FIFTY PERCENT PROOF

You might feel like this about this book...

Some years ago there was a Seminar on Control Theory at the University of Leeds. The afternoon session began with a high-powered talk containing some very sophisticated mathematics. After the lecture had been going on for about ten minutes three latecomers entered the room. As luck would have it, the only vacant seats were in the middle of the centre row, and a few minutes passed before the late comers were able to squeeze their way to these empty seats.

Everyone settled down again and the high-powered lecture continued. It was noticed that the three latecomers seemed not at ease, and they began whispering to each other. After a few more minutes one of them stood up, interrupted the lecture and asked "Excuse me, but are we at the right lecture?" To everyone's embarrassment the answer was "Yes", they were at the right lecture.

Alan Slomson, University of Leeds.

You are reading the right book, so settle comfortably in your seat and enjoy it!

Quickest way to a million

People who do very unusual jobs indeed (30): The man who counts people at public gatherings, and everything else as well.

You've probably seen his headlines, "Two million flock to see Pope." "200 Arrested as Police Find Ounce of Cannabis." "Britain £3 billion in red." You probably wondered who was responsible for producing such well rounded-up figures. What you didn't know was that it was all the work of one man, Rounder-Up to the Media, John Wheeler. But how is he able to go on turning out such spot-on statistics? How can he be so accurate all the time?

"We can't" admits Wheeler blithely. "Frankly, after the first million we stop counting, and we round it up to the next million, I don't know if you've ever counted a papal flock, but not only do they all look a bit the same, they also don't keep very still, what with all the bowing and crossing themselves.

"The only way you could do it accurately is taking an aerial photograph of the crowd and hand it to the computer to work out. But then you'd get a headline saying "1,678,1634 [sic] flock to see Pope, not including 35,467 who couldn't get a glimpse of him", and, believe me, nobody wants that sort of headline."

The art of big figures, avers Wheeler, lies in psychology, not statistics. The public likes a figure it can admire. It likes millionaires, and million-sellers, and centuries at cricket, so Wheeler's international agency gives them the figures it wants, which involves not only rounding up but rounding *down*.

"In the old days people used to deal with crowds on the Isle of Wight principle. You know, they'd say that every day the population of the world increased by the number of people who could stand upright on the Isle of Wight, or the rain forests were being decreased by an area the size of Rutland. This meant nothing. Most people had never been to the Isle of Wight for a start, and even if they had, they only had a vision of lots of Chinese standing in the grounds of the Cowes Yacht Club. And the Rutland comparison was so useless that they were driven to abolish Rutland to get rid of it.

"No, what people want is a few good millions. A hundred million, if possible. One of our inventions was street value, for instance. In the old days they used to say that police had discovered drugs in a quantity large enough to get Rutland stoned for a fortnight. We started saying that the drugs had a street value of £10 million. Absolutely meaningless, but people understand it better."

Sometimes they do get figures spot on. "250,000 flock to see royal two", was one of his recent headlines, and although the 250,000 was a rounded up figure, the two was quite correct. In his palatial office he sits surrounded by relics of past headlines – a million-year – old fossil, a £500,000 Manet, a photograph of Mrs Thatcher's £500,000 house – but pride of place goes to a pair of shoes framed on the wall.

"Why the shoes? Because they cost me £39.99. They serve as a reminder of mankind's other great urge, to have stupid odd figures. Strange, isn't it? They want mass demos of exactly half a million, but they also want their gramophone records to go round at $33\frac{1}{3}$, 45 or 78 rpm. We have stayed in business by remembering that below a certain level people want oddity. They don't want a rocket costing £299 million and 99p, and they don't want a radio costing exactly £50."

How does he explain the times when figures clash - when, for example, the organisers of a demo claim 250,000 but the police put it at nearer 100,000?

"We provide both sets of figures, the figures the organisers want and those the police want. The public believes both. If we gave the true figure, about 167,890, nobody would believe it because it doesn't really sound believable."

John Wheeler's name has never become well known, as he is a shy figure, but his firm has an annual turnover of £3 million and his eye for the right figure has made him a very rich man. His chief satisfaction, though, comes from the people he meets in the counting game.

"Exactly two billion, to be precise."

