the tee shots is aimed directly at the longer hitter; and because in order to get near enough to the pin with his second shots to make sure of his "par" on hole after hole, he's going to have to strike them

truly and accurately. For him, too, the openness of the course and the lack of rough is going to offer a chance to relax and open his shoulders in a way he can't often do—especially if he is a very long hitter—on most of our traditionally finest layouts.

At this point I rather wish the Editor himself was writing this article instead of me; because only a professional golf course designer can see the whole picture, from course to course and from country to country, and put things properly into perspective. (Perhaps he could take up the topic next month?)

It seems to the layman that although obviously the Canons Brook type of course (even as tightened up by the vast numbers of decorative trees Cotton intends shall be planted there over the years to come) won't for one moment become a blueprint for future courses, it does suggest how some of the huge unsatisfied demand for golf amongst ordinary people may be taken up in the future.

More Difficult?

It also raises once again the old question of to what extent many of our older courses have become, with the years and the lengthening of the distance a ball will go, more difficult for the bad golfer than for the top class player. Whether they should be is, of course, a matter of opinion. But many longer-handicap men find the game quite difficult enough in itself, without any need of hazards arrayed against them. Much of the time the problem of hitting the ball straight enough, far enough, is quite capable of exercising their best efforts, without any extra help from penal-type hazards. Yet on most older courses the main hazards from the tee, and often through the green as well, are arrayed far more to trap the sort of not-too-bad shot he's likely to play, than they are to affect the tiger, who has to hit a real stinker (for him) before he lands anywhere near any of them.

The best compromise between extremes, and one towards which many courses move hazard by hazard and hole by hole, is one in which our best courses remain very tight for the low-handicap man who hits the ball a good distance, but are made milder at about the length, and in the sort of areas, most used by the rabbit and beginner.

Take a single hole of some 450 yards (from the point of view of playing-value and ease of maintenance alike): suppose you have a clear area between the tee and the first artificial hazards at some 230 to 260 yards from the tee; then a tightly hazarded stretch for some twenty or thirty yards at the range where the long-hitter's tee shot will pitch; then a comfortable opening up again, both to reward the man who has hit an extra-long, accurate drive, and to offer plenty of room for the long-handicap man's second shot; and finally a fairly tight hazarding of the entrance to the green for both the tiger's long second shot and the rabbit's third shot.

Keep the Pattern

It is precisely because so few courses do space their hazards in this way, or have altered them with the years to keep the pattern despite changes in clubs and balls, that the point is worth noting and deducing. There are too many holes, perhaps nowadays, where the long hitter can clear all bunkers from the tee on the carry, so long as he hits the ball fair and square; but where the line is twice or three times as tight for the shorter hitter. There are too many, perhaps, too, where the worst rough lies in front of the tee or at the sides up to some 200 yards from the tee, precisely where it can torment the duffer all the time, but never affect the tiger at all.

Often, too, old-fashioned cross-bunkers and such like lie at exactly the range of two of the rabbit's best shots; but 50 to 100 yards short of where the long hitter is going to pitch.

Henry Cotton's extreme example may carry a lot of precept for thought even if it makes no common model for imitation.

Continuing . . .

THE ECOLOGY OF NITROGEN ACTIVITY IN TURF SOILS

by

Dr. R. E. Blaser and R. E. Schmidt

This paper was presented at the American Golf Course Superintendents' International Turf-Grass Conference and Show at Philadelphia, last year. We reprint the second instalment here with grateful acknowledgments to the "Golf Course Reporter" because so much of it will be of interest to readers over here.

Wilting and Nitrogen

Wilting injury or death of bentgrass is often a problem during warm, sunny days. Wilt is caused by a combination of factors—soil, climatic, and morphological and physiological condition of plants. Nitrogen has direct and indirect effects on wilting. Thatch encourages wilting in three ways: (1) shallow roots; (2) poor moisture infiltration; and (3) the inhibited gaseous exchange (consequent carbon dioxide gas accumulation) causes protoplasm to resist water intake; hence, plants wilt more rapidly.

