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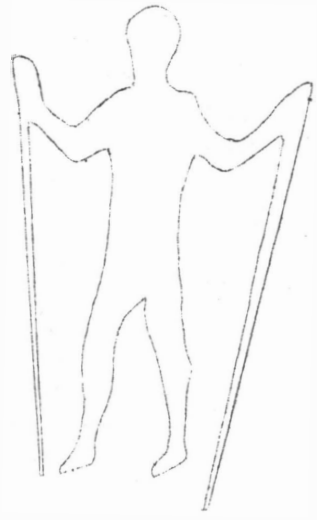

# THE LEY HUNTER

THE LEY HUNTER

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## EDITORIAL

Now that the Ley Hunter reaches its fourth issue and the end of its first year of publication, perhaps a review of the present situation is necessary. We must realise that the Club is small and can only work in limited fields, and in this issue Jimmy Goddard and Peter Furness have pointed the way forward. The only way to get sceptics to look at the subject seriously is to study a restricted area intensively and to back up your findings with statistical evidence for what you claim. Let us make sure that we have something worthwhile for them to investigate when they care to look.

Turning to other matters, I think this issue is the best yet. To begin with, it's much larger, but it's also got some excellent articles. As well as those by Jimmy Goddard and Peter Furness, we have two articles on details of leys in Sheffield and the Fenland which are particularly good. Keep sending in your articles, however, and we can make the next issue better still.

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## THE VASTNESS OF OUR TASK

by Jimmy Goddard

On the small printed leaflets which you no doubt received with your last issue of The Ley Hunter you will see that one of the aims of the Ley Hunter's Club there listed is the compiling of a National Ley Index; that is, a record in index form of every ley, ley point and ley centre. When I joined the Club at the beginning of its career I was burning with enthusiasm and wanted to get this task done, and even went so far as to plan to get flat copies of Ordnance Survey maps covering the whole country. Now I see that, in the present circumstances, the Ley Hunter's Club could not possibly do such a thing.

The reason I say this is that, because of the difficulty of transferring leys from one map to another, I decided a short while ago to purchase an Ordnance Survey map of a small compact area and do a thorough study of that, first plotting all the leys it contained and then going and walking the lines; in short, to make a ley survey of the area. Because of its isolation from other places in Britain, I chose the Isle of Man as an ideal place to study; it was small enough to fit on one Ordnance Survey map and the plotting of all the leys should not take more than a few weeks.

How wrong I was! I now know that if I plot all the leys on it in a year I will be very lucky. From the first time I laid ruler to map leys and centres leaped up at me, and it seems that there isn't a tumulus on the

Island which is not a centre. Every one I have tried has proved to be - and there are still a great many more to go.

Just think of the mathematics of the thing. Suppose there are a hundred acceptable ley points on a map (no O.S. map has less than this), then on the present showing ninety of them will be actual ley points and at least fifty (probably more) will be centres. To take a low estimate, the average number of leys per centre should be about five. Imagine the pattern this would make, and the number of leys that would comprise it. And remember, low estimates were taken all the time with this assessment; most maps would have many more than a hundred points. Also, we must not forget of course the leys that we cannot draw because all or some of the visible marks have been destroyed (for that particular map).

And that is just one map. There are 190 of these covering Britain, so one's mind boggles a little when one wonders just how many leys there must be in the country. Also, if the present indications are correct and the ley system is world-wide, what astronomical figure must we conjure up then? It would seem that to compile a National Ley Index would take an army of Watkinses; to build a World Ley Index would cost more than the space race.