Miles Kington in *The Observer,* 3 November 1986, contributed by Brian Cooper, and reproduced by kind permission of *The Observer.*
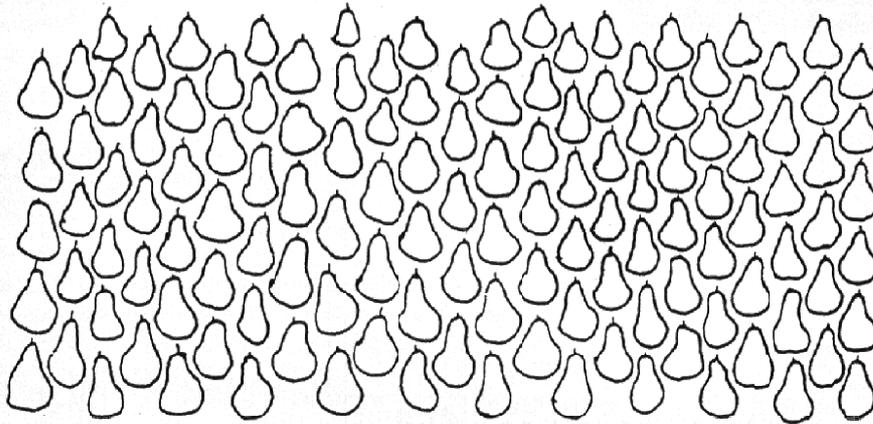
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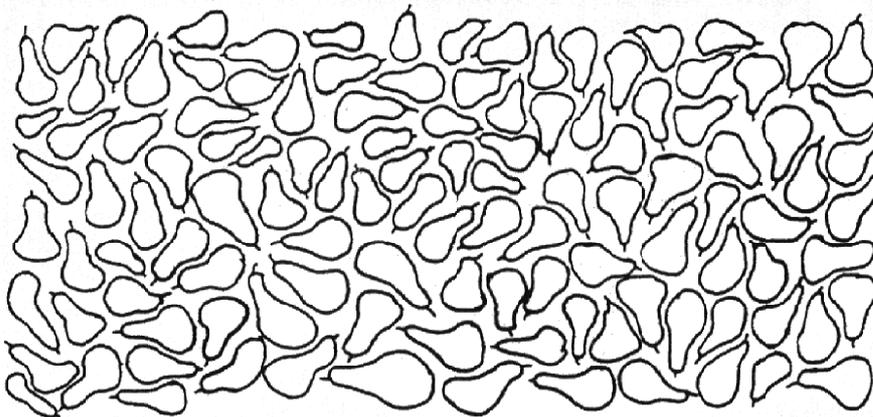
UNORDERED PEARS

Manifold, **Spring 1980.**

"If" (school certificate maths version)

If you can solve a literal equation
    And rationalise denominator surds,
Do grouping factors (with a transformation)
    And state the factor theorem in words;
If you can plot the graph of any function
    And do a long division sum (with gaps),
Or square binomials without compunction,
    Or work cube roots with logs without mishaps.
If you possess a sound and clear-cut notion
    Of interest sums with P and I unknown;
If you can find the speed of trains in motion,
    Given some lengths and "passing times" alone;
If you can play with R (both big and little)
    And feel at home with l (or h) and π,
And learn by cancellation how to whittle
    Your fractions down till they delight the eye.
If you can recognise the segment angles
    Both at the centre and circumference;
If you can spot equivalent triangles
    And Friend Pythagoras (his power's immense);
If you can see that equiangularity
    And congruence are two things and not one,
You may pick up a mark or two in charity,
    And, what is more, you may squeeze through, my son.

**IVH, in *The Times Educational Supplement*, 19 July 1947, contributed by A. R. Pargeter,
and reproduced by permission of the *TES*.**

A meal for Emile

I shall never forget seeing a young man at Turin, who had learnt as a child the relations of contours and surfaces by having to choose every day isoperimetric cakes among cakes of every geometrical figure. The greedy little fellow had exhausted the art of Archimedes to find out which were the biggest.

**J. J. Rousseau, *Emile*, p. 111. [Per L. W. H. Hull.]
MG, 1958, p. 108.**

A powerful conclusion

A lecturer at King's College, London, who claimed not to have had the benefit of a classical upbringing had always left off 'Q.E.D.' as a somewhat mysterious phrase and one showing an unwelcome degree of snobbishness. He preferred to end his proofs with W^5, which was an abbreviation for 'Which was what was wanted'.

