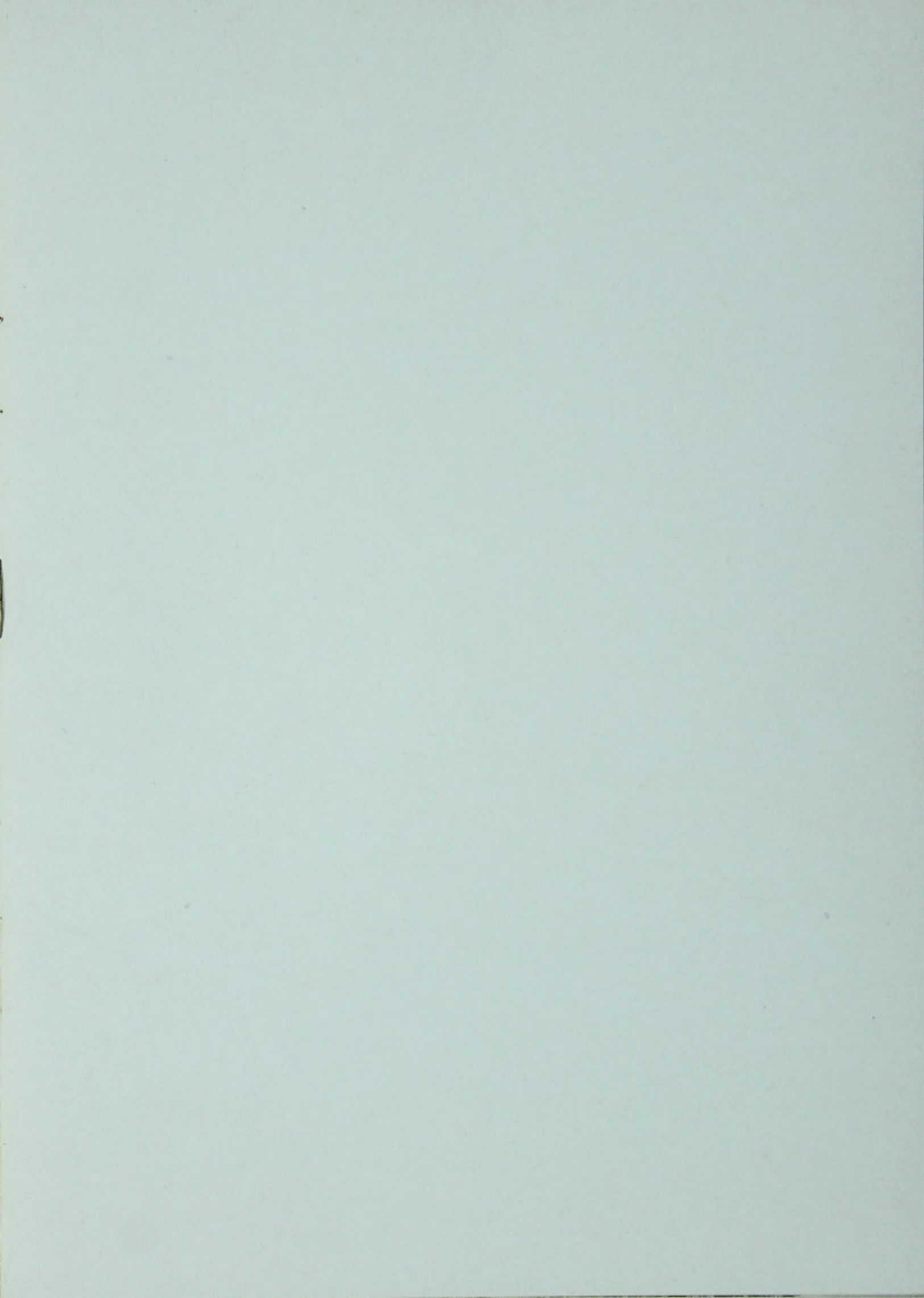


GOLF
COURSE
ARCHITECTURE







G O L F C O U R S E
A R C H I T E C T U R E

By

R o b e r t T r e n t J o n e s



The seventeenth hole at Banff Springs in the Canadian Rockies—a hole well designed to blend with its magnificent surroundings. Note how the difficulty of the shot to the hole can be controlled by the position of the pin.



GOLF COURSES HAVE LABELS

FOR every dollar wisely spent on golf course construction there have been two dollars wasted.

In the early growth of American golf there was some justification for this as there were no trained and talented architects. In order to make a beginning we had to depend largely upon the advice of Scotch and English professionals. While many of these were admirable players, only a few had the technical knowledge or experience to construct an intriguing golf course. Therefore, progress was slow until such men as Charles B. MacDonald, Herbert C. Leeds, Walter Travis, George Crump and others applied themselves to creating good golf courses.

From the very beginning, we had to work with difficulties not facing our British cousins. All our courses were hand-made on meadowland while the original British courses were developed on the linksland bordering the sea. There, wind-made bunkers and exquisite contours for natural green sites adapted themselves to grand golf courses. True, these perfect examples of seaside courses, where the British began their golf, were not of their own conception, but it is to their credit that they chose this land upon which to develop golf and even more to their credit is the fact that they retained its charming, natural features.

It is a strange coincidence that with these perfect examples so near at hand, the designers of that early period committed the same mistakes as our own early designers. For they built ill-made and hard-featured golf courses. The British school of talented golf architects now refers to the hideous construction of early days as "Victorian." Since we have no name for ours it might well be referred to as "military." Certainly our early traps resembled trenches with their systematically-dug holes and straight-faced, tomb-like mounds.

