SC

The Koch Snowflake Dissected

Future Shock!

Diatonic Ratios In The Fields

I'd like to thank the many readers who have recently read *Quest For Contact* and written to express their appreciation. It's nice to know it does all mean something to so many and more than a couple of people have said it has changed their entire outlook on life! Although it's my and Paul Bura's names on the cover, your approval reflects on all the people who took part in the work recounted, which includes most of the current *SC* team. Inevitably, it's not everyone's cup of tea, however, and in amongst the nice reviews we've picked up, there have been one or two deviating voices, accusing us of everything from madness to fraud and cynical cashing-in. *Quest For Sanity* was the title of one particularly amusing piece in a regional UFO newsletter, for instance. Well, people must read the book and make their own minds up - *we* know what our motivations were in carrying out the work and publishing the results, and all sleep soundly. Now we learn from advance sources that our old friends at *The Cerealogist* (or should that now be *Cereologist*?) will be firing a major broadside at us in a hilariously punned article provisionally entitled *Quest For Contract* with all that that implies. We look forward to seeing if its author's usual knack for venomous dissent will stay just this side of libellous... Watch this space. The most recent issue has already managed to alienate its last supporters in the Centre for Crop Circle Studies by attacking their method of database keeping and making a very thinly veiled attack on our own Barry Reynolds, prompting a terse rebuke in *The Circular*. (The appalling quality flyers for *Quest* in the same *Circular* were nothing to do with us, by the way - it was meant to go in as an ad!)

Readers may like to know that Paul Bura is now re-covering well from his recent brain tumour removal but isn't quite out of the woods yet - although currently out of hospital which has been home for the last few months, he has to return again soon to have a steel plate fitted in his skull. The good wishes, letters and telephone calls enquiring after his welfare have been overwhelming (even Uri Geller telephoned Paul in hospital!) and a great comfort in distressing times. I know he would like to voice his thanks for it all, which he feels has helped him through.

On a sadder note, we would like to express our sympathy to the friends and family of Shari Adamiak who died from cancer a few weeks ago. A close colleague of Steven Greer and Ron Russell from the US-based ET contact group CSETI, Shari was familiar to many croppies from her visits to the Wiltshire fields and was never less than pleasant company. Ironically, Shari passed away the night before a recent English TV programme she took part in, *Louis Theroux's Weird Weekends*, an irreverent look at US ufologists, was broadcast on BBC 2. She'll be missed by many.

Finally, don't forget next month's *SC* - a 75th issue celebration...

ANDY THOMAS

Question: What do English church bells and crop circles have in common? Answer: Diatonic ratios! Ever since the 1300s the bells have pealed out with the "do re mi" scale (no sharps or flats) and since the late 1970s the diameters of crop circles have given these notes as numbers.

Each white note on the piano increases in pitch in so-called perfect steps like this:

C	D	E	F	G	A	B	C
1	$\frac{9}{8}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{15}{8}$	2

Nowadays musicians use the equal temperament approximation (chromatic tuning) where the step ratio, r, is:

$$r = 2^{\frac{n}{12}}$$

(2 raised to the power n/12, where n = 1, 2, 3 etc.)

The white notes fall on n-values of 0, 2, 4, 5, 7, 9, 11, and 12.

The black notes fall on semitones number 1, 3, 6, 8, and 10.

I took all the circles from (Delgado & Andrews' book) *Circular Evidence* and these are listed by page number in the Table. For satellite patterns, the ratio was the diameter of the large circle to the satellite (rule 1 as shown in Figure 1). For concentric rings, the ratio was of diameters squared (rule 2 as shown in Figure 2). The measurements at the outside edge of each ring were taken.

Accuracy is paramount. Because some of the intervals are only 6% apart, to be safe we call it a hit only if the ratio fits to within +/-1%. This means the n-value has to fit to +/-0.165 or better.

In *Circular Evidence*, 16 out of 25 fell on diatonics, whereas only 5 would be expected by chance. Each and every white note was hit, and the black notes were not.

The analysis was repeated for the inside edges of the rings and no significant correlation with diatonic ratios was found.

In science, we always insist that a new result is reproducible. Lab experiments must be repeated, observations must be verified. With the diatonics we needed a second set of independent data to confirm the *Circular Evidence* result. Enter *SC*. Thanks to careful teamwork we have an independent, homogeneous set of 8 formations to add to the Table. Four of the *SC* ones are diatonic, whereas less than 2 would be expected by chance.

So it seems we have satisfied the scientific conditions. A second set of homogeneous data confirms the first result. Together this makes 20 diatonic hits in 33 formations from 1981 through 1995.

The odds of diatonic ratios being truly intended now go up to better than a million-to-one in favour.