**Contributed by Matthew Linton,
University of Hong Kong.**

From a mid-nineteenth century exercise book

I saw a tree with tempting fruit
Just sixty-five feet high
But a deep ditch that came between
Forbade me to come nigh

The ditch was fifty-two feet wide
Now I would gladly know
How long a ladder I must get
To reach the topmost bough.

And a modern response

Pythagoras' will tell you how
With theorem renowned
To reach unto the topmost bough
From down upon the ground.

Assume we have an upright tree
Set upon level ground,
Then at its base 'tis plain to see
A right angle is found.

So first we square the sixty five,
The fifty two the same,
And then the sum of these derive,
Its square root solves our game.

So by Pythagoras' great law
We need a ladder strong,
It must be near three inches more
Than eighty-three feet long!

From a nineteenth century exercise book in the University Library, Nottingham, with a solution by Keith Selkirk.
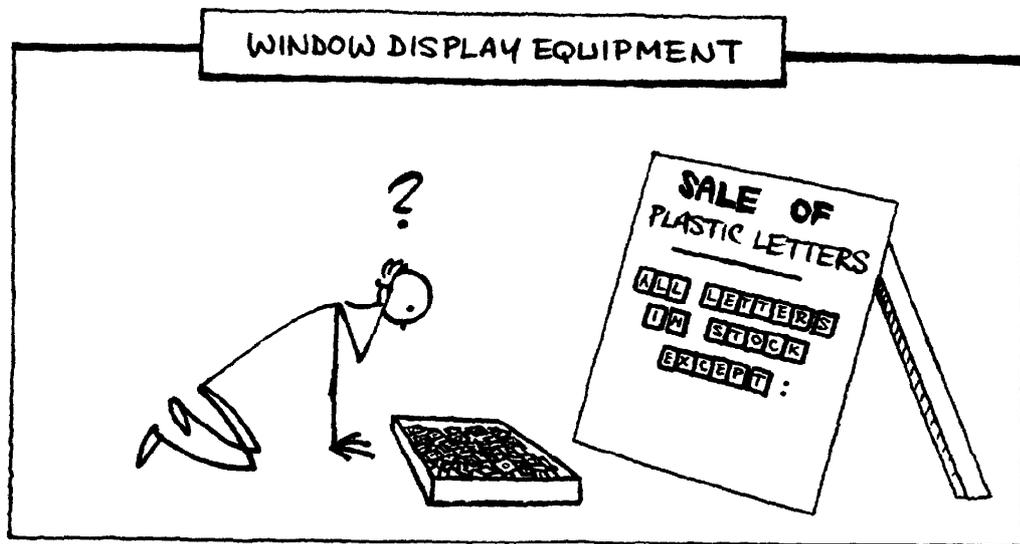
The best of Colemanballs

. . . and Dusty Hare kicked 19 of the 17 points.   *David Coleman.*

Bill Tindall has done a bit of mental arithmetic with a   *Ted Lowe.*
calculator.

The dart is almost diametrically in the middle of the treble   *David Lanning*
twenty.

53% of all cars coming into Britain for the first time are   *Monty Modlyn*
imported.

There's one minute sixty seconds to go.   *Eddie Waring.*

He made a break of 98 which is almost one hundred.   *Alan Weekes.*

Oh, that cross court angle was so acute is just doesn't exist.   *Dan Maskell.*

So that's 57 runs needed by Hampshire in 11 overs, and it   *Norman*
doesn't need a calculator to tell us that the run rate   *Demesquita*
required is 5.1818 recurring.

. . . and with eight minutes left the game could be won or   *Jimmy Armfield.*
lost in the next five or ten minutes.

And Ritchie has scored 11 goals, exactly double the   *Alan Parry.*
number he scored last season.

Attached to the bottom corner is a rope of infinite length.   *Gordon Burns.*

. . . and it's exactly nine minutes past nine – and that   *Tim Boswell.*
doesn't happen very often.

In those days, number two was in a funny sort of way, also   *Jimmy Saville.*
number one.