Happily, these atrocities are now a thing of the past. The most famous courses built in the last ten years have reverted to the original examples of golf course construction, the best features of the linksland. These courses, designed by able architects, have characteristics which will endure. They have the subtle features of strategic architecture that have stood the test of time at St. Andrews, Hoylake and Prince's—the flowing, sweeping lines that please the eye and attractive, natural-looking traps.

Among the now-famous courses of this class we have Bobby Jones' Augusta National, those spectacular courses along the blue Pacific at Pebble Beach and Cypress Point, the thrilling Rocky Mountain courses of Banff and Jasper Park. With such grand examples as these we have proof beyond doubt that the gap is well closed between the seaside architecture and the artificially-created courses of the inland meadows.

Many private clubs are now finding it necessary to consider the improvement of their courses. Countless courses built during the mushroom growth of golf in the twenties are cluttered with useless traps that affect, primarily, the enjoyment of the average golfer—the mainstay of any club. These courses will be changed to the more popular and attractive strategic type which demands more brains and fewer strokes with the niblick.

Actually, golf architecture is a combination of professions, for in addition to an understanding of the game itself a golf architect should have a knowledge of engineering, agronomy, horticulture and landscape design. Being proficient in one phase of this work does not necessarily imply that one has the knack to create outstanding golf courses.

Robert Tyre Jones, Jr., the greatest golfer of our day, when he built his Augusta National course had collaborating with him a renowned architect—the late Dr. Alistair MacKenzie. Such large corporations as the Canadian Pacific Railway, the Canadian National Railways and the General Electric Company, as well as the State of New York, with countless trained engineers in their employ, retained us to design their courses. In the field of landscape architecture, the name of Olmstead Brothers is outstanding, yet they called us in to handle the golf planning and construction for a large development on the Coast. Recently we were commissioned to remodel a course at the greenskeeper's recommendation to his superiors. Yet he is considered one of the best men in his profession and is editor of the *Greenskeepers' Reporter*. Here are outstanding men in their respective fields who yet sought specialists in golf architecture when building a golf course.

The third hole at Banff Springs in the Canadian Rockies. Sand and sod have been oriented to blend with the snow-capped mountains in the background. The bold framing mounds create a receptiveness to the surface of the green that inspires confidence as one shoots to it.



CONSTRUCTION—the Unknown Quantity

IN designing more than one hundred courses throughout the United States, Canada, British West Indies and South America, we have found that experience is the best teacher where construction is concerned.

It is futile to lay down a hard and fast rule on how to construct a golf course and on the methods and equipment that should be applied to an unknown case. One has to cut the cloth to suit the pattern and since nature never repeats itself, any given piece of property is different from all others.

Old St. Andrews, Scotland, is built along the seaside wind-swept dune country. Banff, in contrast, is chiseled out of rock in a valley between towering, 10,000-foot mountains. So the one thing we do know when we are called in to design a new golf course is that it will be different in some respects from any of the hundred others we have built before.

Our first step is to investigate the conditions of the new piece of property, for knowing these we will arrive at our solution as to the best method of procedure to create an outstanding golf course in the most economical way. We study:

1. The soil types—sand, loam, clay or rocky.
2. The fertility and depth of the soil.
3. The contours of the terrain including the natural green sites.
4. The cost of hand labor and rental of mechanical equipment for that particular area.

When some of these questions are answered we can decide upon the proportion of manual labor, team labor and mechanical equipment that will be most economical for the job. Some of the courses we have built during the past few years have varied from 80% manual labor to 80% mechanical, yet in each case the cheapest method of construction was adopted.

At Jamaica, British West Indies, a few years ago, we built a course for United Hotels. The terrain was a piece of gently rolling property at the base of a mountain, the soil was loamy and nicely workable. Under the normal wage scales and equipment charges in the United States, this job would have been done by a combination of shovel, team and labor construction. In Jamaica, however, shovel costs were exorbitant, teams also were expensive and the cost of labor was only forty cents a working day. The job was done almost entirely by hand.

Picture, if you can, building a golf course with oxen. It sounds medieval and fantastic in this modern day. But in Brazil, South America, we recently built

a golf course, using oxen for power. Mechanical equipment would have cost a fortune, and horses in that country could not stand up under the torrid heat. Oxen, therefore, were the only feasible solution.

In sharp contrast with these methods were those used on a course which we built a few years ago for the General Electric Company. This was on an island in the St. Lawrence River. The average depth of the top-soil covering the island was about one foot. Fortunately, in several places on the island there were low spots which nature had filled, over many decades, with rich soil from the surrounding higher land. A scoop shovel was placed in each of these pits and kept busy filling the trucks. The earth carried to the chosen green sites was placed as nearly as possible to meet with our design. Then the mounds and green contours were formed by pushing the soil around with a bulldozer (a mechanical horse made from a large caterpillar tractor with a steel plate in front which can be adjusted up or down, left or right, similar to a road scraper). The cost of that job was nearly 80% mechanical and unquestionably this was the most efficient procedure.

The most common method for molding greens, where conditions are suitable, is the team and slip-scraper method. This is used where the hauling distance is short. The soil is stripped before starting construction if it is of good quality, and forgotten if it is poor. The teams then dig here and build there, using the nearby soil. In this way a green can be quickly and inexpensively built.