The chance of hitting a chromatic, non-diatonic, black note semitone by accident is 1 in 7. None of the 25 in *Circular Evidence* hit a black note, so we conclude the circle makers deliberately avoided them. But the *SC* data has got one (*Sx 94/02, a small ringed circle at Sompting, reported in* SC *30*), note A#, n-value 10. It could be the 1 in 7 accidental perpetrated by a hoaxer unaware of diatonics, or it could be an expansion of the original music code. Only a third independent, homogeneous and well-surveyed set could tell.

Crop surveyors should, of course, measure at least 8 radii. It all has to do with getting an accurate mean, or average diameter. At +/-1%, the diameter of a 50-footer has to be known to +/-6 inches - a tough requirement. The circle makers leave little wobbles in their circles of from 1 up to 3 percent. At +/-3%, 9 radii averaged together get the accuracy down to +/-1%. With only 4 radii measured (as with the Sussex data), the error in the mean would be +/-1.5%, and so even if the formation was diatonic, it could fail the test because of the lack of full accuracy of the field survey. *GH*

· FEATURES ·
DIATONIC RATIOS
IN SUSSEX CROP CIRCLES

It has often been said that some crop circles conform to 'The Diatonic Scale' - an unlikely coincidence and clearly indicative of a non-random creative source. But what is the Diatonic Scale and how does it work? Professor GERALD HAWKINS, Ph.D, D.Sc sheds some light on the subject and discovers more correlations in archive copies of *SC*...

DATA FROM CIRCULAR EVIDENCE

Page	Date	Diameters in meters	Rule	n-value		Deviation from diatonic	Keyboard note
19±	1981 - -	15/15	1	0.00		0.00	C
21	1981 Jly -	17/8.5	1	12.00		0.00	C'
23±	1982 - -	12/9	1	4.98		-0.02	F
27	1983 - -	16/4	1	12.00	+12	0.00	C''
31	1985 - -	16/3.2	1	3.86	+24	-0.14	E''
33±	1985 Aug 3	12/3.6	1	8.84	+12	-0.16	A'
41*	1986 Aug 14	26.13/19	2	11.03		0.03	B
43	1986 Jly 26	22.6/16	2	11.96		-0.04	C'
45	1986 Aug 24	19.5/12.9	2	2.31	+12	0.31	
45	1986 Aug 24	19.5/3.6	1	5.25	+24	0.25	
55	1987 Jun 1	23.0/15.38	2	1.93	+12	-0.07	D'
67	1987 Jly 9	23.0/15.6	2	1.44	+12	-0.56	
71±#	1987 Jly 24	19.8/3	1	8.67	+24	-0.33	
71±#	1987 Jly 24	19.8/4	1	3.69	+24	-0.31	
79#'	1987 Aug -	17.2/7.48	1	2.42	+12	0.42	
87**	1987 Aug 6	12.75/6.76	1	10.98		-0.02	B
95	1987 Aug 8	30.28/16.3	2	9.44	+12	0.44	
97	1987 Aug 14	26.24/19.28	2	10.67		-0.33	
99#'	1987 Aug 21	15.2/6.75	1	2.05	+12	0.05	D'
103*	1987 Aug 22	34.71/25.3	2	10.95		-0.05	B
104	1987 Aug 22	8/8	1	0.00		0.00	C
113	1988 Jun 25	36.2/29.6	2	6.97		-0.03	G
113	1988 Jun 25	36.2/23	2	3.70	+12	-0.30	
115	1988 Jly 15	17.2/6.5	1	4.85	+12	-0.15	F'
0¢	1988 Sep 10	13.95/4.13	1	9.07	+12	0.07	A'

± Approx. # Unequal satellites. # Mean taken. ** Revised by CA.
* Measured photogrammetrically. 0¢ Jacket photo values by CA.

DATA FROM SUSSEX CIRCULARS

SC No.	Date	Diameters decimal ft.	Rule	n-value		Deviation from diatonic	Keyboard note
18	1993 Jun 8	65.29/23.36	1	5.79	+12	+0.79	
19	1993 Jun 23	57.46/21.69	1	4.87	+12	-0.13	F'
19	1993 Jun 25	26.71/6.67	1	0.01	+24	+0.01	C''
19	1993 Jun 27	53.33/6.67	1	11.99	+24	-0.01	C'''
20	1993 Jun 28	62.63/22.96	1	5.37	+12	+0.37	
30	1994 Jun 4	20.83/15.58	2	9.96		-0.84	
42	1995 May 8	91.96/47.88	2	10.60	+12	-0.40	
42	1995 May 8	91.96/23.75	2	10.87	+36	-0.13	B'''

ABOVE: *Professor Gerald Hawkins' charts showing diatonic correlations extracted from early formations included in* Circular Evidence *and early to mid-1990's formations as surveyed in SC. ('CA'= Colin Andrews)*

I knew it wasn't going to be a good day...
I'd decided that a visit to my Californian cousin wouldn't come amiss, and got a hunch the trip ought to be done before the planetary alignment took place, in case that mucked things up a bit.

