Autumn 1994
Volume 5
Number 3
£5.00

USE YOUR HEAD

SYNAPSIA

THE INTERNATIONAL

BRAIN CLUB JOURNAL

MENTAL WORLD RECORDS

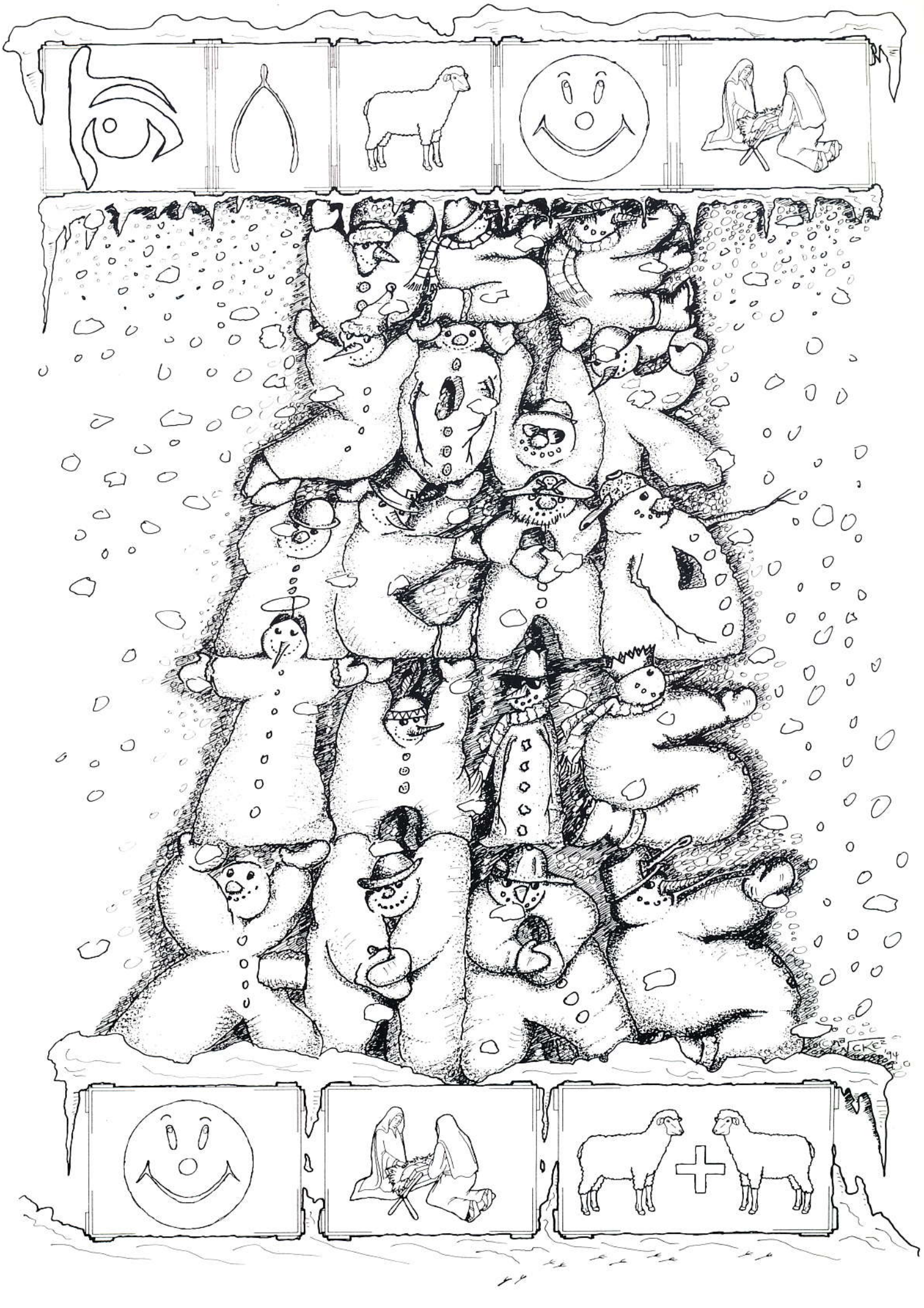
1994 OAG WORLD MEMORY CHAMPIONSHIPS

INTERVIEW • KEENE ON GENIUS

NEURAL NETWORKS

THE MNEMONS ARE COMING

RUNNING YOUR OWN BUSINESS



USE YOUR HEAD EDITORIAL

Food for Thought

The *Guinness Book of Records* is full of remarkable achievements and exerts a tremendous fascination for many people, some of whom have gone to extraordinary lengths in an attempt to gain themselves an entry. In this quest, a brave few have endured lengthy periods of time with ferrets down their trousers, while Michel Lotito (aka Monsieur Mange Tout) of Grenoble, France chose instead to achieve immortality by eating his way through ten bicycles, seven TV sets, a supermarket trolley and, for the *coup de grâce*, a Cessna light aircraft.

When Jonathan Hancock was 16, he also developed the ambition to carve his own niche in the book and so perused it at some length before lining up his target activity. Expressing a healthy concern for his physical well-being, as well as recognising his own gastronomic limitations, Jonathan chose to bypass the above methods and concentrate instead on the field of memory. Having always been interested in mental sports and card tricks, a world memory record seemed a natural objective.

The pursuit of this goal led him to compete in the World Memory Championships and in the previous two events, held in 1991 and 1993, Jonathan captured the silver medal. This year he went one better and clinched the ultimate prize, becoming the 1994 OAG World Memory Champion and defeating Mr Memory himself, Dominic O'Brien, in the process. Most observers, having seen Dominic in action in previous events, would have offered short odds on him retaining the title. Jonathan, however, upset the form book to register a brilliant victory. See our lead article for a full report of the dramatic conclusion to this year's championship.

Jonathan is 22 years old and comes originally from Middlesborough. He is currently living in Oxford, having just completed his English studies for which he received a first-class honours degree. He did not expect to win the memory championship this year, as his academic studies had left little time for training. He was hoping instead to gain second place and to use this as a springboard for a concerted effort at winning the event in 1995. However, a slip up in the penultimate round by Dominic O'Brien, winner of the previous two events, gave Jonathan the opportunity to forward his plans by a year, and he did not need a second invitation.

Jonathan trains his memory regularly, and is always on the lookout for new ideas for mnemonics and memory codes. In common with most other mental athletes, he is a firm adherent of *mens sana in corpore sano* (healthy body, healthy mind) being a keen swimmer and tennis player. He claims that his mental faculties are considerably sharpened after a session in the pool or on court.

The new World Memory Champion is currently juggling a number of activities including working at weekends for Oxford Radio. Radio work provides a good opportunity for putting memory to the test, since it involves a great deal thinking on one's feet. He is also writing a book on memory (to be published next July by Hodder and Stoughton) and is currently planning a number of talks on memory techniques which will be used as the basis of lectures to schools and companies. Jonathan's determination and clear vision has led to a World Championship title and a promising career. Where Monsieur Lotito's determination and vision will lead him is less clear.

THE BRAIN CLUB CHARTER

The Brain Club was incorporated on 15 May 1989, and became a registered charity on 23 November 1990. Its official charter states the Club's formal purposes:

A. To promote research into the study of thought processes, and into the investigation of the mechanics of thinking as manifested in learning, understanding, communication, problem-solving, creativity and decision-making.
B. To disseminate the results of such research and study.
C. To promote generally education and training in cognitive processes and techniques.
D. To develop and exploit new techniques in cognitive processes.

The editor welcomes contributions to *Use Your Head*. Please contact him at 23 Ditchling Rise, Brighton, Sussex BN1 4QL.