A course we constructed at Green Lakes State Park, near Syracuse, New York, offers a striking example of economy in green building, contrasting ideal conditions with those less desirable. The upper nine of the course made a loop around the base of a very high hill. The soil was so shallow and the slope such that it was more practical to fill for most of the green construction. A shovel and trucks were used and finishing touches were applied by teams. The lower nine was on a large, natural shelf some forty feet below the upper nine. The terrain here was ideal, being gently rolling and abounding with natural green sites. In most cases but little work had to be done to make attractive greens, and those greens that needed molding could be done with soil from the immediate area of the greens with slip-scrapers.

So, on the same property we had completely contrasting construction problems in creating two separate nines. The greens on the upper nine cost more than double the lower nine to build, and needed twice the time, yet in the quality of golf they are of equal calibre.

EVOLUTION of a Golf Hole

THE top photograph was taken just as the clearing for one of the holes at the Durand-Eastman Park course in Rochester was begun. Before anything was started in this jungle, the contouring of the terrain had been studied and the best type of green designed to blend into this setting . . .

. . . The photograph below was taken after the clearing had been done, but before the green had been molded. Try visualizing the various types of greens that you think would fit into this site, then check your results with the picture of . . .



. . . the completed fourth hole of the Durand-Eastman Park course, designed for the City of Rochester, New York. This hole has been used in the national golf magazines of United States, Canada, the Argentine and England to illustrate the Utopia of municipal golf courses.

It has two tees: a back tee from which this photograph was taken, and a lower tee upon which the golfer standing in the right foreground may be seen. With the pin placed just behind the trap at left and the markers on the back tee, the hole requires an extremely accurate shot of one hundred and fifty yards. With the pin in the green center and markers on the lower tee the hole is an interesting yet relatively easy pitch shot.

Such holes are a constant source of variety and charm and their popularity is everlasting.



MODERN THEORY OF GOLF COURSE ARCHITECTURE

THE modern theory in golf architecture is to create a balanced hole for the various classes of golfers. In the past, the majority of players who may have been termed average golfers were punished far out of proportion to their playing skill. Traps were profusely placed in all areas of the fairway so as to catch a shot only slightly in error. Since the technique of the average golfer's swing is subject to flaws more often than the good or expert golfer's, he was constantly in trouble. As a result the game of golf lost its thrill for him.

An analysis of the situation disclosed that as far as the crack golfer was concerned, traps under 200 yards offered little or no hazard usually, whereas those same traps were constantly punishing the average golfer. It therefore was feasible that moving such traps would make the play for the average golfer less punishing without spoiling the character of the course or the playing value for the expert.

It was found that in the green area, the green and trap could be designed so the hole could be tightened or eased by the extent that the pin was placed behind a diagonal trap. In the old penal type of architecture, where the greens were flat and surrounded by a maze of clam-shell traps with a bottle-neck entrance, only one problem was involved—the golfer had no choice other than to hit a perfectly executed shot to the green. Since the shot required was often not in the average golfer's repertoire, he realized he was doomed before he started. With the diagonal trapping, tongue greens and alternate routing to the green, he can play a shot which he feels is within his range. This involves mental keenness as well as playing skill, as one must vary the manner in which one plays the hole on any particular day according to how well one is playing or, in the case of tournament play, according to the circumstances of the match.

The sixteenth hole at Green Lakes, Syracuse, part of the New York State Park System. It should be hard to tell where the natural ends and the artificial begins on this attractive hole, yet its character is dependent upon the artificially created features. The artistic orientation of sand and sod completes the picture, illustrating how much can be accomplished on what was originally a listless green site.

Furthermore, this penal type of design was really unfair in its degree of compensation for error because a shot that was ever so slightly off center might catch



a deep, ugly trap, whereas a shot *badly* missed would avoid this trouble, enabling one to pitch the approach in close to the pin and get a par, thus equaling the golfer who had played the hole perfectly.

We have offset this to a great extent by framing the greens with long, well-formed mounds, placed strategically, thus presenting a definite problem to the hole. Therefore, in approaching the pin, a shot badly missed makes the next shot that much more difficult in proportion to the error. One is then forced to play a hazardous shot over mound and trap and is less likely to be putting for a par. Naturally, the person who has made only a slight error, being closer to the green, does not have to make a shot that requires the finesse of one badly missed.