I tried to ring him, but a big solar flare got in the way and fouled up all the satellite links. I shoved the phone down and went outside to watch the ionised curtains glowing and dancing overhead. Anyway, I'd never have heard his voice clearly since the grid lines over the house were crackling something awful, as whacking great voltage surges jumped the three-foot ceramic insulators.

I noticed seven cows dead in the next field, by a grid pylon. They must have been standing radially to the tower so that the megavolts drop between their front and back legs had got them, the grass being pretty damp... I wondered if it would have curdled their milk too.

I got in my car - after a bit of trouble because the ham next door was using his transmitter at illegal levels again - and my remote locking system was knocked out. Eventually I got going but headed for the Post Office with flashes of static zigzagging across the windscreen. I'd nearly arrived when the car was buzzed by a couple of huge glowing UFOs, rotating over the roof. Happily, I knew they weren't after me as I was wearing my false moustache.

Then I spotted a new crop circle in a nearby field. I guessed it was a fresh one as it was buzzing a bit and still steaming from the EM Radiation input. But I couldn't resist walking across into it where, unfortunately, I was bitten by a strangely maddened dog. I returned home, somewhat chastened, only to stumble over a new ley line that had appeared across my front garden. I got in the house at last, despite getting a shock off my key as I offered it to my aluminium front door.

I thought I'd try the phone again but couldn't find it anywhere, until it was spotted jammed flat against the ceiling by some sort of electromagnetic field - or was it electrostatic? By now I didn't care. Then I thought - of course, my mobile... I dialled it up but it only gave me a nasty ache in my brain from the earpiece, so that idea was given up as another bad job.

At that moment, the Earth's poles abruptly reversed, south/north, and then nothing worked. I staggered up to my north-facing bedroom - but turned the wrong way and ended up in the other room at the south end of the house. I must have been tired, because even the old seismic fault crack under the foundations didn't disturb me, despite the big balls of blue light that kept oozing up between the floorboards.

But I was oblivious to all that night - probably the crop circle effect - and in the morning I tuned in my old crystal set; the last radio still working. After jiggling its cat's whisker, the first news I heard made me glad I hadn't fixed the US trip earlier. Apparently the whole of California had fallen in the Pacific Ocean overnight. I'd often tried to tell my cousin that the San Andreas Fault wasn't reliable but he wouldn't listen, and now it was too late. I could only hope he'd been visiting our other cousin in Wichita when the whole State of CA disappeared into the drink.

Then the radio began telling me that all the Antarctic ice was melting fast, so I got out my inflatable dinghy, blew it up, and packed it full of bean cans. Already the Grand Union Canal at the bottom of my lane was six inches higher - despite all the lock gates being open.
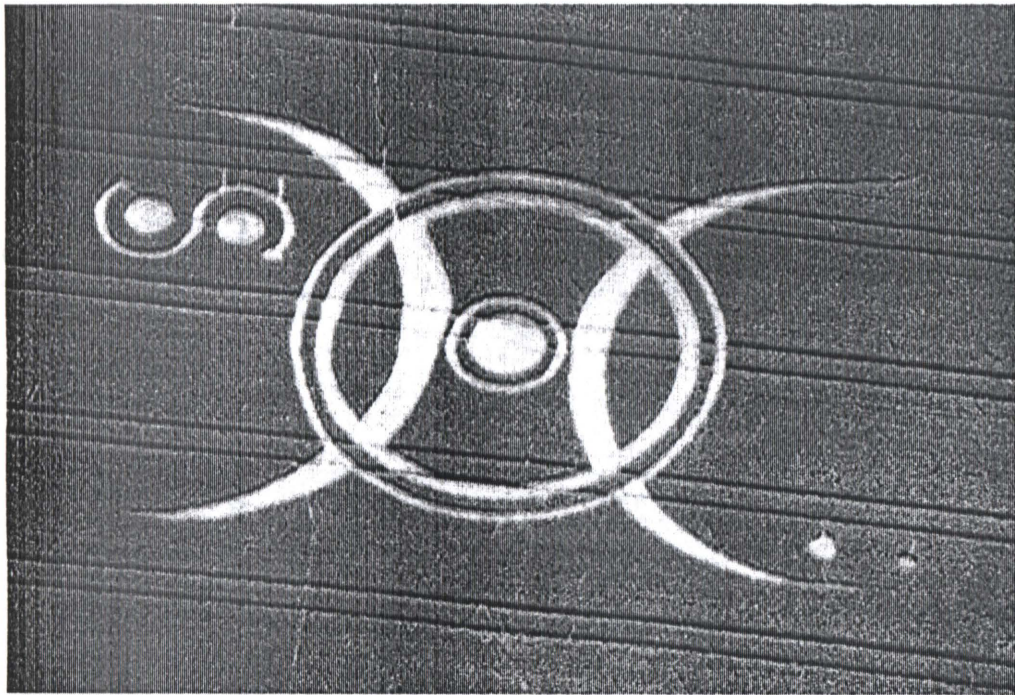
Yes - I knew all along it wasn't going to be a good day ... *MR*