Mr C. V. Durell's "Genarith"

This prolific writer of mystery books - it would be wrong to call them "thrillers" - fully maintains his reputation in the work before us,* and the reader who delights in problems will find here a plenty. Who are the characters? How many of them are there? What is the plot of the story? These are some of the questions which the mysteriologist will approach with a simple interest which will intensify in proportion to his success in discounting the false clues with which the volume abounds.

Mr Durell has adopted a somewhat statistical and episodic style which does not make for easy reading; each incident is classified and numbered and presented in a completely objective and baldly matter-of-fact form in the minimum of words. The author's descriptive style is frankly lamentable and one feels that he has not succeeded in making his characters live. He veils them in an anonymity which cuts across the reader's sympathy, referring to them impersonally as "a man" or as "A, B and C"; thus it is not easy always to relate a character to the incidents of his career, more especially since the author gives no clue to the thought-processes or motives leading up to the events he narrates. He has, too, a disconcerting habit of suddenly shifting the locale of his story without the slightest warning. Thus on p. 141 an explorer investigating the sources of the Amazon appears to have been transported thither from the Ganges in the twinkling of an eye, and on p. 300 he gets himself unaccountably mixed up with Feddens and qirats in Egypt. There is similarly the Home Office inspector who travels vaguely round the country enquiring into the Local Government of unsuspecting towns, with especial reference to their finances – p. 142 Winchester, p. 268 Oxford, p. 386 Leeds, p. 388 Poole. These people certainly get about!

The main action of the book takes place in this country and in France, as we may deduce from the frequency with which the characters are called on to exchange English money into French and vice versa: the period was evidently before the war, since cigarettes were 20 for 1/- [5p] (p. 27). As might be expected, the most clearly defined personality is the villain. He begins in a small way as a barrow-boy, putting only 12 peaches in boxes ostensibly containing 18 (p. 30) and selling oranges two-ninths of which are bad (p. 42); the absence of any mention of nylons confirms our estimate of the period. Considering the company he keeps – in one chapter the words "common", "vulgar" and "improper" recur monotonously – how can he be expected to remain "integer vitae, scelerisque purus"? From his first petty defalcations he is able to make enough to buy a small milk round; he waters the milk and narrowly escapes well-deserved ruin when he spills some of it (p. 175). Even when he plays cricket he cannot refrain from falsifying his average (p. 236), and he advertises a car for sale claiming for it a performance far in excess of the truth (p. 116). For a time his career is obscure. There is a cryptic reference to a Derby run in record time (p. 237) on which he presumably wins a packet, since he gives a celebration dinner but fails to pay nearly half the bill (p. 256) though he spends £96 on shirts (p. 116). In an access of remorse he pays £1195 as conscience money to the Exchequer (p. 258), but he ends miserably with an overwhelmingly number of bankruptcy orders against him (p. 142).

A less clearly drawn character is a man who is Something in the City. His father encouraged him to save in his boyhood (p. 157), and later in his life he was able to do a little money-lending at $12\frac{1}{2}$% (p. 152). He has a setback when a bank holding some of his savings fails (p. 158), and after dabbling in insurance (p. 165) and bill discounting (p. 221) he loses money in two speculations

* Clement V. Durell, *General Arithmetic for Schools,* Bell, 21st impression, 1951, pp. xvi, 441.

obviously suggested by the villain (p.257). But he is not dismayed: some lucky deals in foreign stocks (p. 366) and a profitable foreign exchange operation (p. 398) set him on his feet. Only once does he fall foul of the law, when he is trapped by a policeman for travelling at 68 m.p.h. in a built-up area (p. 378).

We can do no more than mention the scientist with his germ-cultures (p. 147), the swimming enthusiast, who is always building swimming baths and emptying and refilling them (*passim*) or the College Youths whose sense of timing is poor (p. 13); but attention must be drawn to the book's most striking feature – the complete absence of love interest. On p. 50 there is certainly mention of a co-educational school where doubtless began a boy-and-girl romance which culminated in the marriage (on p. 51) of a man of 27 to a woman of 24, but there is not a word about the courtship nor of the outcome of the marriage except that it lasted 54 years and a hint that the wife joined a committee (p. 265); perhaps it was that Road Safety Committee which discovered that if you don't want to be killed on the roads you should not be a child under ten (p. 102).

A remarkable book: and if you think this review is sketchy see if you can do any better yourself!