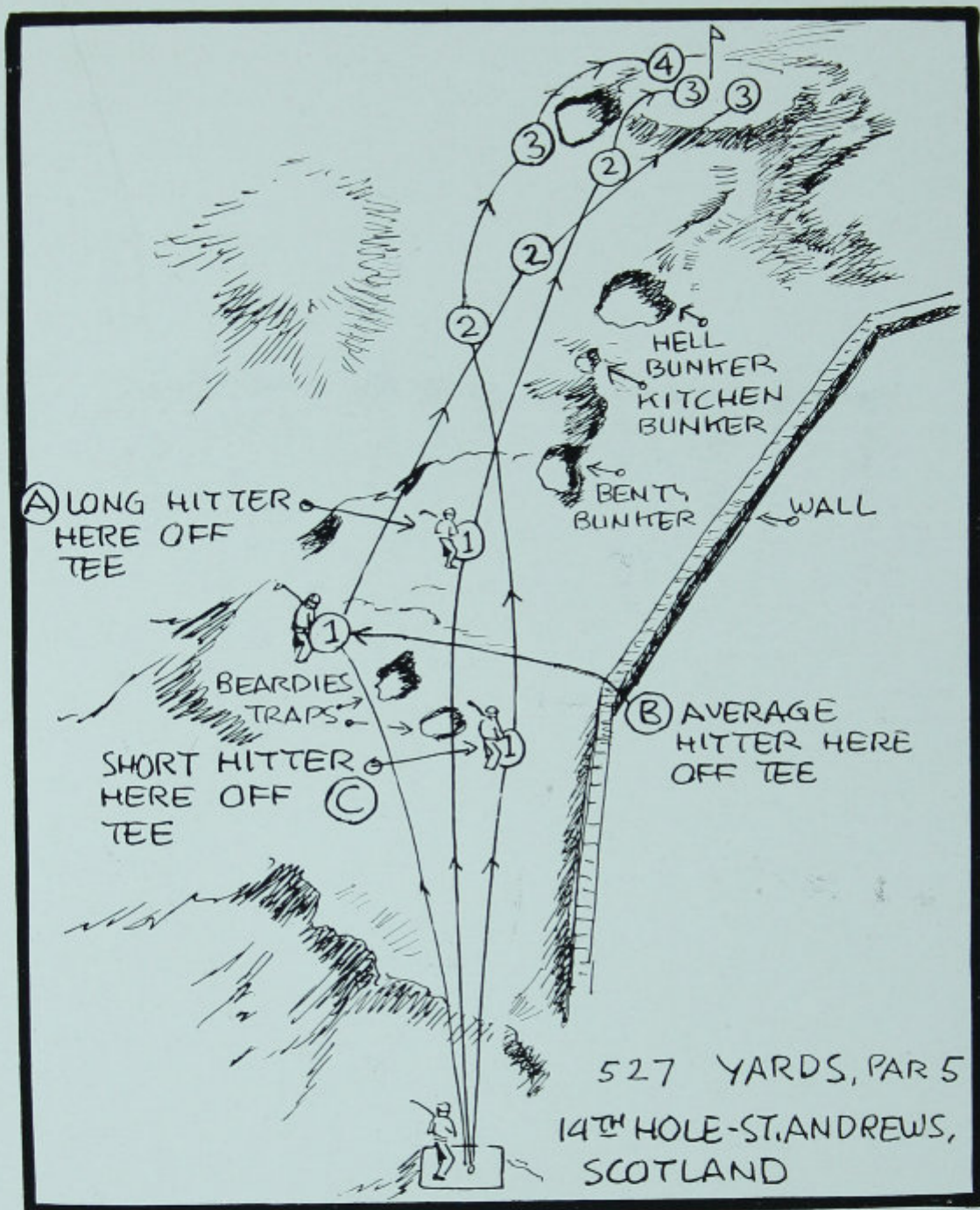
Another factor about this dune type of green molding is that the green surface itself is given a receptivity that inspires confidence as one plays to the green, for one feels that a bold shot will not overrun the green too easily and, therefore, hits a crisp, sure shot to the pin rather than a doubtful, faltering shot.

This type of design also creates a feature terminating each hole. It gives the hole a feeling of isolation from any adjacent holes since the construction of the mounds builds up a third dimension, blocking off part of the view beyond the green.

Sand can be oriented effectively in the face of these mounds so that they stand out from a distance, creating a fearful aspect. The orientation of sand and sod, when effectively done, makes an extremely attractive appearance. It is the modern theory that certain traps should have real penal value and others only a psychological effect so that a hole often plays more easily than it would seem at first glance. This can best be done by dune-type construction.

In following this type of construction, the green surfaces must be of an undulating character rather than flat, as in the penal type of design. Otherwise, there would not be a harmony of lines between the framework of the green and the green surface itself. These undulations vary according to the requirements of the various types of shots. Some may be gentle, and some bold. The green surface and its environs then have a natural, rather than an artificial appearance.

In addition to diagonal green design to tighten the hole, double sets of tees are part of the modern scheme. In this way a hole can be lengthened for championship play to make it a more trying test of golf. It also adds a constant variety of interest to the course as a whole because it is then possible to alter the yardage of the course.



The fourteenth hole at St. Andrews, Scotland, is a prize example of the strategic school of golf architecture. In spite of the fact that this hole is more than a century old it has stood up as an acid test of golf against the improvements of modern equipment.

This hole is still great, for the traps are placed so adroitly that they challenge all classes of golfers seeking the shortest route to the hole.

There is "Beardies," a dangerous nest of traps at the 200-yard mark; next there is "Crescent" at 300 yards from the tee, while the famous and maliciously named "Hell" is at the 400-yard stake. Then there is a threatening boundary wall, and a bold, sharply sloped green with a greedy pot trap to catch any who approach from the right.





Olfer's Paradise

These tees may often be at a different angle from one another if the design of the hole justifies such treatment. In this way it sometimes gives an entirely different playing quality, which is like having a new hole. Different combinations of pin- and tee-placing in modern golf architecture give an infinite variety of shots that were not possible in the stilted, penal type and add spice to the play.

Since it is the desire of the modern architect not to punish the average golfer too severely, the fairways are shaped so as to give their narrowest areas where the crack golfer should land. This gives the average golfer ample latitude, tightens the hole to punish the error of the expert without necessitating the development of any greater fairway area than in the penal school where the fairway was the same width from tee to green.