- FEATURES -

THINGS
Aren't What They Were...

What if all the talk of cataclysmic Earth changes, mass outbreaks of paranormal phenomena and environmental and social apocalypse actually comes to pass? What will an average day in the life be like in those times? MIKE ROGERS humorously leaps forward a few years to find out...

ABOVE: *Oliver's Castle, Wiltshire. No video controversies this time but rumours abound that this was made by or for a Japanese TV crew because of its rather oriental look. This doesn't necessarily mean it was, of course.* **BELOW:** *Now garage circles are appearing... or they are at GEOFF STRAY's Sussex home where he decided to decorate his abode with the Cissbury Ring formation of 1995 (West Sussex). The door is visible the whole length of the street! Now for the roof...*
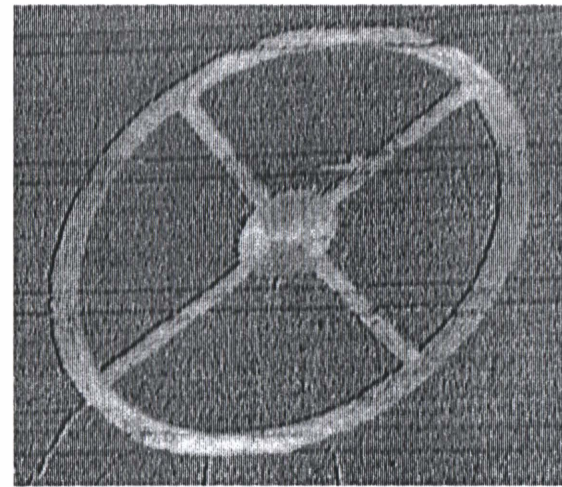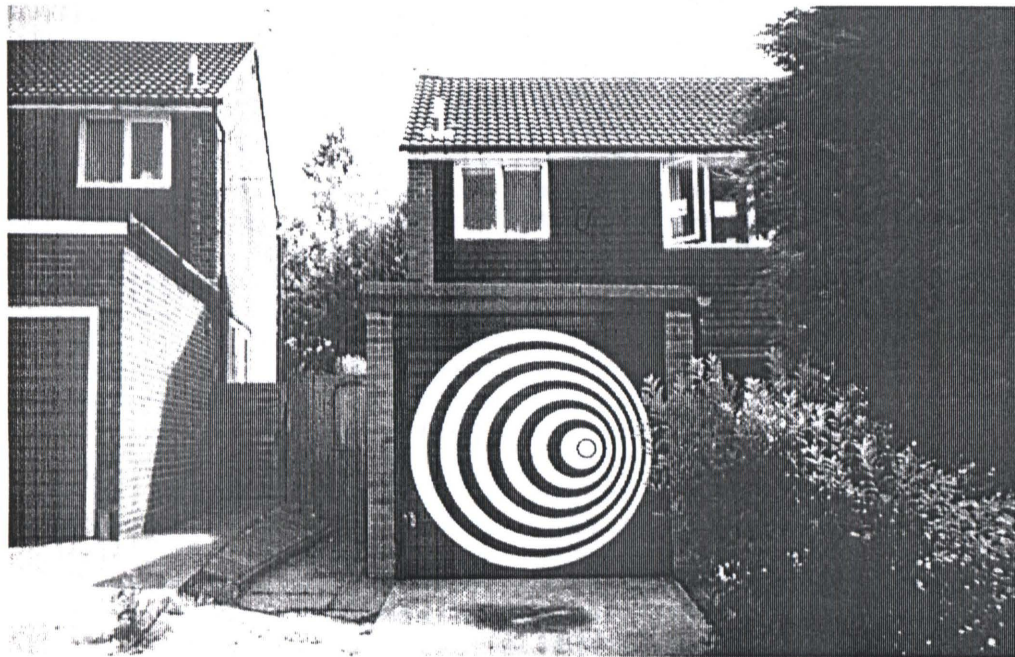
Yet more crop glyphs from 1997. Haslebury Plucknett, Woodborough Hill and Barbury Castle by LUCY PRINGLE. Oliver's Castle by STEVE ALEXANDER. HMS Mercury by JO BOURNE & DAMIAN BROTHERS.