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## ISLE OF MAN PRIMARY LEY SYSTEM

There is a pattern of leys in the Isle of Man which seems to be a primary ley system - that is, a system on which all the other leys in the Island are based. It takes the form of an irregular, but symmetrical, hexagon. Here are the grid-references of the centres:-

| | | |
|---|---|---|
| 1 | Apex centre, hill with track crossing | SC 411929 |
| 2 | N.W. centre, tumulus | SC 350948 |
| 3 | N.E. centre, cross-tracks | SC 431883 |
| 4 | N. central centre, "Slieau Managh" (1257 feet) | SC 396910 |
| 5 | S.W. centre, "South Barrule" (1585 feet) | SC 258759 |
| 6 | S.E. centre, tumulus | SC 298736 |
| 7 | S. central centre, junction of road and track | SC 277747 |
| 8 | S. Apex centre, Ballabeg Church. | SC 246705 |

To find the primary leys join the following centres:-

(a) 1,4,7 and 8 (b) 8 and 5 (c) 6 and 8 (d) 3 and 6 (e) 2 and 5
(f) 5,7 and 6 (g) 2,4 and 3 (h) 1 and 2 (i) 1 and 3.

The Isle of Man map is Ordnance Survey No. 87.

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## A SOUTH-NORTH ALIGNMENT IN THE CITY OF SHEFFIELD

## ORIGIN OF UNITS OF LENGTH

By R.D.Y. Perrett, B. Sc.

### PROLOGUE

In scientific circles it is normally "not done" to rush into

print until one has exhaustively looked up previous references and carried one's own work to the point of a complete investigation. Yet I am doing it; and so are others interested in the subjects to which this magazine is devoted.

In our case I think it is justified. First, most of us are folk with only limited time to spare for these activities; if we waited to publish until our work was complete we should never publish anything. Secondly, there are few other workers in this field, apparently, so other references are few and hard to trace. Finally, our material is vague and fragmentary, so that a complete investigation is more or less out of the question anyway.

In these circumstances, to minimise the risk of getting into disrepute, I suggest that in our writings we should adhere so far as possible to the following principles :-

(1) We should indicate clearly which of our statements are facts, which are inferences from facts, and which are only surmises.
(2) We should try to assess and state the degree of accuracy of our "facts".
(3) We should indicate in which directions further work could with ad advantage be undertaken.

I have tried to keep these objectives before me in what follows.

FEATURES INVOLVED

Beauchief Abbey (SK 334819). This abbey was founded in 1183. A church on the site is still in use.

Brinkcliffe "Tump" (SK 333848). This is a mound with trees growing on it and cut in two by a footpath through it, in a small park adjacent to B "Brinkcliffe Tower", a large house now used by Sheffield Corporation as a home for elderly people. The lump is of the order of perhaps 15 feet high and perhaps sixty feet across (I have not measured it).

Botanical Gardens "Tump" and Roads-Junction (SK 334861). This is somewhat indefinite. About the spot in question the main road is joined by two others, and, close by, by another. The main road and one of the others (Botanical Road) form the boundary of a park - the Botanical Gardens. There is a hump-like rise in the land hereabouts, extending for perhaps two or three hundred feet, much of which is in the park, including what is or was presumably the highest point. Botanical Road rises and falls over the "shoulder" of this hump; at the highest point of the road the base of the wall dividing the park from the road contains some large stones. I understand from the Secretary of the (Sheffield) Hunter Archaeological Society that a former Sheffield historian speaks of a tump at or by Botanical Road, but I have not seen the reference myself.

"Spion Kop" in Football Ground of Sheffield Wednesday Football Club (SK 333905). There is a large mound, used as part of the viewing arrangements for football games, at the east side of the Sheffield Wednesday Football Club's ground at Owlerton, Sheffield. This mound is very large, and, even if there was originally some sort of "tump" there, has presumably been enlarged in modern times for its present purpose. The mound is known locally as

"Spion Kop"; I understand that the existence of a mound, with the same name, is a feature of more than one football ground.

DIRECTIONAL CHARACTERISTICS

By calculation from measurements taken from a 1-inch Ordnance Survey map, allowing for the accuracy with which I can locate the features involved, I have arrived at the following directions :-

Beauchief Abbey to "Spion Kop". Between $0^{\circ}27'$ and $0^{\circ}1'$ W. of N.

Beauchief Abbey to Botanical Gardens "Tump".
Between $0^{\circ}28'$ W. of N. and $1^{\circ}16'$ E. of N.

Beauchief Abbey to Brinkcliffe Tump.
Between $1^{\circ}45'$ W. of N. and $0^{\circ}3'$ E. of N.

