

Astonishing mathematical invention

A NORTH London inventor has successfully applied a remarkable new mathematical technique, which — when used correctly — is capable of producing a prolific harvest of national and international publicity. The inventor, Mr Arnold Arnold of Cricklewood, went public in last week's *Guardian*, and featured in both a front page story and a lengthy inside feature on his new mathematics. The story did indeed gain him international publicity.

The Arnold technique relies on persuading students and journalists that a smattering of nonsensical algebra and geometry reveals methods of breaking international military and diplomatic codes and the firing sequences for nuclear weapons. Earlier and prestigious victims of the Arnold technique have included the *Far East Economic Review*, *Computer Weekly* and minor science magazines. Last week's *Guardian* story, which claimed that both international security codes and NATO's 'nuclear interlocks' were at risk, was, unhappily, the second time in two years that the paper's science editor, Anthony Tucker, has reported Arnold's claims to have made a mathematical discovery.

A year ago, Arnold Arnold wrote to the *New Statesman* claiming that the Government Communications Headquarters, GCHQ — which is responsible for British codes and cyphers — was taking action against him to suppress his discoveries. He sent us his 'unpublished' mathematical papers — the same ones that the *Guardian* has now reported on. They were nonsense. Asked to substantiate his claim that GCHQ was suppressing his work, Mr Arnold withdrew. He asserted merely that GCHQ was so threatened by his discoveries that they would have to suppress his work in the future.

No sources were quoted to support Mr Arnold's claims in last week's *Guardian*. Although Mr Arnold claimed that knowledge beyond 'present and possibly future computing ranges' could be achieved with the aid only of his special methods and 'any alphanumeric programmable calculator', ie a programmable pocket calculator, there was no note of the *Guardian* scepticism in the news story.

In fact, the mathematics is nonsense. Asked this week to explain the page of algebra which purported to prove Arnold's critical theorem, Mr Tucker acknowledged that he could not explain how any single line of the 'proof' could be deduced from previous lines. 'You've pointed out aspects that... I don't know what it means'. He agreed that two parts of the explanation of Arnold's 'discove-

ries' that he had published actually only 'proved' that $1=1$. But he maintained that he still believed that Arnold was right, although he suggested that the mathematics could better be explained by an Imperial College physics research student and Arnold disciple, Mr Geoffrey Kolbe.

Mr Kolbe told the *New Statesman* that he did believe Arnold's claims. Asked to explain how the proof in the *Guardian* worked, he eventually said that 'there seems to be a step being missed out here,' but did not have time to identify the missing steps.

Dr Andrew Hodges, a former King's College, London, mathematics research fellow who has just published a detailed and highly acclaimed study of the work of the wartime codebreaking genius, Alan Turing, said this week that the Arnold 'mathematics' was 'complete gibberish — there isn't a single coherent statement in it. The *Guardian*'s endorsement of this rubbish is dangerous in that it discredits serious comment on the applications of mathematics'.

Duncan Campbell

Red faces for Wandsworth Tories

JUST THREE months after sacking Pritchard Industrial Services for its failure to comply with the terms of a gardens maintenance contract, Tories on Wandsworth Council have picked a firm to replace it which plans to use fewer employees at lower salaries.

R. B. Tyler Ltd of Ware, the firm which has won the new contract, has spent the past few weeks helping clear the backlog caused by Pritchard's failure. Armed with this experience, the firm beat off its competitors by bringing in a tender which — at £428,000 for five years — is £175,000 lower than the same firm bid last year and £114,000 less than the Council's own official costing of the work involved. The Council's own direct labour force was not allowed to tender for the new contract — despite the fact that its bid last year was lower than any except Pritchard's.

Tyler's have now told Wandsworth they intend to use 30 workers on the contract during the summer — ten fewer than Pritchard's did — and to pay a basic hourly rate of £2.04 — which is £10 a week less than the average basic rate for Council gardeners, and less than the lowest local authority rate paid to Council cleaners. Charge hands will be paid a higher basic of

£2.48 an hour — but the company has not ruled out the possibility of introducing a piecework scheme similar to that introduced by Pritchard's last year, which led to a strike by their gardeners. Tyler's have also announced that the men will, at least initially, be expected to travel over 40 miles to work every day, in their vehicles, from the company's base at Nuthampstead, Hertfordshire.