Full colour original copies of their pictures can be obtained from Lucy at: 5 Town Lane, Sheet, Petersfield, Hants. GU32 2AF, tel. 01730 263454, and from Steve at: 27 St Francis Road, Gosport, Hants. PO12 2UG, tel: 01705 352867.
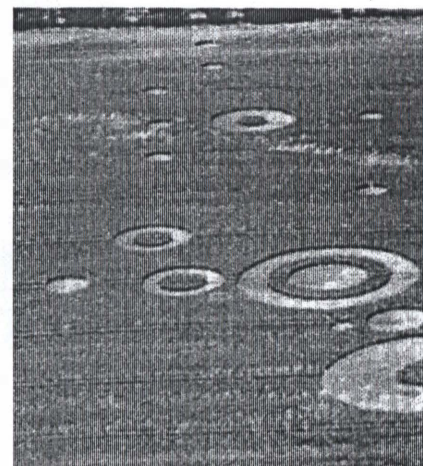
TOP: 'Maltese Cross', Haslebury Plucknett, Somerset.
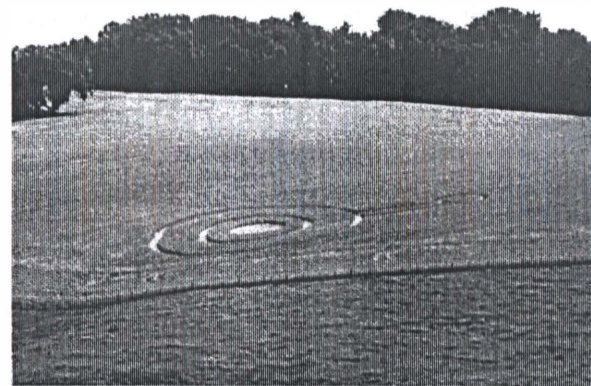
LEFT: Ringed dumbbell adjacent to the HMS Mercury base, West Meon, Hampshire. To our knowledge this is the only photograph of this formation, which slipped all nets. It's nearly identical to the 1997 dumbbell at Upham.

RIGHT: Barbury Castle, Wiltshire. Though crude, the radial burst in the circle is impressive.

LEFT: Man-made rings at Woodborough Hill, Wiltshire. These were the German's Koch and Kyborg's annual communication experiment with circle-making ETs. The ring positions denote astronomical information.

After seeing an illuminating lecture by Michael Glickman on the Koch Snowflake (which appeared twice as a crop formation in 1997) and how to make it (see diagrams), I realised that it would be fairly straightforward to construct from 'Polydron'. (Polydron are flat plastic triangles, squares and pentagons that clip together to make 2-D or 3-D shapes. Myself and my two sons, Mark (10) and Peter (7), have great fun with these building things like geodesic domes, icosidodecahedrons and snub-nosed cubes courtesy of John Martineau's superb book on geometry *A Book of Coincidence*. It's worth noting here that the boys' teachers have never quite been the same since Mark and Peter started building - and naming - these Platonic and Archimedean solids at primary school. Whilst other pupils were busy making cubes from just six square pieces, they were showing off their stellated dodecahedron with 12 vertices, 30 edges and

60 faces! So we set about making a Koch Snowflake and without too much bother came up with an exact 2-D representation, minus the strategically placed grapeshot. I then wondered whether it would be possible to fold up the 2-D snowflake and make a 3-D solid object. I tried for some time but could never quite get it to work, and left it with Mark.

After several days and many hours of frustration, I arrived home from work one night to find that at long last Mark had managed to join the whole thing up into a solid, three dimensional shape with 3-fold geometry and without any cheating! To the best of my knowledge, this is only one of the few times that a solid shape has been made directly from a crop formation. Peter reckons that the shape is actually the spacecraft that the aliens come in, and who are we to question that? *BR*
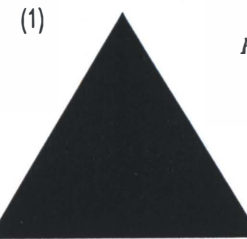
BELOW: *A Koch Snowflake, laid out on the carpet in 'Polydrons', coloured plastic pieces which fix together at the sides, making the whole pattern moveable.*