Xmas Card

The Xmas card on the facing page has been designed for the *Use Your Head* club by Neil McKee. The black and white format makes it an interactive greeting card, as it can be coloured in. The cards are printed on a cream background and are available in packs of 10 (price £3.00 including p&p) from the Brain Foundation at the Marlow address overleaf. Each pack comes with an A4 duplicate, which can be copied and used as a fax header or greeting.

USE YOUR HEAD Vol 5
No 3 Autumn 1994

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The editor reserves the right to shorten, amend or change any contribution accepted for publication. If you would like articles returned, please include an appropriate SAE.

The term and concept Mind Map referred to in this publication is a trademark.

Pécub, the world's fastest brain cartoonist, is happy to provide cartoons based on your ideas and requests.

Design, artwork and typesetting by Byron Jacobs.

Printed by Berforts
8 London Road
St Leonards-on-Sea
East Sussex TN37 6AE

Genius photos: *Hulton Deutsch*
Joan Bland Mind Map: *Neil McKee*

Special thanks to Cassandra Kinsman for typing work.

21st April 1995
See Use Your Head Club News

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Brain News

GENIUS Beats Genius

Last issue we reported the success of the Fritz3 computer programme in an international blitz chess event in Munich, where it finished runner-up to Garry Kasparov. In London early in September the Genius program, running on the same Pentium processor as Fritz, went one better, sensationally defeating the world champion in a two-game rapidplay mini-match at the Intel-sponsored Grand Prix event. Although the computer's run was eventually brought to an end in the semi-finals by the Indian Grandmaster Viswanathan Anand, its performance clearly represents another major breakthrough in computer chess. What price a computer 'world champion' by the year 2000?

Mind Sport First

In the related mental sport of draughts, however, a computer program has, for the first time in the history of any mind sport, won the world championship itself. Chinook, a program devised by Professor Jonathan Schaeffer of the University of Alberta in Edmonton, Canada, has been declared world draughts champion. In the championship match at Boston, USA, in August, Chinook's opponent, the world draughts champion Dr Marion Tinsley of Atlanta, withdrew from the contest after six hard fought draws, citing ill-health. Tinsley had been champion since 1954 and no previous opponent had remotely come close to challenging him successfully. Dr Tinsley, a devout Christian, had also been visibly depressed by a vision of God appearing to him personally in a dream before the championship, in which God had said: 'I love Jonathan too.'

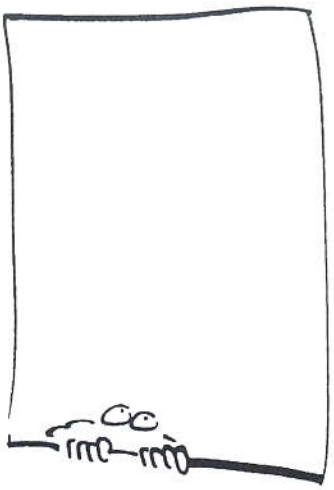
Forbidden to continue the contest by his doctors after six games, Dr Tinsley conceded the world title to Chinook, thus creating a landmark in the history of mind sports, the first ever computer world champion. Chinook promptly accepted a fresh challenge for its world championship title from the reigning US open champion, Grandmaster Don Lafferty of Kentucky, who flew in to Boston in a last ditch attempt to reclaim the world title for humanity. Lafferty, a 61-year-old former physics teacher, is Dr Tinsley's natural successor. He is the only other player in the world to be regarded as in the same class as both Chinook and Tinsley and studied for 30 years under the 67-year-old former human champion. The new challenge lasted for 20 games and resulted in one win each to the human and the computer with 18 draws. Although Lafferty fought Chinook to a standstill he failed to win a majority of points, so Chinook retains the championship title.

Mozart's Musical 'Theft'

A remarkable piece of musical detection was recently carried out by Alison Robertson, an 18-year-old Yorkshire schoolgirl. In her A level dissertation she reveals that the central theme to Mozart's famous unfinished Requiem was borrowed from Pergolesi's Stabat Mater. Although there are hundreds of Mozart experts around the world, none had made this connection, which Alison came across while preparing to sing in a school concert. While recognising that this is an important discovery, scholars have been quick to rush to Mozart's defence, pointing out that this is a rare case of plagiarism by Mozart, and Alison herself believes that it may have been sub-conscious rather than deliberate.

Dr Linus Pauling

One of the greatest scientists of the twentieth century, Dr Linus Pauling, died recently. Pauling, the only man ever to win two Nobel prizes outright, established his reputation with his pioneering work on chemical bonding and molecular structure in the 1920s and 1930s, for which he was awarded the Nobel prize for chemistry in 1954. He was also one of the major campaigners against nuclear tests in the atmosphere in the 1950s and 1960s, and was Nobel peace prize winner in 1962. He continued to work right into his nineties, either at his ranch or at the Linus Pauling Institute of Science and Medicine in Palo Alto, near San Francisco.



1994 OAG WORLD MEMORY CHAMPIONSHIPS

We all know what happens at the annual memory championships: all the contestants try their best, but Dominic O'Brien breaks all the world records and walks away with first prize. This year, however, Jonathan Hancock decided to rewrite the script. Raymond Keene reports.

The World Memory Championship was inaugurated in 1991, when it was won by Dominic O'Brien. Two years later the second World Memory Championship attracted mnemonists, memorists and memory record holders from across the globe, and once again Dominic O'Brien took the title. So dominant was his performance that the Brain Trust Charity, which monitors superlative mental performance, awarded him the accolade 'Brain of the Year' (sharing the title with the United States prodigy Lana Israel).

For the 1994 World Championships, sponsored by the travel management firm OAG and held at Simpson's-in-the-Strand in

Jonathan Hancock receiving his award.

the heart of London, Dominic O'Brien was once again the favourite. After 9 of the 11 rounds he had established a commanding lead. In the process he had smashed a number of the individual records that he himself had set in former years. Dominic's new records included an unprecedented memorisation of no less than 142 consecutive spoken digits, memorisation of 1080 random digits in just one hour, accurate recall of 494 playing cards in sequence and an amazing ability to memorise no less than 1296 binary digits without error (binary digits are 0 and 1 in random order on a page).