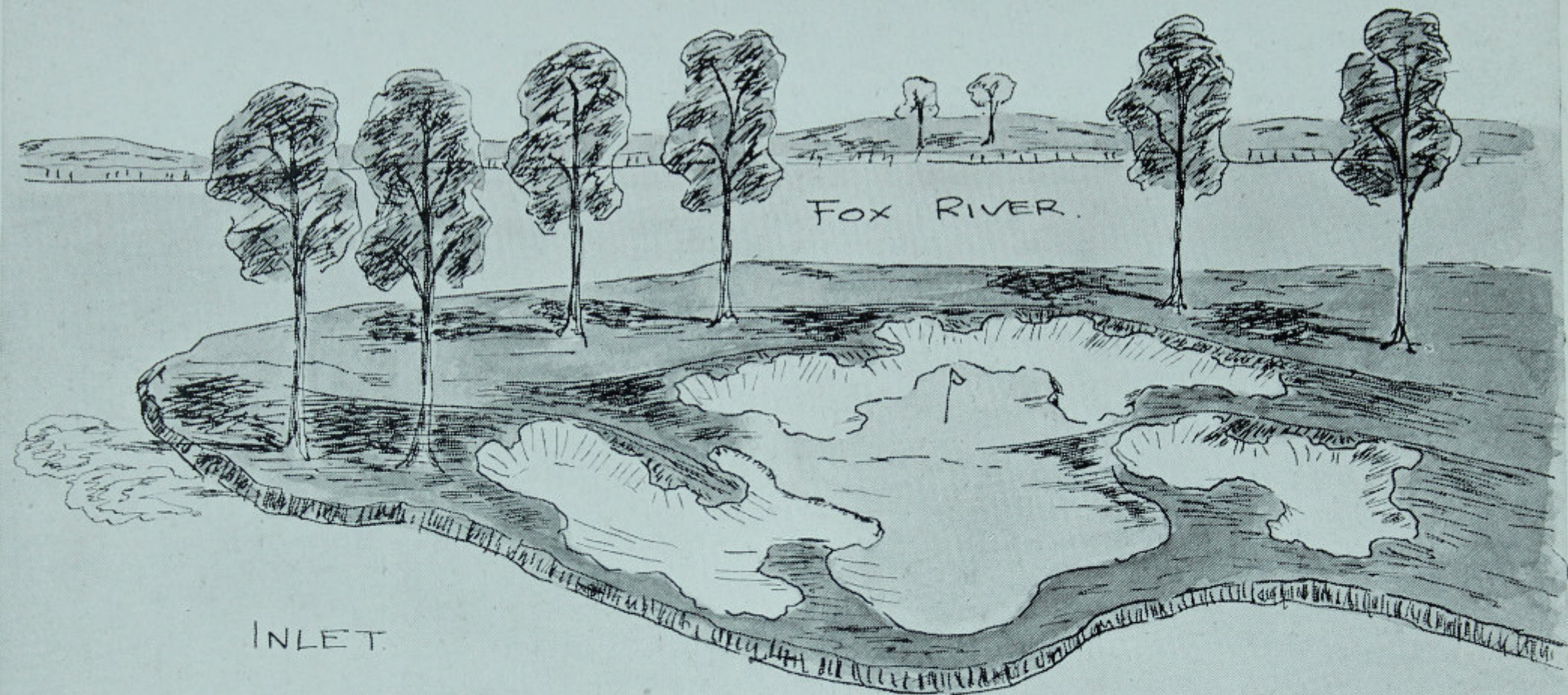
In appearance, this symmetry of curving lines is much more attractive than the long, ribbon-like fairways of the past. In addition, the bays and narrow necks created act as a yardstick for the player to judge his distance from tee to green.



The fifth hole of the first nine at the Montclair Golf Club, Montclair, N. J.

Here is an old hole that had its face lifted. A shallow new trap was added at the back. The trap at left was originally small with sodded slopes, making it invisible from the tee. This trap was enlarged and the sand and sod oriented for its present effect. The shallow trap at the right is an addition. It balances the picture and in spite of its depth usually garners a toll of one stroke from those who land in it. Such changes as these can be made quickly and cheaply.





INLET

FOX RIVER.

Designed & sketched by Robert Trent Jones

A SKETCH IN TIME . . SAVES

UNTIL recently the missing link in golf architecture was the inability of the leading architects to render accurate drawings giving a true perspective of the hole as it would be when completed.

The customary methods of presenting preliminary plans have been:

1. General plans giving the tee, traps and green in one plane.
2. The use of contour maps.
3. The use of plasticine models.

The first method is necessary but doesn't cover enough territory, for it does not illustrate the type of architecture that the designer had in mind. The same plan could present any number of combinations. Some architects make flat greens with sharp banks for traps, which are hard to maintain; some make saucer greens with scattered mounds; some make crowned greens. They all appear the same in such a plan, drawn on one plane.

As for the second method, the average individual does not have the technical knowledge and training to read contour maps adequately, and these maps do not always show the subtle features that go into making great golf holes.

Plasticine models, when drawn to scale, show mounds or slopes in the green surfaces so insignificantly that they have no meaning.

Sketches similar to those in this booklet are rendered and presented in such a manner that they give anyone a clear vision of the completed hole.

Groups responsible for founding new golf clubs have found such drawings invaluable in selling memberships. Greens chairmen find them most helpful in selling proposed changes, and in construction they have cut down error to a minimum.