ABOVE: *Mark Reynolds holds the completed 3-D Koch Snowflake.*
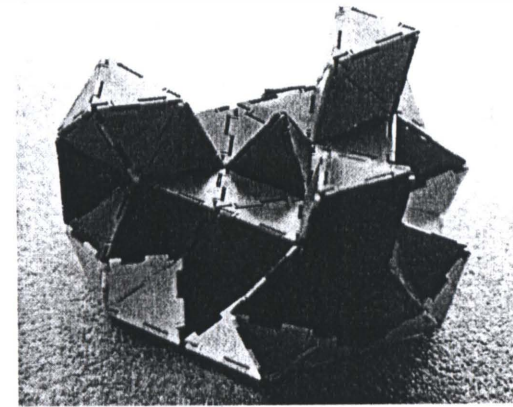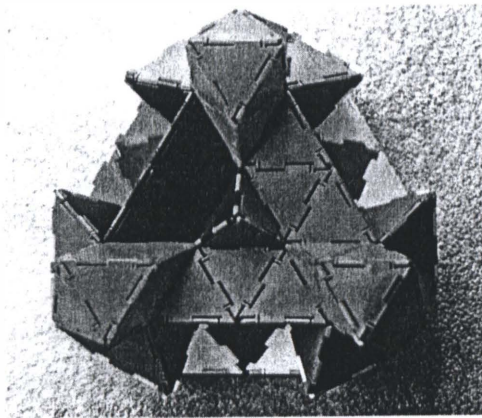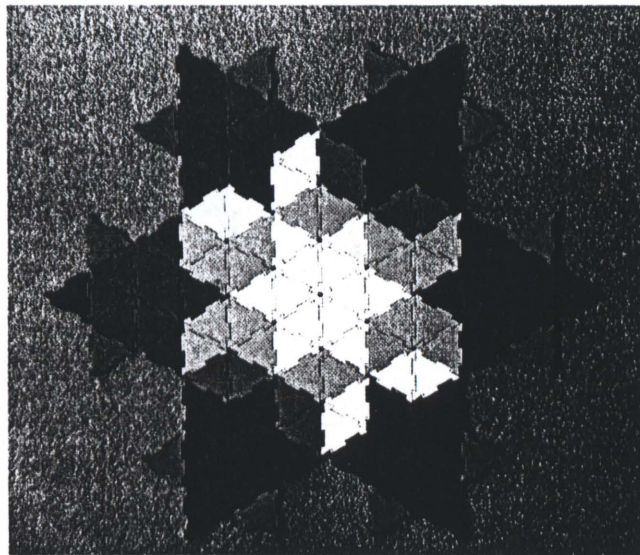
ABOVE (left and right): *Two views of the folded 3-D Koch Snowflake.*

Photos and diagram by BARRY REYNOLDS

How to build your own basic Koch Snowflake...

1) Draw a triangle.

2) Draw three smaller triangles, each with sides one third the length of the original.

3) Attach these smaller triangles to the centre of each side.

4) Now draw 12 even smaller triangles, each one with sides one third the length of the ones in step 2 (or one ninth the length of the original).

5) Attach these small triangles at the centre of each of the triangles created in step 3. Hey presto! Your very own Koch Snowflake, based on thirds. *BR*
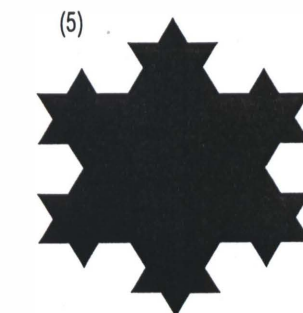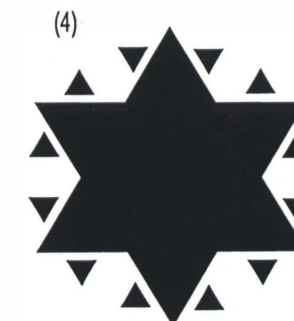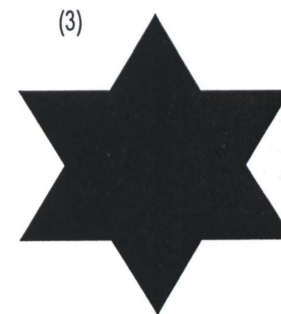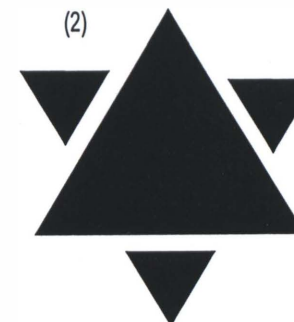
But if you think all this implies it would be pretty easy to knock up such a design in a field overnight, think again and read Martin Noakes' article on the next page...

(1)

(2)

(3)

(4)

(5)

KOCH 2-D

Drawing The Milk Hill Snowflake...

It sometimes isn't until one attempts to draw for oneself some of the more complex crop formations that the true genius of the designs hits home. The calculations and guidelines needed to accurately lay out configurations like the Milk Hill Koch Snowflake boggle the mind, as MARTIN NOAKES discovers...