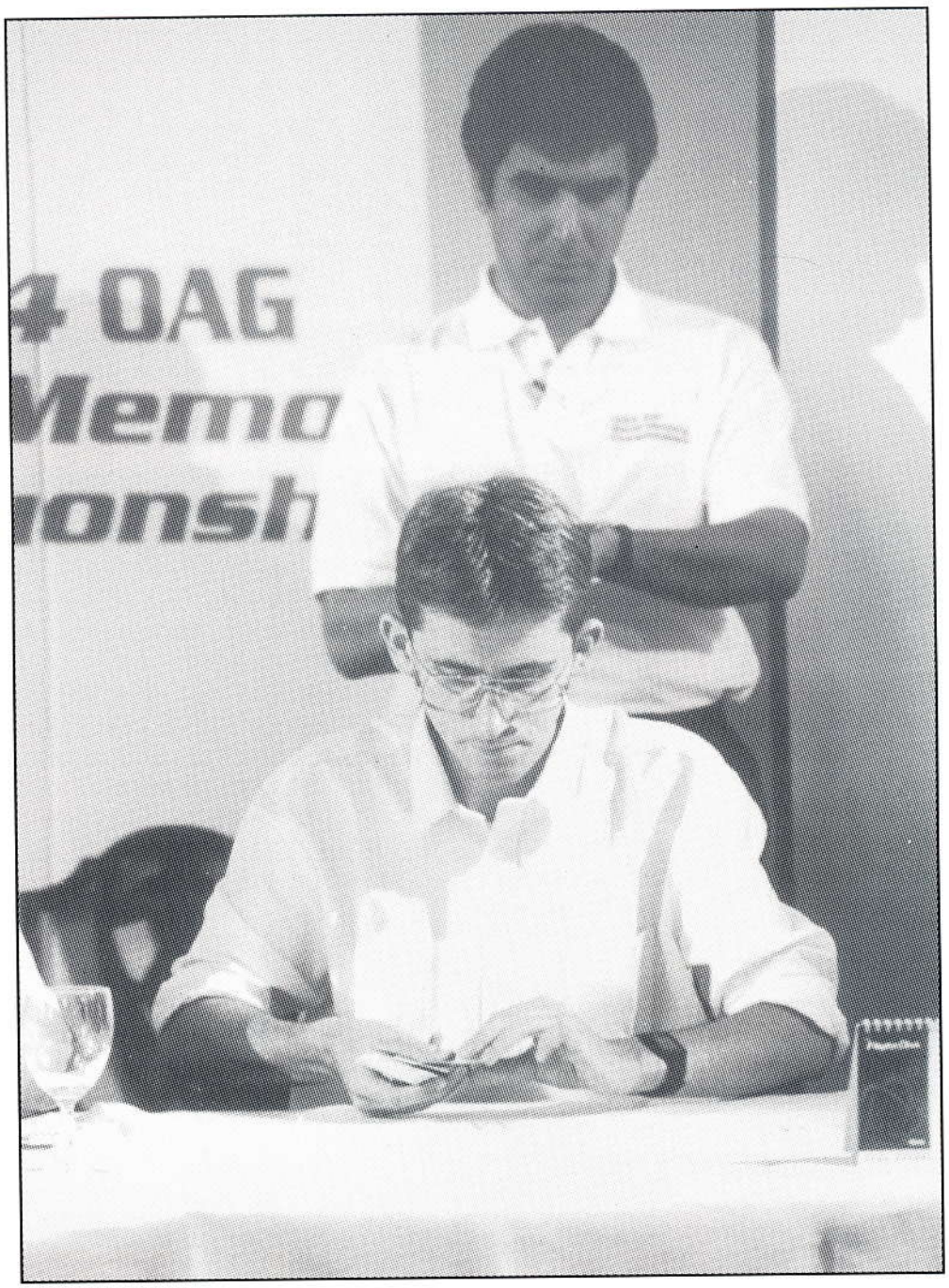
Then, with the predicted easy victory within his grasp, O'Brien stumbled in the 'Round the World in 80 Days Flight Challenge'. Sponsored by the Official Airlines Guide of Reed Travel Group, the major backers of the 1994 Championship, and devised by Tony Buzan, the 'Flight Disk Challenge' required memorisation of 800

items of travel information in just half an hour. If correctly recalled, this complex yet functional itinerary would enable the memorist to circumnavigate the planet in precisely 80 days.

When the results were read out, a sensation was in store. Dominic O'Brien had mistaken a digit at the very start of his mental journey and had virtually 'crashed' on take-off from London Heathrow Airport, thus scoring essentially zero points for this competition. Meanwhile, his great rival Jonathan Hancock, a first-class honours degree student from Oxford, and silver medal-winner in the first two Memory Championships, had memorised an amazing segment of his journey, sweeping him across the Atlantic into the United States, down through Latin America and back, via the Caribbean, to America's west coast. Declared the triumphant winner of the 'Flight Disk Challenge', Hancock had now shot into the lead, albeit a narrow one, in the overall standings.

Everything now rested on the final test, speed memorisation of a single shuffled pack of cards. Traditionally, this was O'Brien's strong suit, a field of mental combat in which, time and again in earlier contests, he had obliterated the competition. By winning the card sprint, he could still salvage his title.

After just 58 seconds Hancock signalled that he had completed his task. This was an amazing time, but had he, in his haste, perhaps mistaken a card?



As spectators gathered for the final showdown, Hancock seemed understandably nervous. Starter's orders were given and Hancock sped through the cards, pausing only for micro-seconds, yet with visibly trembling hands. After just 58 seconds Hancock signalled that he had completed his task. This was an amazing time, but had he, in his haste, perhaps mistaken a card?

After a further 22 seconds O'Brien indicated that he too had memorised his pack. The tension was now unbearable as the invigilators painstakingly checked the two rivals' answers. Then, the final announcement! Under championship conditions Hancock had set a new world record for perfect speed memorisation of a pack of cards. The packed tournament hall erupted into thunderous and prolonged applause. Jonathan Hancock was the new World Memory Champion.

MEMORIAD '94

Competition by Competition Results

	1 One Hour Random Digits			2 Names and Faces			3 Random Words			4 Spoken Numbers			5 One Hour Card Recall			6 Five Minute Speed Number		
Jonathan Hancock	780	2	90	**140**	**1**	**110**	100	2=	90	60	2	90	384	2	90	140	2	90
Dominic O'Brien	**1080**	**1**	**120**	133	2	100	102	1	100	**142**	**1**	**150**	**494**	**1**	**120**	**157**	**1**	**110**
James Lee	380	5	60	81	3	80	53	4=	70	34	3	80	182	4	70	60	7	40
Sue Whiting	290	7	40	45	6	50	53	4=	70	24	5	60	114	6	50	42	9	20
Natacia Diot	40	11	10	34	8=	30	0	10=	15	18	7=	40	52	9=	30	72	4	70
Ian Docherty	230	9	20	30	11	10	35	8	30	29	4	70	56	8	40	54	8	30
Melik Duyar	411	4	70	29	12	5	0	10=	15	0	12	5	199	3	80	29	11	10
Patrick Colgan	260	8	30	80	4	70	100	2=	90	6	10	15	26	11	15	64	5=	60
Philip Bond	430	3	80	40	7	40	33	9	20	14	9	20	52	9=	30	90	3	80
Kenneth Wilshire	0	12	5	34	8=	30	53	4=	70	20	6	50	1	12	10	35	10	15
Creighton Carvello	330	6	50	73	5	60	50	7	40	3	11	10	156	5	60	64	5=	60
James Longworth	60	10	15	31	10	15	0	10=	15	18	7=	40	0	13	5	20	12	5

	7 Images on Screen			8 One Hour Binary Numbers			9 Poem			10 OAG Flight Disk Challenge			11 Speed Card Recall			Total Pts	Rank
Jonathan Hancock	30	3=	90	1140	2	100	114	2	90	149	1	110	**58.79**	**1**	**130**	**1080**	**1**
Dominic O'Brien	26	7	50	**1296**	**1**	**110**	102	4	70	12	11	10	85.36	2	100	**1040**	**2**
James Lee	29	5	70	555	4	70	34	10	15	54	7	40	52c	4	70	**665**	**3**
Sue Whiting	28	6	60	408	5	60	50	8=	30	59	5	60	20c	7	40	**540**	**4**
Natacia Diot	32	2	100	198	11	10	**149**	**1**	**120**	32	9	20	34c	5	60	**505**	**5**
Ian Docherty	30	3=	90	393	6	50	50	8=	30	61	4	70	21c	6	50	**490**	**6**
Melik Duyar	**34**	**1**	**110**	345	8	30	58	7	40	90	3	80	15c	8	30	**475**	**7**
Patrick Colgan	22	11	20	273	10	15	106	3	80	56	6	50	2c	11=	15	**460**	**8**
Philip Bond	25	8=	40	750	3	80	18	11	10	4	12	5	6c	10	20	**425**	**9=**
Kenneth Wilshire	25	8=	40	390	7	40	72	5	60	121	2	90	2c	11=	15	**425**	**9=**
Creighton Carvello	17	12	5	180	12	5	11	12	5	35	8	30	183	3	80	**405**	**11**
James Longworth	23	10	25	294	9	20	60	6	50	17	10	15	2c	11=	15	**220**	**12**

Notes

The first column shows the participant's score in that event, the second their position and the third their points score for the Memoriad competition.