Liberal nitrogen fertilisation influences the physiology and morphology of plants to encourage wilting in four ways. (1) Root to top ratios and root depths are reduced. (2) Fast growing leaves with high nitrogen fertilisation are thin walled and high in water content. These combined effects encourage water loss and make grasses vulnerable to wilting. (3) Temperatures of liberally nitrogen fertilised grasses may be increased because the darker green leaves absorb more heat and also because of higher rates of respiration. Water loss in leaves is positively related to leaf temperatures. (4) Liberal nitrogen decreases the osmotic concentration of cell sap because of lesser mineral uptake, such as potassium, per unit of tissue and lower sugar content. Water is lost faster from leaf cells with sap low in sugars and minerals as compared with higher concentrations.

Now we will look inside the plant to understand the principles just discussed.

Food Reserves and Respiration

The green chlorophyll in grass leaves fixes carbon dioxide into simple sugary substances that are then used for maintaining and forming new roots and tops. Thus plants manufacture energy products (sugars) that are re-utilised for making all other substances and tissues in growth processes. Plants must stay alive at night, during periods of dormancy, under snow, and any time when leaves are not making food. Thus, sugary substances not used for growth are condensed and stored as reserve carbohydrate energy foods. Such reserve carbohydrates are important in many ways: (a) When leaves and shoots are lost due to cold weather, wilting, diseases, insects, or due to heavy verticutting and leaf removal; new ones are made from reserve carbohydrates. (b) When leaves do not make enough food for root and top growth, the stored reserves supply the shortage. (c) New basal grass shoots form much faster with high as compared with low carbohydrate reserves. (d) With a shortage of reserve carbohydrates, the tops have first access to them; thus, a low root-top ratio and shallow roots. A simplified list of materials in plants is given below:

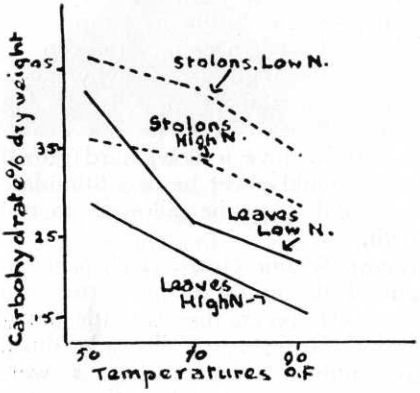


Figure 2.
Reserve carbohydrates in leaves and stolons of Cohansey bentgrass as influenced by temperatures and nitrogen fertilisation.

- Organic Materials—19%
  - Soluble carbohydrates
    - Simple sugars
    - Stored (fructosan or starch)
  - Structural Materials
    - Protoplasm (N-substances)
- Water—80%
- Minerals—1%

Fructosan is the main starch-like storage reserve carbohydrate in northern turf-grasses like bluegrass, bentgrass, and others. Fructosan accumulates in grasses in the stubble, underground in roots and rhizomes and also in leaves. Alternately it breaks down into simple sugar for growth and is stored again. The amount of fructosan reserves in grass tissue is influenced drastically by closeness of clipping (leaf removal), available nitrogen in soils and by the temperature (season of application). The combined effects of very close clipping, and high soil nitrogen during the hot summer season would cause very low frustosan reserves.

	Fructosan reserves in grass tissue	
Influencing factors	*Low*	*High*
1. Closeness of clipping	Very close	Lax
2. Available nitrogen	High	Low
3. Temperature (season of application)	Very warm	Cool

Data are now available to point out these inter-relationships. In our laboratories, Cohansey bentgrass was grown at temperatures of 50°, 70°, and 90° F. with low and high nitrogen, Figure 2. The stubble stems (stolons) were higher in carbohydrate reserves than the leaves. Note that stolons and leaves grown with low nitrogen were much higher in carbohydrate than those with high nitrogen. There was a drastic drop in carbohydrate in all tissue as temperatures were increased from 50 to 90° F. The lowest carbohydrate occurred with high nitrogen and high temperature; on the other hand the highest carbohydrates occurred with the lowest temperatures and low nitrogen. The carbohydrate content was much higher than would occur on a putting green because the grasses were not clipped for several weeks.