The limits for the longest (and therefore most accurately determinable for direction) line (Beauchief Abbey to "Spion Kop") lie within the overlap of the ranges of the other two. The overall mean is about $\frac{1}{4}^{\circ}$ W. of true (geographic) north.

No part of this line coincides with a length of any modern roads; indeed the latter show a strong tendency to be more or less at right-angles to this line where they cross it.

DISTANCE CHARACTERISTICS

For reasons which will become apparent below, I take as my unit of length the distance 4ft. $8\frac{1}{2}$ins., i.e. the standard rail-gauge, calling this unit a"gauge" for short.

In addition to the 1-inch map, I possess a 4-inches-to-the-mile "Geographia" map of Sheffield. The accuracy-limits of distance-measurements made with these two maps are set out below, using "gauges" as the unit of length. Means are in brackets.

| | From 1" map | From 4" map |
|---|---|---|
| Beauchief Abbey to "Spion Kop" | 5990 - 6070 (6030) | 6036 - 6072 (6054) |
| Beauchief Abbey to Botanical Gardens "Tump" | 2930 - 3010 (2970) | 2904 - 2976 (2940) |
| Beauchief Abbey to Brinkcliffe Tump | 2000 - 2080 (2040) | 1982 - 2018 (2000) |

These three stretches are thus - especially having regard to the uncertainty of the location of the Botanical Gardens "Tump" - such that the Brinkcliffe Tump and the Botanical Gardens "Tump" respectively mark approximately one-third and one-half of the way from Beauchief Abbey to "Spion Kop". The figures also suggest the rather "attractive" quantities of round thousands of "gauges", viz., 6000, 3000 and 2000 respectively.

Since the distance between the one-third-way mark and the half-way mark is one-sixth of the whole distance, I thought it possible that something

special (e.g. a tump or a church) might be found at the other three points dividing the distance between Beauchief Abbey and Spion Kop into sixths, and examined them. They were all in built-up residential areas. At two I found nothing at all; at the third (half-way between Beauchief Abbey and Brinkcliffe Tump) there was a rise in the ground behind an electricity sub-station which may have been artificial, but I could not be sure.

However, at a point close to one-quarter of the way along the line from "Spion Kop" to Beauchief Abbey is a church which, with five other churches or other features which I believe may be significant, makes up an alignment (the degree of accuracy of which I have not yet determined) running for about $6\frac{1}{2}$ miles roughly $33^{o}$ N. of W.

## WHEELS AS MEASURES OF DISTANCE

I have been told by the Secretary of the Hunter Archaeological Society, in a letter in April this year, that the standard rail-gauge of 4ft. $8\frac{1}{2}$ins. is evidently very ancient; he quotes references to tracks going back to the 5th century B.C. in Greek and Roman times. This seems a very odd measure to be so widely current in time and locality.

It is also curious how the rather odd factor "eleven" occurs in our length-measures; e.g. a "pole" is $5\frac{1}{2}$ yards (= 11 half-yards), a chain is 66 (= 6 x 11 feet).

Moreover the pace is a rather uncertain basis for measurement, and so also is the "foot" since the curve-up at the back of the heel makes it difficult to put a precise measure to the length of the human foot; but the human hand-span is fairly precise and is usually taken as nine inches.

It occurred to me in April this year - although I can hardly think that this has occurred to no one else in recent times - that all these features could be fairly naturally reconciled if the basis of measurement was a wheel of radius equal to the span (thumb-tip to little-finger-tip) of the human hand. Suppose one takes such a wheel and rolls it round once along the ground. The distance so set out is 4ft. 8·55 ins. - the rail-gauge to within about one-tenth of one percent. If one rolls such a wheel seven times ("seven" always seems to have been an attractive number to mystic minds; is it really because it is the denominator of 22/7, the ratio of the circumference to the diameter of a circle?) one goes 33 feet, which is half a chain or two poles. If one divides the said 33-foot length into 12 equal parts, one gets 2·75 feet; Prof. Thom, from his survey of many Bronze Age Stone Circles extracted a probable unit of length of 2.72 feet (New Scientist, No. 382, 12.3.64.) which is within about 1% of the 2·75 feet mentioned. (Although this difference seems small, in the light of the evident statistical accuracy of Prof. Thom's work, I am rather worried about it. Working backwards from his figure one would get a rail gauge of 4ft. 8ins., but the extra half-inch seems to be well established!)