Sketch of the third hole on the Potawatomie Park course in St. Charles, Illinois. This is a drive and pitch hole, the narrowest part being 90 feet. Although the site is attractive, the flashing of sod and sand is really what makes this a spectacular hole.

COLGATE UNIVERSITY GOLF CLUB



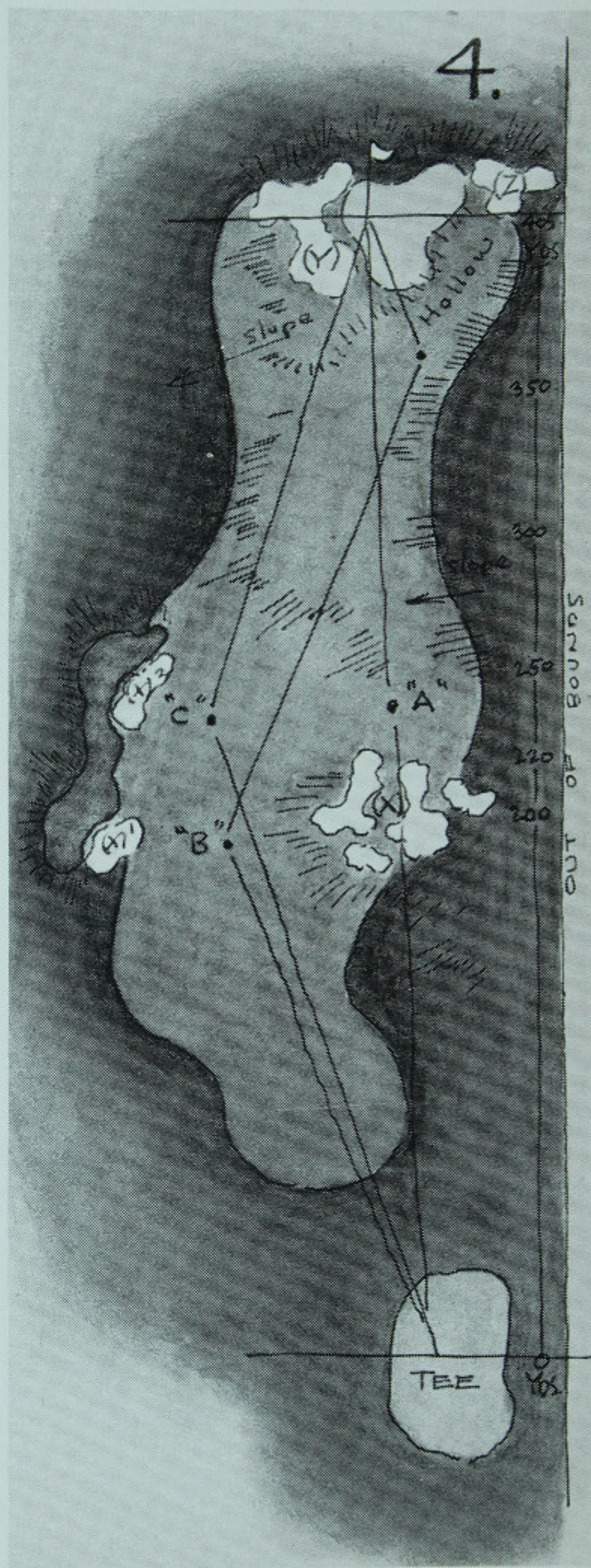
FOURTH HOLE

405 YDS.

GREEN: This is designed to blend into the hillside, and shaped to develop various problems in the play of the hole through strategy. The position of the pin makes a vast difference in the difficulty of the hole. The hollow along the right side of the green is created to set the green up, yet gives a natural appearance. A missed shot to the right leaves an interesting chip shot to the pin.

Trap "Y" is the key trap at the green, six feet deep at the front and shallow in the back.

STRATEGY: The long hitter (A and C) has the choice of carrying trap "X" or playing to the left between traps "X", "X-1" and "X-2". The difficulty of the second shot depends upon the route of the tee shot. "A" has an open shot to the green; "C" must carry trap "Y". The short player, "B", chooses his route, as illustrated, making it a three-shot hole.



OUR FIRM

SCOPE OF WORK

We have built more than one hundred golf courses covering both American continents, scattered from Vancouver to Nova Scotia, from northern Ontario to Brazil. Several national championships, as well as many state and provincial titles, have been played over these courses.

AMONG OUR CLIENTS

Canadian Pacific Railways
General Electric Company
United Hotels
Canadian National Railways
State of New York
Colgate University
City of Rochester, New York
Timmins Gold Mine
City of Amsterdam, New York
British Properties, Ltd., and
City of Utica, New York

AMONG COURSES RECENTLY BUILT OR REMODELED

Green Lakes State Park, Syracuse, New York
Capilino Golf Club, Vancouver, B. C.
Terezopolis Golf Club, Terezopolis, Brazil
Noranda Gold Mine, Rouyn, Ontario
Itanhangá Golf Club, Rio de Janeiro, Brazil
Durand-Eastman Park Course, Rochester, New York
Municipal Golf Course, City of Amsterdam, N. Y.
Colgate University Golf Course, Hamilton, N. Y.