Scores given in bold indicate a new world record.

For event 11, the time taken to memorise the pack of cards is given (in seconds). If the contestant failed to memorise the whole pack, then the number of cards successfully recalled is given. This is indicated by a 'c' after the score.

Philip Chambers competed in two events. In event 5, he scored 104, coming 7th and in event 11, he scored 10c, finishing 9th.

MEMORIAD '94

The Events

1 Random Digits (1 hour)
Contestants recall this number by writing it down. The arbiter then checks this number against the original, with digits being ticked or crossed accordingly. At the end of each line of 40 digits a note is made of how many mistakes there were in the line. No mistakes scores 40 points, one mistake scores 20 points and more than one mistake scores zero points. The line scores are totalled for an overall result.

2 Names and Faces (15 minutes)
Faces are presented to the contestants in a certain order with corresponding names underneath. They are then presented in a new order without names. Contestants mark the names on the new sheets, and score one point for each name correctly recalled.

3 Random Words (15 minutes)
Words are presented in columns of 50 and numbered. Contestants need to recall words in sequence by writing them down. The columns are scored as follows: no mistakes scores 50 points, one mistake scores 25 points and more than one mistake scores zero points. The column scores are totalled for an overall result.

4 Spoken Number (30 minutes)
Contestants recall this number by writing it down. The score is considered as the number of digits correctly recalled before a mistake is made. The procedure is repeated three times, only the best score counting.

5 One Hour Card Recall (1 hour)
Contestants are given one hour to memorise as many of 12 packs of cards as they can. No mistakes in a pack of cards scores 52 points, one mistake scores 26 points and more than one mistake scores zero points. The scores for the individual packs are totalled for an overall result.

6 Speed Number (5 minutes)
Contestants recall this number by writing it down. The scoring system is the same as for competition 1.

7 Images on Screen (10 minutes)
Contestants are given 24 images which they have to memorise. They are then given a further 100 images of which the original 24 are a part. As each image is presented, the contestants are asked to note whether or not this image has been presented previously. They receive one mark for getting this correct. They receive an extra mark if they can note whether this image has been presented the same way round as previously or not.

8 Binary Number (1 hour)
Rules as for competition 1.

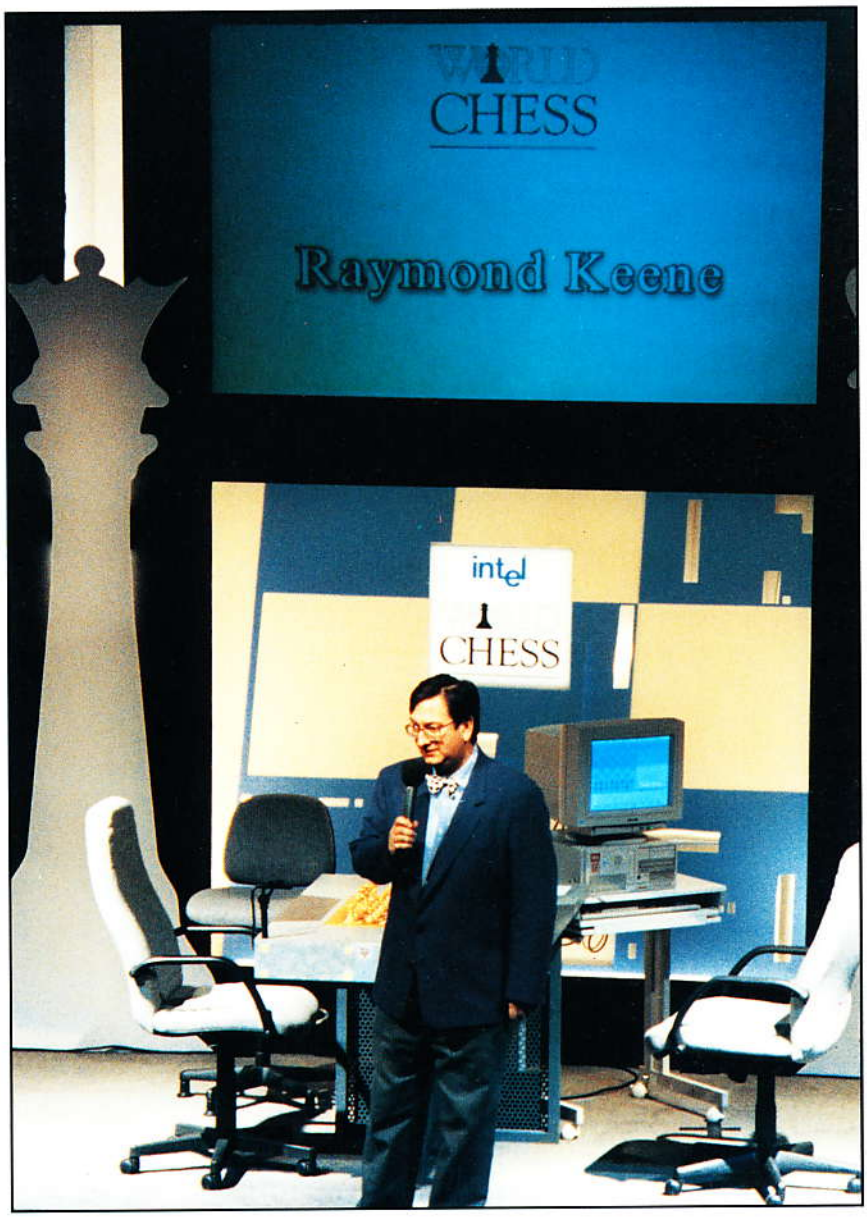
9 Poem (15 minutes)
A poem specially written for the event by Ted Hughes, the Poet Laureate. Contestants are given 40 lines of text to memorise. They then recall this text by writing it down, including punctuation. If a contestant makes any error in a line, that line is scored as zero. A perfect line scores as one point.

10 OAG Flightdisk Challenge (30 minutes)
A new event. Contestants memorise an imaginary 'Around the World in 80 Days' trip containing over 800 pieces of data featuring 32 countries, 5 continents, 40 airports, 45 flights, 6.23 flight days, 149.57 flight minutes, 8,974 flight seconds and 72 nights in hotels. Points are rewarded according to how 'far' contestants travel.

11 Speed Card Recall (5 minutes)
Contestants are handed a shuffled pack of cards by the arbiter. Stopwatches are set to zero and started in synchrony. When contestants have finished memorising the pack, they raise their hand and the watch is stopped. Contestants score only as much of the pack as they correctly recall, e.g. remembering the whole pack in one minute, but failing on the 25th card scores 24 points.

KEENE ON GENIUS

Raymond Keene OBE, International Chess Grandmaster, has written over 80 books on chess, the world's most popular mind sport. He is chess correspondent of *The Times* and *The Spectator*, was the organiser of the world chess championship between Garry Kasparov and Nigel Short in 1993, and is co-founder of the Mind Sports Olympiad. He has made numerous radio and TV broadcasts in the UK and USA and can play and win 100 chess games simultaneously. His most recent project was joint authorship (with Tony Buzan) of the *Book of Genius*. Byron Jacobs spoke to him about this project and his thoughts on genius.



B How did you and Tony get together?

R Tony organises numerous international training courses around the world. Included amongst these are specialised courses for business leaders which are run by Management Centre Europe. During these Tony likes to introduce the idea of mental sports, especially chess, and one way of doing this is by having a simultaneous chess display as a demonstration of the power of the left and right hemispheres of the brain.