Liberal nitrogen fertilisation stimulates respiration (increased release of carbon dioxide and "burning up" food reserves apparently associated with fast growth),

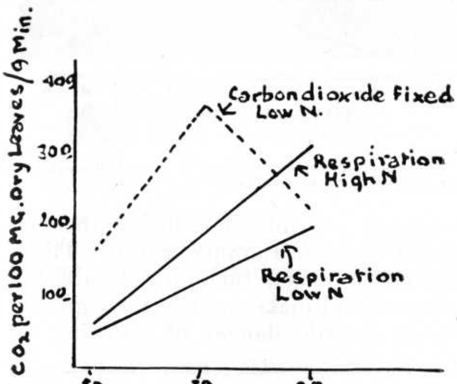


Figure 3.
The respiration rate of Cohansey bentgrass leaves with low and high nitrogen fertiliser at three temperatures. The rate of photosynthesis, carbon dioxide fixed is also with low nitrogen fertilisation is also given.

Figure 3. The highest rate of respiration occurred with the highest temperature and high available nitrogen. Thus, during high temperatures, liberal nitrogen fertilisation reduces food reserves due to fast growth and high respiration. Here reserve foods are made into protein-like compounds and plant tissue, especially top growth. When temperatures are too low for grass to grow

rapidly, high nitrogen does not stimulate respiration and food reserves remain high.

Figure 3 also shows that carbon dioxide fixation (rate of making sugary substances) increased as temperatures were raised from 50° to 70° F.; there was a rapid drop in food fixation with temperatures. Because food is fixed at a low rate and respiration is high during high summer temperatures, nitrogen should be applied at low rates during the summer for cool season grasses.

A summary on some of the effects of nitrogen on grass growth is given in Figure 4.

Timing Nitrogen Applications

Cool season grasses (bent, blue, and others) should have liberal amounts of

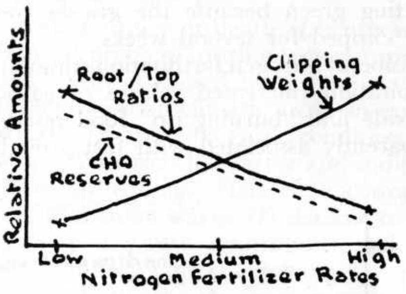


Figure 4.
The influence of nitrogen fertiliser on yield of clippings, root/top ratios and carbohydrate reserves of grass.

available soil nitrogen during the cool spring and late summer season. This is the season when such grasses are best adapted and make most of their growth. There is little danger of applying too much nitrogen in late summer as growth and respiration will be inhibited as temperatures keep getting cooler. Thus, carbohydrate reserves build up during autumn even with liberal nitrogen. Available soil nitrogen should be decreasing in late spring as temperatures get higher. It is necessary to keep cool season grasses slightly to heavily starved for nitrogen during periods of high summer temperature. With hot weather it is best to have a slow, hard growth. Grasses should never be over stimulated nor should they be allowed to stop growth.

Warm Season Grass: The principles discussed also apply to the warm season grasses. However, there is little danger in using nitrogen too liberally during high summer temperatures as warm season grasses have high optimum temperatures for growth. Warm season grasses do not usually have adverse respiration effects at high temperatures and photosynthesis is efficient at high temperatures. Thus, food reserves remain high at usual summer temperatures.

Nitrogen fertilisation should not be excessive during late summer when growth of warm season grasses is slowed up because of low temperatures. Over stimulated and actively growing nonhardy grasses are injured readily by rapid temperature declines. Likewise, excess nitrogen fertilisation and competition from overseeded winter grasses can seriously retard bermudagrass regrowth.

Nitrogen fertiliser is a most important mineral nutrient for growth control of turf.