I was under the impression that the "Surveyor's Wheel" was a relatively recent institution (a few hundred years), but certainly it is a fairly straightforward matter even single-handed to measure distance across even fairly rough ground by counting the revolutions of a wheel. I suggest that the apparent exact thousands of such revolutions of the "span-radius" wheel in the Beauchief Abbey line is supporting evidence. I have also two

other cases connected with stone circles where the distances involved seem corroborrative of this idea.

FURTHER WORK

Old maps and records of Sheffield should be examined to try to fix the location of the Botanical Gardens "Tump" and perhaps the origin of "Spion Kop". The history of the "quarter-way church should be sought also.

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## A R E  L E Y S  D U E  T O  C H A N C E ?

by Peter Furness

Since the early days of research, the ley hunter has never been absolutely sure that leys are not merely due to chance alignment. Some methods have been devised for showing that random points do not line up to the same degree as ley points, but these have always been experimental. Such methods are clumsy and inefficient for the simple reason that reliable results can only be obtained by repeating the experiment a large number of times. In this article I shall only outline a theoretical solution to the problem - fuller details may be obtained by writing to me.

Consider a one-inch Ordnance Survey map of area 'A' square miles, upon which is drawn a thick line representing a ley of length 'y' miles and breadth 'x' miles. If a random point is dropped on the map, the probability that it will fall in the line will be the fraction (f) of the area of the map that the line occupies.

i.e. Probability = $f = xy/A$

Similarly, the probability that 'm' such points fall in the line is $f^m$.

Now, if we scatter 'n' points on the map, the probability that exactly 'm' of these will fall in the line is given by:

$$P(n,m) = f^m(I-f)^{n-m}\binom{n}{m}.$$

where $(I-f)^{n-m}$ represents the probability that the remaining (n-m) points do not fall in the line, and $\binom{n}{m}$ is the number of ways of selecting 'm' points out of 'n'.

It can be shown that $\binom{n}{m} = \frac{n!}{m!(n-m)!}$ where n! denotes the product of all the numbers from 'n' down to one; i.e. $3! = 3x2x1 = 6$.

If the line is first fixed on the map by two of the points ( the method used in ley hunting) the probability of getting an exact alignment of 'm' points becomes:

$$P(n,m) = \binom{n-2}{m-2}f^{m-2}(I-f)^{n-m}. \qquad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

If there is a total of 'W' alignments in the 'n' points (including 2 point lines) then the number N(m) of 'm' point lines to be expected by chance is given by:

$$N(m) = W.P(n,m) \qquad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

It can be shown that : $W = \binom{n}{2} - \sum_{3}^{n}\left[\binom{m}{2}-1\right]P(n,m)W.$

rearranging: $$W = \frac{\binom{n}{2}}{1+\sum_{3}^{n}\left[\binom{m}{2}-1\right]P(n,m)}. \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

If we assume that ley points are random, we can find 'n' for a particular map of area 'A'. If the length of the ley is 'y' miles, what can we reasonably take as its width 'x'? The ultimate minimum for this is the breadth of the pencil of ink line representing the ley, but inaccuracies in drawing and in symbolism on the map itself make it reasonable to take 'x' to be 1/100th of a mile or 17·6 yards.

The following are results of calculations performed using a typical 'one-inch' Ordnance Survey map.

Counting gave the total number of good ley points as 200. The area of land 'A' of the map was 625 square miles. I took the length of a typical ley on this map to be 30 miles.

From equations (1) and (2) W = 16,500.