Montclair Golf Club, Montclair, N. J.
 Municipal Golf Course, City of Utica, N. Y.
 Garden City Country Club, Garden City, Long Island
 Pottawatomie Park Course, St. Charles, Ill.
 St. Charles Country Club, St. Charles, Ill.
 Bonnie Briar Country Club, Larchmont, N. Y.
 Lester J. Norris' Private Course, St. Charles, Ill.

AMONG THE
 OTHERS

Of the hundred or so courses, there are private, hotel, municipal, and college courses:

Banff Springs Golf Club, Banff, Alberta, Canada
 Jasper Park Golf Club, Jasper Park Lodge, Alberta, Canada
 Gavea Golf Club, Rio de Janeiro, Brazil
 Constant Springs Golf Club, Kingston, Jamaica, B. W. I.
 Royal York Golf Club, Toronto, Canada
 Seigniory Club, Montebello, Canada
 Sao Paulo Country Club, Sao Paulo, Brazil
 Hyde Park Golf Course, Jacksonville, Florida
 Pines Golf Club, Digby, Nova Scotia
 Mississauga Golf and Country Club, Toronto, Canada
 Sleepyhollow Golf Club, Cleveland, Ohio
 Bigwin Inn Golf Club, Lake of Bays, Ontario, Canada
 Midvale Golf Club, Rochester, New York
 St. Andrews Golf Club, Toronto, Canada
 Squaw Country Club, Squaw Creek, Youngstown, Ohio
 Fort Erie Country Club, Buffalo, New York
 Floridale Golf Club, Milford, Florida

COMMENT

HORTON SMITH: *"The Royal York is one of the best tests of high class golf in America."*

ABE MITCHELL, famous English golfer: *"The Royal York is the best course I saw on my American tour."*

CRAIG WOOD: *"The architect of Green Lakes did an amazing job on an exceptionally rugged piece of terrain. It took a fertile imagination and a real knowledge of the value of golf shots."*

GENE SARAZEN: *"Of the courses I have played designed by Robert Trent Jones, I have yet to find one that is not outstanding. He is the modern Number 1 Architect."*

GOLFDOM MAGAZINE: *"The new St. Charles municipal golf course will be the ideal of all nine-hole layouts."*

MRS. ALISTAIR MACKENZIE: *"My late husband,"* (the designer of Cypress Point, Augusta National and scores of other outstanding courses) *"had the greatest admiration for your work, its strategy and beauty. He considered you among the world's finest."*

CANADIAN GOLFER: *"A round at Banff is the engraving of a lifetime impression on any golfer."*

ROBERT H. DAVIS, of the New York Sun: *"I have knocked about the world from the Horn to Alaska, from Australia to Iceland, and for sheer beauty, delightful surroundings and everything that goes to make golf the greatest game on earth, this course here at Jasper Park has everything beaten that I have ever seen."*

JACK TUCKER, of the Rochester (N. Y.) Democrat and Chronicle: *"Carved out of virgin forest in many places, Durand-Eastman is truly a picture no artist can paint. Holes like the fourth, fifth, sixth and sixteenth defy description. They are magnificent."*

OLIN DUTRA: *"The Seigniory Club is an outstanding example of excellent golf architecture."*

The fourteenth hole at Jasper Park Lodge in the Canadian Rockies. This illustrates the effective use of natural features in a golf hole. From the tee, which can be seen in the background, the player gambling on his skill in hugging close to the lake reaches a green which has been molded to favor his second shot; the player driving safely out to the right takes more risk with his second shot because the slopes of the approach fall away to the lake.



LAWSON LITTLE: "*Congratulations on your fine course, Green Lakes, one of the finest I have ever seen.*"

JIMMY THOMSON: "*Capilino in Vancouver is one of the finest courses I have ever seen.*"

TOWN & COUNTRY MAGAZINE: "*The diagrams are by Robert Trent Jones, most brilliant of the young course designers.*"

NATIONAL GOLF REVIEW: "*Robert Trent Jones is one of the most noted course architects, his firm, Thompson and Jones, having built many famous courses throughout North and South America.*"

LONDON ILLUSTRATED NEWS: "*The Constant Springs Golf Course at Kingston, Jamaica, is the finest golf course in the British West Indies.*"

JOHNNY REVOLTA: "*The 4th, 15th and 18th holes on the St. Charles Country Club course are as beautifully trapped as any I have come across in my golfing experience.*"

JIMMY HINES, Metropolitan Open Champion: "*It is amazing, the transformation in our second hole at Garden City.*"

LEONARD TINGLE, Greens Chairman at the Garden City Country Club: "*Everyone in the club is extremely pleased with the changes in the 1st, 3rd and 16th holes. Now they are anxious for the others to be changed.*"



The third hole of the Garden City Country Club on Long Island.

You will look at the hole and quake as you stand on the tee, wondering if it's possible to put a ball on the green. This psychological effect has been created by the orientation of sand and sod.

The trap at left foreground is shallow, the trap in the center background also is shallow and prevents the ball from going down a steep bank. The traps at right and at left background are as punishing as they look, but there is ample room for a well-hit shot to find the green, and what a feeling of accomplishment if you do!



The eleventh hole of the Capilino Golf and Country Club, Vancouver, B. C. This is a short hole effectively placed in a magnificent setting. All the natural features were blended into this creation.

From the elevated tee one sees a small pond in front of the green which is a mental hazard to the golfer. The well-flashed traps surrounding the green offer a striking contrast against the wooded background, and are placed in such a manner that the hole can become difficult or easy depending upon the position of the pin.