These displays used to be done by Jan Rooze, a former Belgian champion and an employee of MCE, but in 1990, Jan was unable to attend one of the weekends. Therefore, one of the secretaries, Mrs Webb, was assigned the task of finding a replacement. Mrs Webb's son Simon, aged 8, suggested contacting Raymond Keene, whose articles he had seen in *The Times*. I was thus engaged for the remainder of the lectures.

(Tony's version of the original meeting is revealing: 'I had been a follower of Ray's work for some years and when I was asked if I minded having him as a replacement to do the chess displays, I was astounded. It was as if I was arranging a talk by a boxing champion and had been asked if I minded having Muhammed Ali give the talk instead of the local league second division champion. The first weekend was a great success and within one hour of meeting, we had decided to work together.' - Ed.)

B Tell us about the background to the *Book of Genius*.

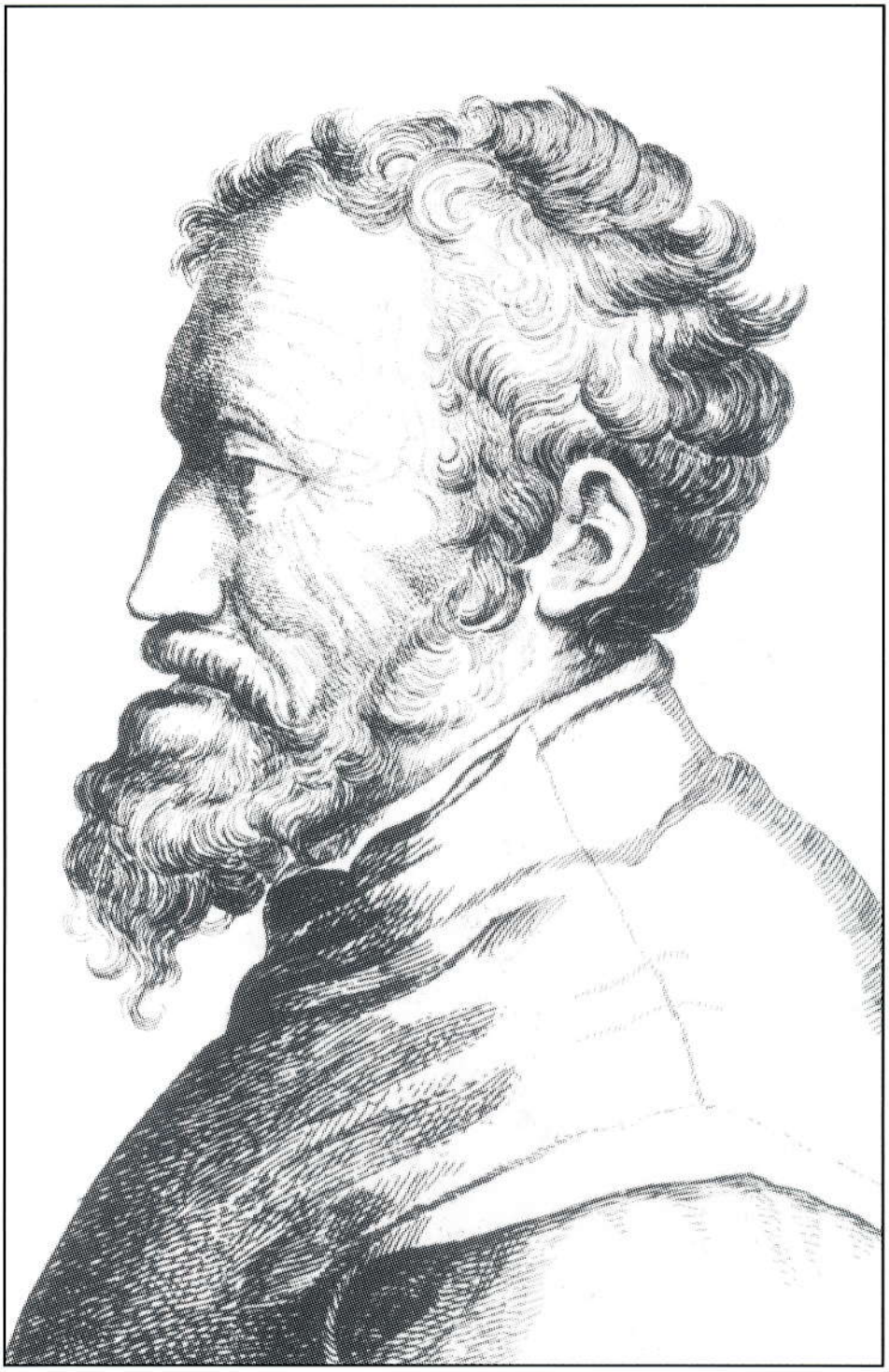
R For Tony, the *Book of Genius* has been a work in progress for many years, as he originally had the idea as a teenager. He has been collecting mental world records and studying deeply the characteristics and nature of genius for 25 years. My role in the book was originally envisaged as being Chairman of the Panel of Experts monitoring the mental world records. However, when we put together specific proposals for the book, the eventual publishers, Random House, said they wanted more material on the great geniuses of history. This section of the book therefore expanded dramatically in size and my role similarly increased as I was responsible for the research and writing of this section. Tony and I therefore became joint authors.

B What would be your definition of genius?

R This is actually given in the book. It encompasses many features which the great minds have in abundance. Amongst them are the following: mental and physical strength - even those geniuses who are physically weak find the strength to carry out their tasks (Stephen Hawking, for example, should, according to medical opinion, have died 20 years ago), a recognition of the truth - many people waste energy pursuing false theories or ideas, a love of the task, faith, vision, desire, commitment, planning, the ability to bounce back from mistakes, subject knowledge, a positive mental attitude, imagination, courage and energy.

B What are the most remarkable mental feats of modern times that you have seen?

R One of the most extraordinary examples of mental achievement I have ever witnessed was Dominic O'Brien in action at the Memoriad in 1993. Amongst numerous other feats, he recalled 100 digits (spoken at the rate of one every two seconds) perfectly on two occasions. When I first saw this, I nearly fell off my chair - I had never seen anything like it and, intellectually, I found it quite difficult to accept that it was possible. I have seen brilliant chessplayers, such as Kasparov, producing phenomenal combinations, but I think that what Dominic achieved was the equal of any of these. In the first Memoriad in 1991, Dominic had achieved some impressive results, but now he was suddenly remembering something like 1000 digits when previously it had been 200, or eight packs of cards instead of two. When I first saw it done, I was completely awe struck.



Buonarotti Michelangelo - gerontological marvel.

Horatio Nelson - amateur hunter of polar bears.

B What about achievements in a historical context?

R There are many different things that struck me about many different people. Here are a few examples:

Gerontological Marvel

I was very impressed by Michaelangelo's achievement in constructing the Dome of St Peter at the age of 81. The Pope commissioned him for the task and, rather than whingeing about being too old or tired, he simply got on with it and produced one of the most brilliant works of art in history.

Nelson's Courage

I was also very struck by the complete disregard that Nelson had for his own physical safety. At the age of 15 he was a midshipman in the Royal Navy and decided that he wanted a polar bear skin. He therefore simply went off with a gun and hunted for one and ended up having to be rescued from this over-ambitious pursuit. He used to take the most incredible risks with his own personal safety and just didn't seem to care. He was often to be seen wearing full dress uniform in the middle of a battle.

Attention to Detail

Napoleon had a phenomenal ability to assimilate and process information. He was an extraordinarily successful general but still found time to run France while he was waging his campaigns and fighting battles. He had a carriage with a portable bed and desk and used to examine all the government documents that came his way. He would often query the most insignificant of details, spotting, for example, a tiny discrepancy in the tax accumulated from the sale of bales of corn in Rouen, while simultaneously organising his forces for the Battle of Austerlitz. He had an incredible capacity to absorb information and act upon it.