From (2).... N(3) = 1,570 (i.e. 1,570 three-point leys by pure chance)
similarly... N(4) = 72 (i.e. 72 four-point leys by pure chance)
" ..... N(5) = 2
" ..... N(6) = 0·05
" .....N(7) = 0·001

These figures indicate that for the particular map used, any ley with less than 6 points could be expected by chance. The value of N(7) suggests that if leys are chance alignments, one would only find one 7-point ley in a collection of 1000 different maps!

Thus we can show with certainty that leys of more than a fixed number of points cannot be due to chance.

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## TWO FENLAND LEYS

By Michael Davidson

The first, 24 miles in length, was sought after reading that below the A142 had been found a Bronze Age causeway, on the stretch that links the height of land at Ely and the low hill the other side of the River Ouse at Stuntney, about one and a half miles away; the present road is a causeway over flat farmland.

Riding east along the present causeway a Victorian chapel lies dead ahead. Appearances deceive, for inside it shows Norman work, and a printed history will tell you that an earlier church stood on this site, which in turn displaced a stone cross, a resting place for pilgrims before crossing the Ouse to the Saxon shrine of St. Etheldrida. Mention is also made of the tradition of an old causeway and that the river extended up to this spot. Six miles farther, the church at Fordam is the next fix, prominent on a small hill, and later, Moulton church, the last eastern fix.

West from the causeway the first landmark is the Castle Mound at Ely which would have been clearly seen from Stuntney in times past. The ley here picks up the A142, both passing the mound on the south. Appearances here are deceptive on the map as the Mound has been marked as a tumulus and so appears much farther from the ley than it actually is. Its size can only be appreciated from the south-east and from the top it can be seen that the foot has been cut away to allow building of houses on the A142, here known as Back Hill. The mound seems far too big for the small wooden fort the Normans erected here, as do the mounds at Thetford and Cambridge. A short distance further on, it passes by the spot, on the highest ground at Ely, where tradition says there stands the socketed stone which held the gallows. Leaving Ely, it passes without comment, so to speak, over eleven miles of reclaimed Fen land to fairly strike Wimblington church in an area where churches are scarce. This church is Victorian, but stands on the site of an earlier one, as one could guess by the prosperous 18th century houses near it. Further, a book on the region discloses that this area was the site of an old settlement, with several tumuli and barrows, not shown on the 1-inch map, unfortunately.

Total : 4 Churches, known causeway and the Castle mound.

The second ley is 35 miles long, and passes from the Cambridge 1-inch O.S. map to the Bury St. Edmunds one. This starts again at a supposed causeway, three miles south of the previous one, roughly between Little Thetford and Barham, both old villages. Barham Church is a small Norman church, rather sad and neglected, looking across the river from a low escarpment. It seems to seek a companion on the other bank, where you will find a Chapel Hill marked on the 1-inch map. On the $2\frac{1}{2}$-inch map you will find the Chapel site marked and it does seem likely that both served a ferry. From Barham, the ley passes east over Henny Hill to strike first the Priory and then the Church at Isleham, the latter prominent on a ridge. The apse and brickwork of the Priory proclaim its age. Missing Worlington Church by a small margin, the ley passes over Tuddenham Heath, where a road edging a wood joins it for half a mile or so, as does the River Lark, where it runs along the south bank. Here a small concrete bridge, but having older brickwork foundation, is met, and considering that it serves no more than a sandy track the name of Temple Bridge is a little grandiose. Yet here two leys from the N.N.E. pass over, while farther down stands the remains of a rampart, Bunns Bank, which looks as though it may well have been placed to guard a ford. Perhaps there was a Temple at this spot. The Lark meanders happily off for a while, but meets the ley again where it passes over the bridge at Icklingham. Here the ruled line just touches the church symbol on the map. Does one count it or not? How strict are other Ley Hunters? Crossing the Icknield way almost at right-angles, it just misses Ampton church to enter private park land where a wood goes with it for a while, shortly touches a circular copse, crosses a footbridge to join with a footpath for $2\frac{3}{4}$ miles, making for Ixsworth Priory and shortly, Ixsworth Church, the path taking the road over the Black Bourne 50 yards or so north of the ley.