B.A. Swinden, MG, 1955, p. 214.

Two plus two

Someone asked an accountant, a mathematician, an engineer, a statistician and an actuary how much 2 plus 2 was. The accountant said "4". The mathematician said "It all depends on your number base". The engineer took out his slide rule and said "approximately 3.99". The statistician consulted his tables and said "I am 95% confident that it lies between 3.95 and 4.05". The actuary said "What do you want it to add up to?"

Anon.
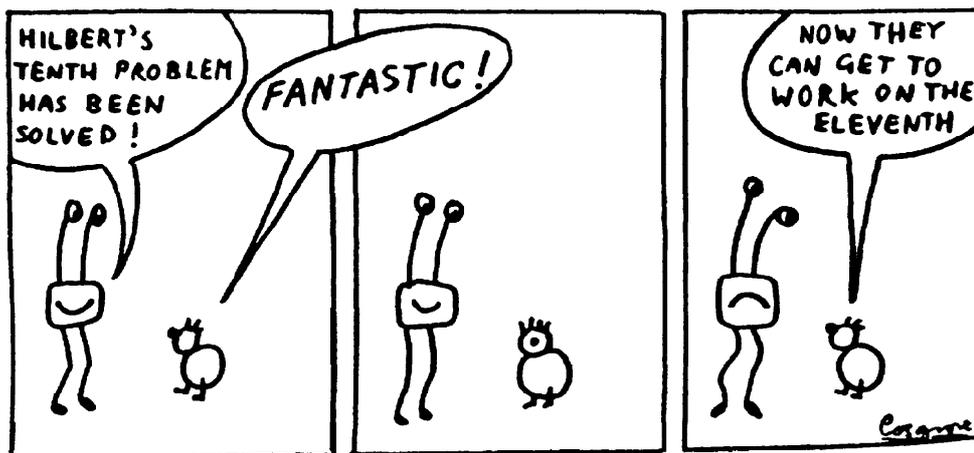
Manifold, Spring 1973.

<u>Special Advertisement</u>

APPLIED MATHEMATICS KITS

As a result of recent reconstruction, the School Mathematics Project has a large amount of material for disposal at reduced prices, and offers to interested readers the following

SUPERB SURPLUS KITS IN
<u>APPLIED MATHEMATICS</u>
STANDARD KIT

includes

1   uniform ladder, complete with rough ground and smooth wall
1   hemispherical bowl of radius a, supplied together with
1   uniform rod, of length $2a \sin \theta$, with perfectly rough ends
2   particles, connected by a light inextensible string
2   rigid, smooth, incompressible, and perfectly elastic spheres, of masses m and em (masses M and eM can be supplied if preferred).
1   hank uniformly flexible string
1   set assorted frictionless massless pulleys, in uniform box, guaranteed not to influence acceleration.

SPECIAL "DE LUXE" KIT

includes, in addition,

1   rigid body, complete with axis, of moment of inertia I (moments of inertia A, B, and C can be supplied at a slight extra charge).
1   isosceles wedge with different coefficients of friction on all three faces, complete with pulley at apex (a connoisseur's item)
1   bottle of resisting medium, capable of extending to approximately 550gt/2240k feet
$n + 1$ bricks, ready stacked in a pile with uniform overlap.

———————————

The whole ready packed in a perfectly rough hollow sphere of radius r and negligible thickness. Price $a + bx$, where a and b are constants and x is the distance from the orchard at Woolsthorpe, Lincs.

Sherborne School

H. M. CUNDY *et al*.
Advertisement in MG, 1963, p. 132.

<u>Approximations</u>

An approximate answer to the right problem is worth a good deal more than an exact answer to an approximate problem.

John Tukey, contributed by Stig Olsson.

<u>Ancient and modern</u>

While modern mathematicians use a function,

And young mathematicians use an iterative process, old mathematicians use their fingers!

Contributed by F. Tapson, Devon.

"We'll only do 72% of it, since it's been reported that 28% of all surgery is unnecessary."

Contributed by Stig Olsson.

Overdone

To err is human, but when the eraser wears out ahead of the pencil, you're overdoing it.

L. J. Pater, *Peter Prescription: how to be creative, confident and competent*, **Bantam, 1973,
contributed by Stig Olsson.**