Due to the workload that Barry Reynolds has, I recently offered to draw some shadow diagrams of the 1997 crop circles for use in the CCCS database.

Having been involved with research for a number of years and having attended some brilliant lectures on the geometry involved in the formations (including John Martineau and Michael Glickman), I wasn't really expecting any surprises. However, I can only urge each and every one of you to either use a computer, or geometry set, and attempt to draw any crop pattern you fancy (especially the more complicated ones). I guarantee you will receive a sense of awe and bewilderment at the time and thought needed to recreate these masterpieces.

The 1997 Milk Hill Koch Snowflake is the first crop circle I have dissected and rebuilt in this way. Having drawn the guidelines needed to mark the centre points of each component part, it becomes immediately apparent that these crucial guidelines are not present in the formation. But don't take my word for it, try it yourself. Opposite are three diagrams demonstrating the make up of the Milk Hill snowflake. Redraw it yourself with the added benefit of knowing where the guidelines go. If you still need convincing that something impressive and unexplained is going on in our fields please let me know why.

Remember every line drawn is flattened crop that cannot be resurrected! And don't forget to time yourself; it took me many hours to draw this formation with the aid of my computer.

The simplest way to create a six-pointed star is to draw a circle and divide it into six equal parts. This is easily achieved by using the radius of the circle. From a point anywhere on the circumference, using the radius length, mark another point on the circumference. Now move to the new mark and repeat the operation, making another mark on the circumference. Continue this process until you reach the original starting point (which will be slightly out, due to the fact that the circumference of a circle is divisible by the diameter by 3.142, otherwise known as Pi). Now draw lines joining up the circumference points by missing every other point (ie. from mark 1 to 3 and from 3 to 5, and from 5 to 1).

If you don't create the six-pointed star using the previously described method (as is the case in the field, due to the fact there is no circle encompassing the star), then you have to start using calculated angles and length measurements. Create an equilateral triangle by firstly drawing a base line, then take an equal length line from the end of the base line at an angle of 120 degrees. From the end of this line join up the two remaining 'open' ends and you have completed the triangle. Now repeat the process but this time rotating the new triangle 60 degrees. You now have a six-pointed star. As can be seen from the diagram the largest part of the formation is made up entirely using stars.

Notice in the close-up section of the perimeter the way that the outer grapeshot circles are positioned, and that parts of the 'stars' have to be missing. There's nothing random about them, and although the actual formation in the field doesn't match *exactly* what I have deduced, I believe there's enough evidence to suggest that this was the intention (how very arrogant of me!).

The reduction in size of each component part is by a factor of 2/3 or .666. The circles also share this same relationship.

The above describes only the geometrical make up of the Milk Hill snowflake. The intricate lay of the crop is another complexity in itself, as can be clearly seen in Steve Alexander's aerial shots.

The closer we inspect the formations, the further away we appear to be from revealing the creators of such staggering beauty, complexity and balance. *MN*

Koch-chai!

THIS PAGE: These examples show the many, many geometrical construction lines and calculations which would be needed to create the Koch Snowflake seen at Milk Hill (pictured) - even the surrounding grapeshot are not random in their positioning. Diagrams: MARTIN NOAKES
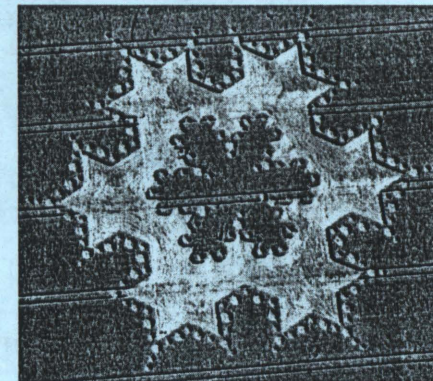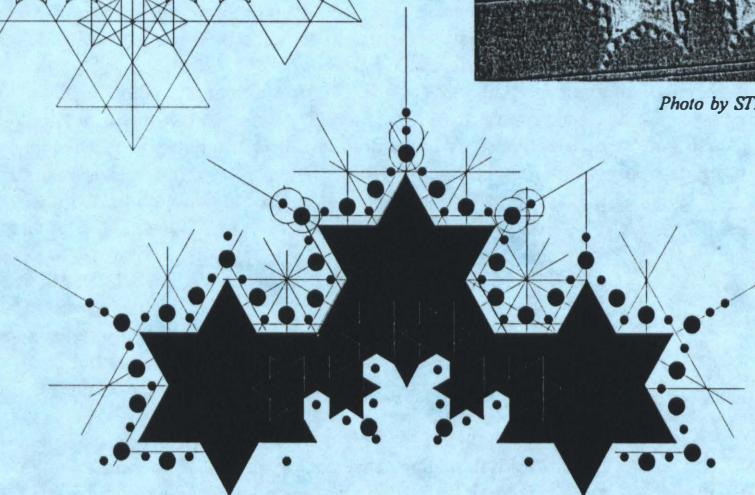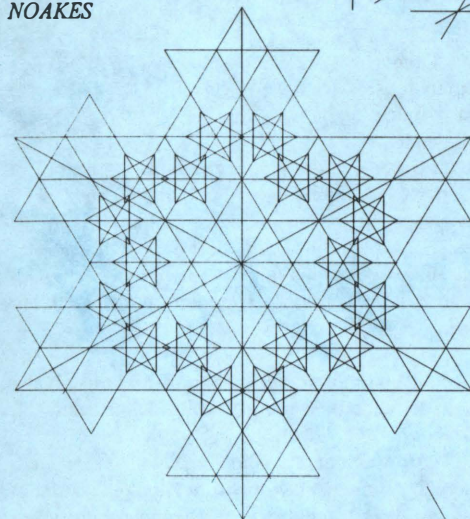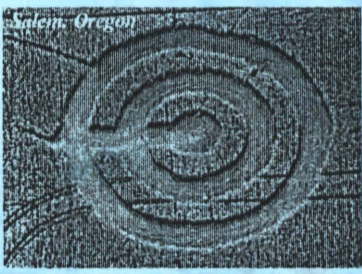