Westwards from the Ouse again there is little to show, though we can celebrate the gloriously named farms Grunty and Tiger, and a pity we cannot enrol them into Watkins' orthodoxy, but we do meet Colnefen Farm, and shortly after the extended line passes through Chapel Field, which would

no doubt yield some results from research.

Total : 4 Churches, possibly 5, 2 Monastic Houses, 2 Fords, 1 Col place name.

The interesting thing about this ley is that it links two places whose names denote that they were inhabited by the Iceni, also crossing their Mi, the Icknield Way. If one accepts these two leys, and real walking of them might yield more convincing proof, one has to conclude that in East Anglia, and perhaps elsewhere, the ley makers would take on far larger rivers than could be forded, for at any time in its history the River Ouse must have been a fair-sized one in view of the area it drains. It is improbable that they bridged the Ouse; more likely they linked the causeways by boat. This begs the question, why have a causeway at all? Yet the fact is at Ely they did have a causeway, while the later "Fen Tigers" were skimming about the fen in dug-out or punt. A possibility is that the earlier inhabitants of the Fens were not so adept in their use, for if you look at the maps which show where finds have been made of Stone and Bronze Age man in the Fens, they indicate the Fens were not desolate marshes: they were even thickly settled. Remains are found lying on top of the clay, buried under the peat of a later time, and it is thought that they looked much as the Breckland region does now. Interesting that these maps also show the antiquity of many modern bridges as sites of fords, dredging disclosing the spearheads, etc. of hunting-parties and war-bands, as distinct from the pottery, beads, spinning-whorls, etc. of the women in the villages.

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## O D D  N O T E S

### LEY HUNTS

We haven't got much space in this issue, but here is a report by Jimmy Goddard of an expedition in Gloucestershire on Sunday, 3rd. October, 1965 together with Millicent Rosslova and Mrs. Geraldine Mortimer:

"We first visited Bishop's Cleeve Church, which is on a rise in the ground, and is also on a ley from "The Ring", a ley centre on Cleeve Hill, the highest point of the Cotswolds. Bishop's Cleeve Church is dedicated to St. Michael (striking ley churches are usually dedicated either to St. Michael or St. Andrew for some reason). Unfortunately there was a service in progress at the time so we could not go in to see if there were any histories of the church.

"After photographing the church, we climbed to the top of Cleeve Hill and found "The Ring", near a triangulation station. I took some photographs of this and one of Bishop's Cleeve Church along the ley. It was visible from the hilltop, and before the buildings were erected the mound it stands on must have been equally visible from the peak. (Many UFO's have been seen over Cleeve Hill, incidentally).

"On climbing down from the hill, we were met in the same way as Allen Watkins (see Vol. 1 No 3 of The Ley Hunter), by a man who told us there was an old mark-stone crossing a stream nearby. As with Mr. Watkins, he told

us this without us telling him we were interested in leys, or even in archaeology.

"After this we went on to see and photograph the Tibble Stone, a mark-stone near Teddington, and Teddington Church, which is on a ley from Cleeve Hill. The present church dates back to the 11th century.

"On the way home from Cheltenham I saw three clumps of trees apparently in alignment on a ridge, and photographed them (though I am not sure how the picture will come out, as the train was travelling quite fast). The clumps appeared to be all on the same ridge, not on separate peaks, therefore I think it likely that they were in fact in alignment."

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## POPE GREGORY'S ACTUAL WORDS

"I have, upon mature deliberation on the affair of the English, determined...that the temples of the idols in that nation ought not to be destroyed; but let the idols that are in them be destroyed...For if these temples be well built, it is requisite that they be converted from the worship of devils to the worship of the true God; that the nation, seeing that their temples are not destroyed, may remove error from their hearts, and knowing and adoring the true God may they more faithfully resort to the places to which they have been accustomed."

(From a letter from Pope Gregory to Abbot Melbitus dated 601 A.D.)

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## SUBSCRIPTIONS

With this fourth issue of The Ley Hunter, your subscription may have expired. If so, please send your renewed subscription to Jimmy Goddard as soon as possible.

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