BERNARD DARWIN is the Golf Editor of the *London Times*, and the English magazine *Country Life*. He is a good golfer in his own right, having been a member of the British Walker Cup Team and formerly Captain of the Royal and Ancient, the ruling body of all golf. This office is now held by the Duke of Kent.

In his article, *Adventures With an Architect*, he says:

“I had no keener pleasure than in following Holmes in his professional investigations, and in admiring the rapid deductions, as swift as intuitions, and yet always founded on a logical basis, with which he unravelled the problems which were submitted to him.

“This was, in effect, what I said, in the manner of Dr. Watson, as I bade good-bye to an eminent golfing architect after spending two exciting days in his company. It was, in some ways, a rather humbling experience, though I am really very humble, anyhow, as regards my architectural qualities; but the feeling of being a foil to Holmes’s brilliance was by no means disagreeable. If the architect could see some things more quickly than I could, and other things which I should never have seen at all, I could console myself with the reflection that it was his job. It was only natural that he should be good at it, and that seems a point worth emphasising, because there are sometimes members of greens committees who think that they can do this job by the light of nature, and they generally make the saddest mess of it.”

A GOLF course can be at once challenging to the champion and fair to the duffer. The differences between a poor and a good course are obvious, but the differences between a good and an outstanding course are subtle.

Before planning major or minor improvements, take advantage of the training and experience of a competent golf architect. The problems which face you today are his life's work.

ROBERT TRENT JONES

Write us arranging a preliminary consultation.

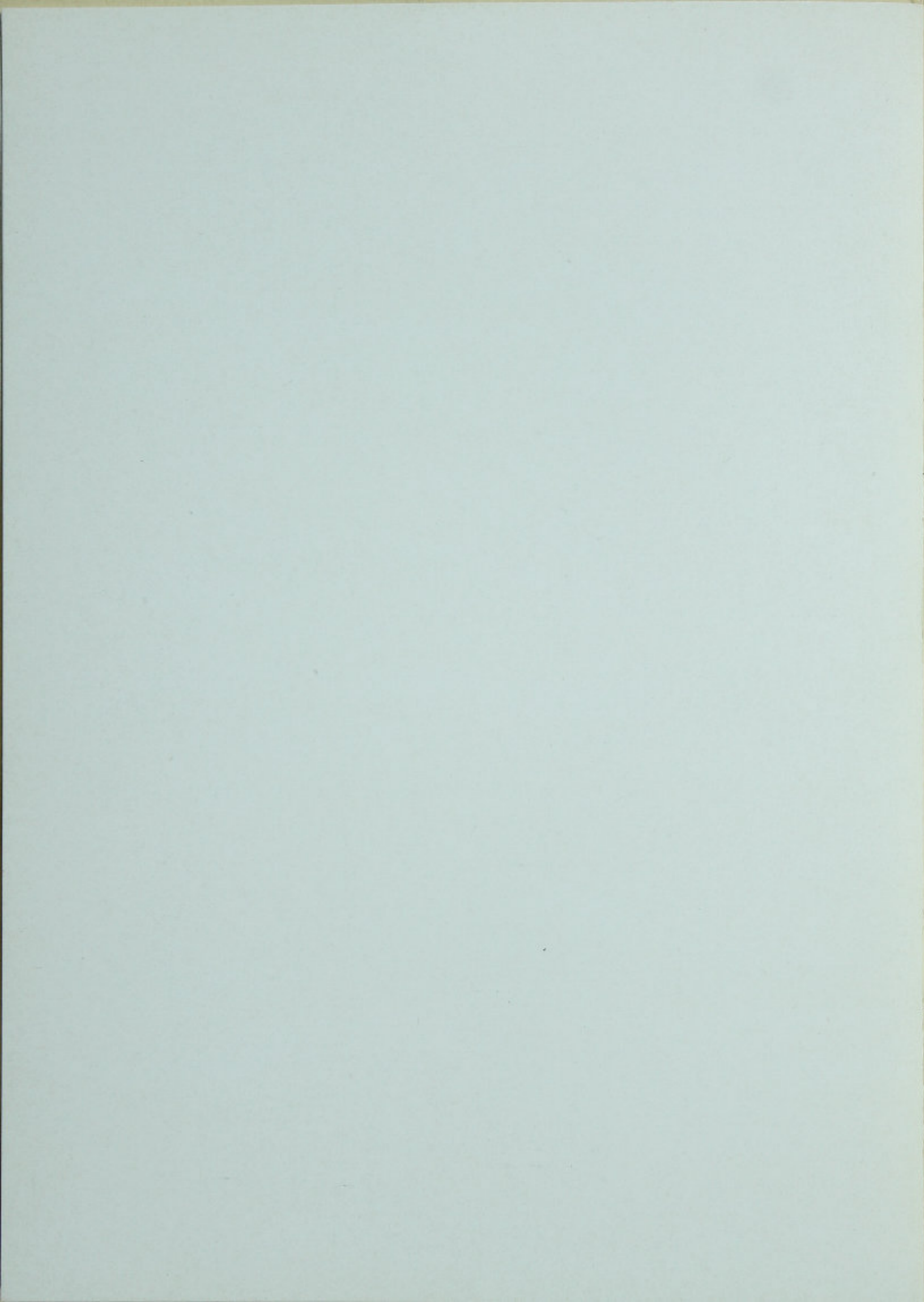
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Banff . . . a Golfer's Paradise