To the Ends of the Earth

A fact which is not often appreciated about the explorer Christopher Columbus is that he was the first voyager to risk leaving the coastline. Nobody, doubtless concerned that they might not find their way back or fall off the edge of the earth, had ever done this before. The only possible precedent were the Polynesian seafarers who did branch out but tended to hop from island to island rather than out into the ocean. Columbus's great navigational insight was that the trade winds worked in both directions and so he was confident that he had a means to return to his base. If you examine the maps of the voyages of discovery, Columbus is the

Horatio Nelson - amateur hunter of polar bears.

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first seafarer whose routes went out at right angles to the shoreline.

Blind Zizka

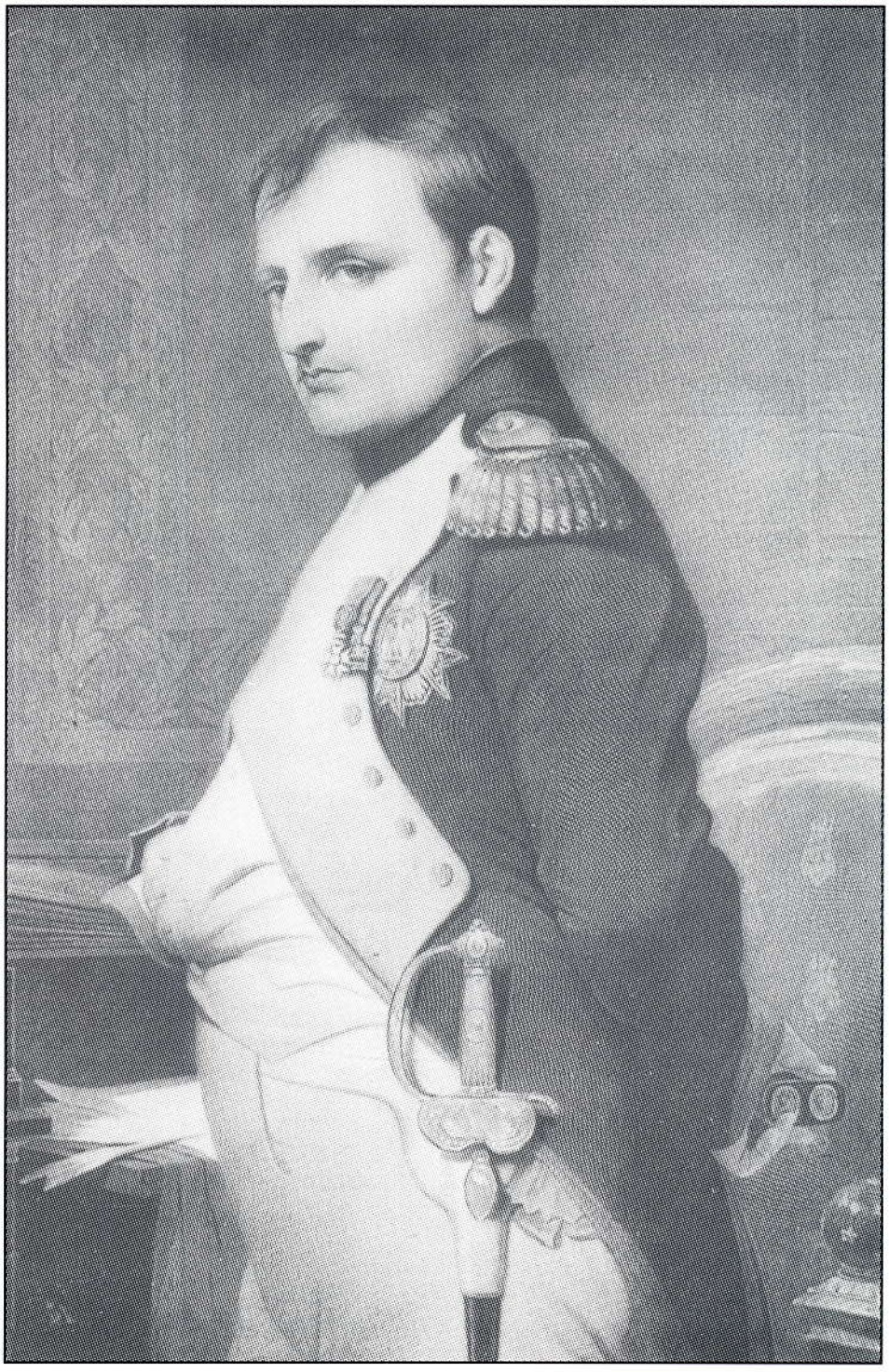
Zizka was a bohemian from the fifteenth century who fought for the English at Agincourt against the French. He lost an eye in a later battle, thus rendering him completely blind as he had already lost the other one in an earlier campaign. Nevertheless he went on to win 12 major battles against the Holy Roman Empire, usually against the most extraordinary odds. His forces (which often consisted of untrained peasants) would typically be outnumbered about 10 to 1 by the opposing army and yet emerged victorious time after time. He had immense energy and was only stopped in his tracks when he caught the plague and died.

Keeping the Nazis Uncertain

Werner Heisenberg was a physicist who was responsible for the discovery of the uncertainty principle. Loosely speaking, this states that you can never quite pin down atomic particles, because as your knowledge of their position improves, there is a corresponding decrease in your knowledge of their momentum. His insight was to realise that this was not just some weakness in the experimental apparatus or the mathematics, but a fundamental law of nature. This is brilliant enough in itself, but what also struck me about Heisenberg was the role he played during the development of atomic weapons. He was Nazi Germany's leading expert on nuclear physics, but his work had been dismissed as 'Jewish physics' by the authorities. However, when they realised that he would probably be able to help them to build an atomic bomb, they changed their tune. Although realising that this project was perfectly feasible, Heisenberg managed to persuade them that it couldn't work, citing all sorts of technical and practical difficulties. This elaborate deception went on for about four years and he completely fooled them for the whole of this time. Had his deception not worked, the outcome of the Second World War might have been very different.

B From your researches, what would you say is the hallmark of genius?

R There is no single or simple intellectual tell-tale sign, such as linguistic or mathematical ability, but what they all certainly demonstrate is an amazing persistence in effort to achieve their vision. They are very focused on their goals and all other factors become subordinated to this. Motivation is another key factor. All the geniuses I



Napoleon Bonaparte - an incredible capacity to absorb information.

Christopher Columbus - the first navigator to leave the shoreline.

researched were totally motivated. Another recurrent theme amongst geniuses is that they treat the whole planet as one gigantic IQ test, and relish accepting the challenges thrown at them.

B What would be your advice to someone who wishes to make the most of their mental abilities?

R Decide what it is you want to do, and how important it is, and then determine if you are sufficiently motivated to carry it through to its conclusion. You cannot get this knowledge from others - you must decide it for yourself. However, we are often not sure what is really important to us, and so I think that making a list is a good idea. List all the things that interest you and then rank them in terms of how important they are. You may, for example, decide that you want to increase your income and thus concentrate on finding a new job, or becoming better rewarded for the one that you do. Alternatively, you may decide that the most important thing for you is to enjoy your holidays more, so you may decide to learn a new language or explore a foreign culture, which would have the by-product of being mentally stimulating. The possibilities are endless and will, of course, differ from person to person, but the key factor is motivation. If you are motivated enough to do what you want to do, then everything else will fall into place. People who are not motivated are unfocused and unable to concentrate their energies effectively.