Photo by STEVE ALEXANDER

cornography

with Michael Glickman

Something of real significance has happened. Hands across the Cs!

It seems to be a given that crop circle activity is centred in Wessex but that they occur in many other countries. What has seemed to elude us is evidence of common authorship or a stylistic link. The non-English formations remind us, year-by-year, of design themes that were explored three or four years previously in Wiltshire and Hampshire. Occasionally, as in the wonderful Nemilkov, Czech Republic formation of two years ago or Drieschor, Holland, last year, there is an approach to a tentative link to current English circles.

America has long exhibited what appeared to be apprentice works. Formal ideas which were explored in depth in England some years ago were rehearsed - rather scrappily - in America. There was never any doubt that US circles were improving but I have been searching for some years for evidence that they were made by the same authors as the English ones.

In early June last summer the illustrated circle appeared in Salem, Oregon. It arrived on the land of farmer Wavra who was generally sympathetic but naturally anxious about unannounced public visits. The pattern is impressive for its clean graphic quality. An early visitor likened it to "two horseshoes". What I see is a letter C inside a larger letter C. This impression is confirmed by the positioning of the formation. If north is 'up' the Cs are in the correct orientation. What might CC stand for, I ask myself? (*Crop Circle? - Ed*)

The outer laid ring was anticlockwise, the inner clockwise and the central circle was anticlockwise. This, in itself, indicates a certain sophistication. However, a striking and unusual feature was the rather fleshy tendril to the east, like an extroverted belly button. All the visitors noted it and said that it seemed to be a deliberate and important part of the design.

The meaning of this tendril did not become clear until the West Clandon pictogram of about 9th August 1997 (featured on the cover of *SC* 72) appeared. On close examination - in fact on the most superficial examination - it was apparent that the two 'hands' on the eastern and western extremities were identical 'CC' replicas of the Oregon formation. Not similar, but identical.
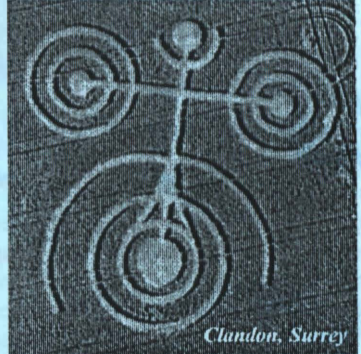
Clandon, Surrey

This, I believe, is the first occasion in the history of this bewildering phenomenon that we have seen such a specific formal link between the US and UK formations. Perhaps the fleshy appendage was indicating "Watch this space, I am growing". (*Salem photo by Keith Ardinger, Clandon by Michael Hubbard.*)

And now in a more down-to-earth vein I must make minor corrections to my esteemed editor's notes in *SC* 73.

The very important distinction between a maze and a labyrinth seems to have been overlooked. A labyrinth is unicursal, that is it has a single path which goes, normally, from the outside to the centre. One cannot get lost in a labyrinth. A maze, on the other hand, offers many routes, some of which lead nowhere. The function of a maze is to lose you. Thus the Bodenhausen circle is a labyrinth (as is Cissbury Ring) while Burghasungen is a maze. Mazes, being concerned with reasoning, are never sacred. Labyrinths, which offer no choices but encourage a contemplative state of mind, are often associated with the sacred.

This duality is important as - while mazes have occasionally occurred in the circles - the spirit of the labyrinth is often more apparent. *MG*