One reason for the Tories' brinkmanship in accepting such a tender could be the delicate task they still face in recovering the extra cost of the new contract from Pritchard's, by whom they were originally indemnified. Negotiations are still taking place with Pritchard's, in an effort to prise from them the extra £65,000 that the new contract is costing the Council.

Further embarrassment could await Wandsworth's Tories in the coming financial year. Despite saving several million pounds by 'streamlining' some services and privatising others, Wandsworth's spending limit for next year has been cut by the government. The Council's share of Rate Support Grant has also been cut, by £1.4 million — which could cost the borough's ratepayers an extra 3½p in the pound.

Council Leader Paul Beresford — an advocate of rate capping — points out that if the Council increases its budgeted spending by five or six per cent, just to keep pace with inflation, ratepayers will suffer the loss of over £2 millions of grants, including penalties.

'This is a disappointing settlement for Wandsworth which offers dismal prospects for our ratepayers next year,' he commented recently, adding, 'it is madly disappointing that an authority with our spending record should still have to contemplate the possibility of penalties.'

Quentin McDermott

How the Sun inflated the Alliance

A REMARKABLE claim that Labour won back one-and-a-half million votes in the final two days of last June's general election has fuelled a blistering row in the small world of opinion pollsters.

The claim was made last weekend by John Clemens, managing director of the company that owns Audience Selection Ltd. ASL's final poll, conducted on Tuesday 7 June put Labour at 23 per cent, six points behind the Liberal/SDP Alliance. On 9 June Labour obtained 28 per cent, and the Alliance 26 per cent of the actual vote.

Since then, ASL's polls have been widely criticised for consistently over-estimating the Alliance's support during the campaign, and under-estimating Labour's support. ASL conducted

election polls for the *Sun*, TV-am, and the SDP. Critics say that ASL polled the public by telephone and failed to adjust its findings properly to the non-telephone-owning public, which is largely poor and Labour-voting.

At a conference last weekend at Essex University, where politicians, pollsters, academics and journalists discussed the election campaign, Clemens defended ASL's methods. In a paper to the conference, he claimed that ASL's poll had been correct at the time it was taken but 'there was a dramatic swing back to Labour on election day.'

If Clemens is right, Labour's support rose by 5 points in the final hours of the campaign. Since each point is worth 300,000 votes, that implies a last-minute gain of 1½-million votes. That would count as one of the most remarkable electoral phenomena of the century.

Since the Essex conference, new evidence has come to light to explain the discrepancy between ASL and the other pollsters. Professor Richard Rose of Strathclyde University has written a detailed critique* of last year's election polling. He criticises ASL's method of trying to correct for the biases in telephone polling:

It asked people how they voted in 1979. But this introduced a new set of difficulties, for measures of voting intention from four years ago are subject to error in recall.

Specifically, fewer people remember voting Liberal in 1979 than actually did vote Liberal. The consequence of failing to allow for this discrepancy was to exaggerate the number of new Alliance voters throughout the campaign.

Prof. Rose goes on to make a yet more damning point about ASL:

The Audience Selection sample greatly under-represented council-house tenants. Even after applying its standard weighting, which made no allowance for housing, council tenants constituted 21.4 per cent of their sample, compared to 29.5 per cent in the Gallup Poll campaign surveys, a figure consistent with census data.

In other words, ASL's working-class respondents had the wrong mix of home owners (too many) and council tenants (too few). Since working-class home owners are far less likely to vote Labour than working-class council tenants, it was inherent in ASL's methods that their figure for Labour's support would be too low. And if any wavering anti-Tory voter, reading in the *Sun* that the Alliance had overtaken Labour, decided to switch support, she or he would have done so on the basis of wrong information.

Peter Kellner

*Opinion Polls as Feedback Mechanisms: from cavalry charge to electronic media. Published by the Centre for the Study of Public Policy, University of Strathclyde.