Role Model

Dominic O'Brien, for example, actually used to have a poor memory and was always forgetting things. So he decided to improve it and we are all aware of the results of that decision. Successful achievement does not materialise out of nothing - it requires planning. An important concept here is the role model, which is referred to in the book as the Mastermind Group. In Dominic's case, his role model was Creighton Carvello. He watched Creighton memorise a pack of cards on Record Breakers, and decided that he wanted to do the same. Admiration for your peers and a desire to emulate them is a further important factor. Many artistic careers are fashioned along the following logical lines: 'I want to become a great artist. X and Y are great artists whose work I admire. I will therefore study the lives of X and Y and try to emulate them.' Machiavelli talks about the importance of emulation in *The Prince*. If you are inspired, you copy, and then surpass. If you don't admire then you cannot achieve anything. Cynicism is an enemy of genius.

B Have you any thoughts on our education system - is the current set up successful in encouraging the development of mental skills?

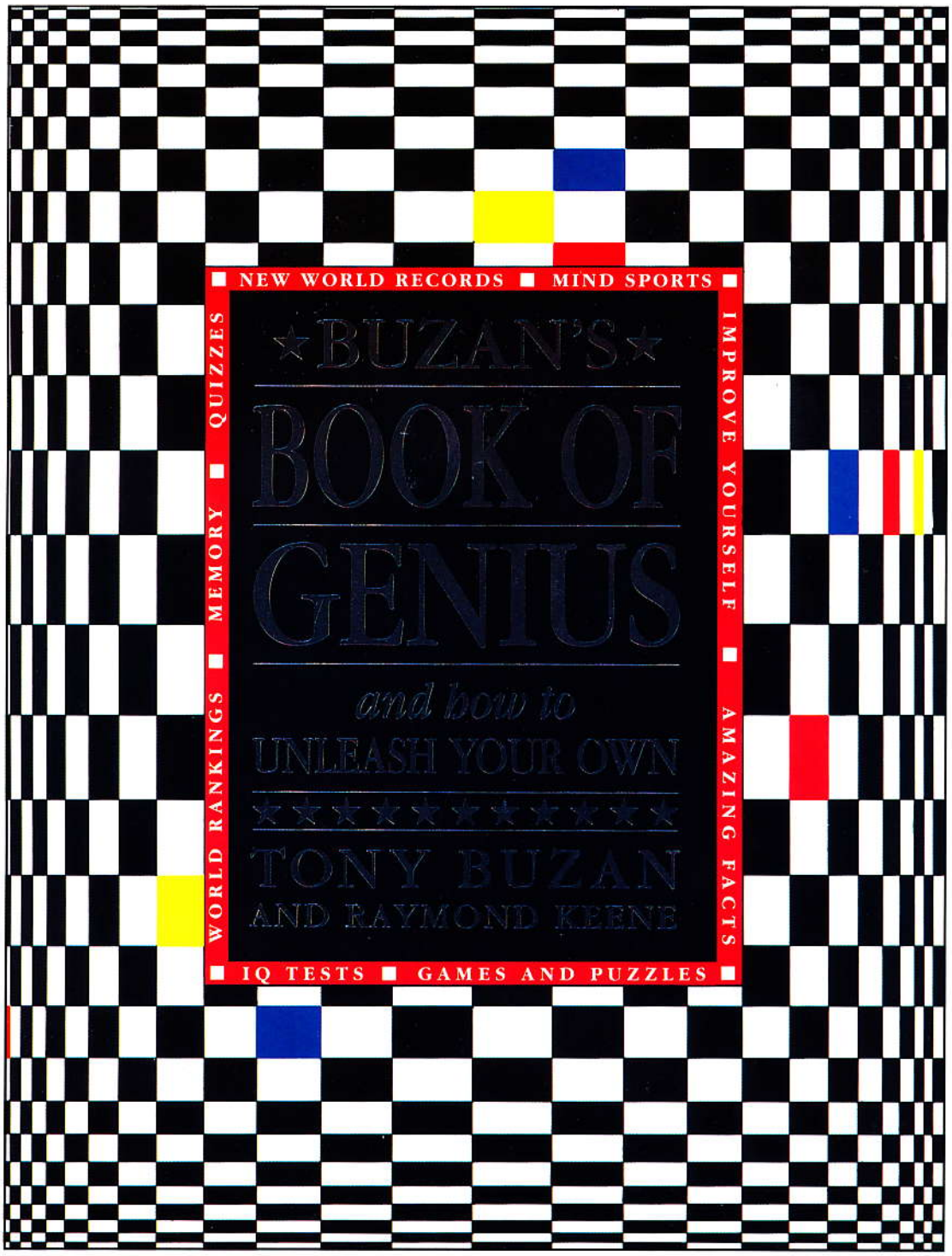
R I think that there is perhaps a tendency simply to concentrate on communicating facts without necessarily ensuring that comprehension has taken place. For example, I didn't like maths at school, and so did the absolute minimum necessary to get through the exams, and then dropped the subject as soon as possible. I was never asked if I understood what was going on. I suspect that there is too great an emphasis on the fulfilment of norms. I think Tony's concept of Mind Maps can be very useful here. If I had been encouraged to Mind Map my maths studies at school I might have found them substantially more interesting than I did.

As Ted Hughes said, our schools should be producing mental warriors who go forth in the land to spread intelligence and culture.

B Do you think it was 'easier' to be a genius in the past than it is now?

R I think it was certainly easier to be a polymath in the past. There were a number of these, Leonardo being the most obvious example. Nowadays, it is necessary to specialise much more as the level of knowledge on all subjects has substantially increased. However, I don't think that this makes it more difficult to be a genius, in fact, I believe the opposite is true. There are many more opportunities to excel in a particular field, but the problem now is that of recognition. A research scientist might, for example, discover a tiny intricacy in the way some cells reproduce. This could be the equal of a number of famous historical achievements but, if there are no obvious or immediate consequences of the work, it may well go unrecognised for a long time.

What else has struck you from your research for the book?



Buzan's Book of Genius: and how to unleash your own by Tony Buzan and Raymond Keene (Stanley Paul, 20 Vauxhall Bridge Road, London SW1V 2SA), will be published on November 24th, price £14.99

R First of all, it was fantastically interesting to write. It essentially comprises a basic sketch of the intellectual history of the planet from the building of the pyramids onwards, and I learnt an enormous amount. I found myself deeply admiring people who had the capacity to turn negatives into positives, which I think is another excellent indicator of genius. This is not merely a case of fighting through adversity, but implies a conscious decision to look for the positives in what appear to be the most appalling catastrophes. Borges, for example, went blind but, having done so, then learnt Anglo-Saxon, which greatly enriched his life. This is a recurrent theme. Many of the geniuses of history are great survivors who have suffered the most dreadful calamities but refused to look at them negatively. On a lighter note, I am a great fan of the *Star Trek* episodes. In many of these, the Enterprise and its crew would find themselves in some appalling mess and the only solution would be to think their way out of trouble. *(Gene Roddenberry, the creator of Star Trek, was Brain of the Year 1993, and narrowly missed out on being included the top 100 geniuses of all time in the book - Ed.)* As Spock says at the end of one of the films when he has become fatally irradiated: 'There are always possibilities.'

AMAZING MEMORY STORIES

Greek Gifts

All in the Mind

Homer was a Greek poet who lived in Ionia in the 8th century BC and was responsible for two distinct but complementary epics, the *Iliad* and the *Odyssey*. The former recounts the fall of Troy, while the latter tells of the wanderings of Odysseus on his adventurous return to Ithaca. Despite the fact that Homer's lifetime seems to have coincided with the introduction of writing into the Greek world, it appears that he did not utilise this emergent technology himself. He committed his works to memory and is alleged to have passed on his poems to his pupils, the 'Homeridae', a guild of professional reciters. There is also a tradition which suggests that Homer may have been blind, though this is not accepted by all scholars. The *Iliad* was not actually written down by anybody until 200BC when a scholar in Alexandria undertook this task.

Early Polymath

Sophocles (c. 496-405 BC) is best known as one of the great figures of Greek drama, writing over a hundred items, most of them conventional satirical plays. His greatest masterpiece is *Oedipus Tyrannus*, on which Aristotle based his aesthetic theory of drama and from which Freud derived the name and function of the Oedipus Complex. He was also an outstanding poet, winning first prize 18 times at The Great Dionysia - a bi-annual poetry competition.

What is less well known about Sophocles was that he was also an early example of a polymath, specialising in a number of fields. In addition to his literary achievements, he was a leading member of the government, as well as being a senior general in the Athenian army. A contemporary parallel would be if, for example, Douglas Hurd was also Sir Peter de la Billiere and Harold Pinter.

Courting Disaster

Sophocles lived to the age of 89 and towards the end of his life he was charged by his son that his mental faculties had waned. His son further claimed that this rendered him incompetent to run his own affairs and that all such matters should thus be passed on to him. Sophocles, however, was unwilling to accede. Naturally he was a wealthy man and his son's demands would have resulted in a substantial transfer of wealth and power. The situation could not be amicably resolved and so Sophocles' son took him to court with the aim of proving the decline in his father's mental abilities and thus wresting control of his affairs from him.

When the case opened, Sophocles conducted his own defence: 'Here is the script of a tragedy which I have just completed,' he informed the presiding judge, 'if you doubt my mental competence, take the script away and I will recite it in its entirety.' His request was granted, and when Sophocles got to the second act without having made a mistake, the case against him was thrown out of court.

Thanks to Ray Keene for suggesting the above two stories which are based on material in the *Book of Genius*.

Here is the script of a tragedy which I have just completed, if you doubt my mental competence, take the script away and I will recite it in its entirety.'

ANIMAL INTELLIGENCE

Horse Sense

Fear of Riding

The common assumption that horses are unintelligent is being laid to rest by a California-based horseman, who is part Cherokee Indian and who has three degrees, including one in psychology.

Monty Roberts, who has solved the problems of many leading racehorses, believes that horses have excellent memories, strong associative powers, and the ability to make conscious and sensible decisions. Problems such as fear of going into stalls, or fear of certain riding equipment, can be traced to early events in the horse's life in which they were traumatised, and sensibly they make a decision not to re-enter a life-threatening environment.

For example, Young Senor, who would not enter the stalls at Epsom in 1992, was discovered to have got his head stuck in the stalls just before a race at Ascot as a two-year-old. This was compounded when, having been blindfolded to get him into the stalls, he collided with running rails behind them.

Safety Zone

Roberts simply re-trains the horses' associations, taking the animal step by step into a different train of associations around the single 'problem' environment.

One of the prime approaches Roberts uses is to have the horse associate himself or the handler as a 'safety-zone', so that the horse always feels protected. As Roberts says: 'In the end, you could build a brick wall and he would crash through it to be with you. The system is a miracle worker, but you have to be educated with it.'

Do horses really seem so different in their needs from humans?

Mowgli

BOOK REVIEWS

Andrew Kinsman covers the latest publications.

Music and the Mind

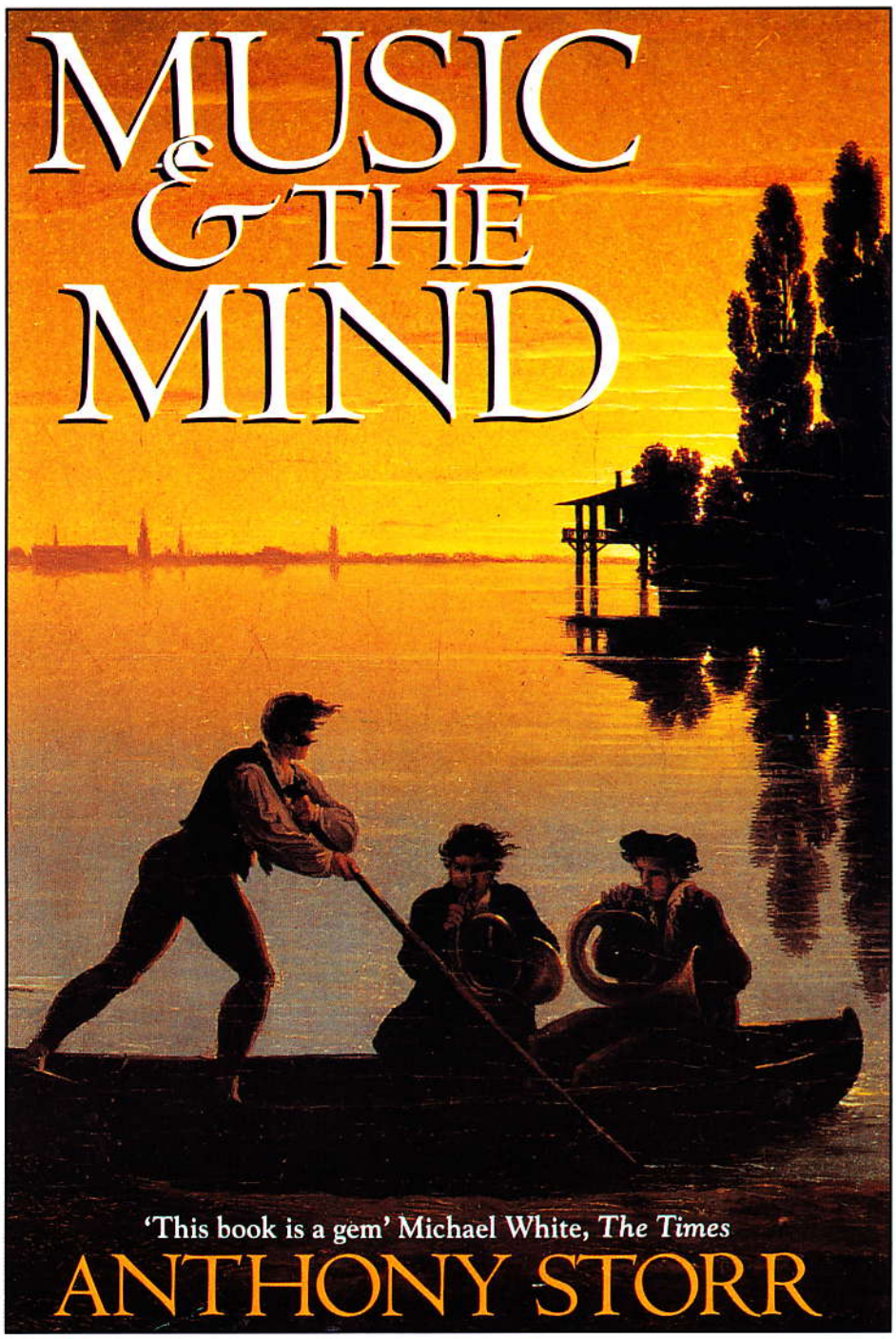
Anthony Storr

In this beautifully written essay, eminent psychiatrist Dr Anthony Storr embarks on an exploratory search to attempt to discover what it is about music that so profoundly effects us, and why it is such an important part of our culture. This search takes in the whole range of scientific musical issues, its origins, its use in religion, its effects on the brain and body, the role of the composer, music and the two hemispheres of the brain, music and education, etc. He describes how the aborigines used sacred song-cycles as a mnemonic device to preserve their knowledge, belief and customs, argues that music originates from the human brain rather than the natural world, shows how certain composers habitually select certain keys to express particular emotions (Mozart used G minor to express tragedy or melancholy), and demonstrates how composers play with our own emotions. Storr's own love of music comes through clearly in the text, as does his view that music is an ally in everyone's life: 'My guess is that future research will disclose that those who have been lucky enough to receive an adequate musical education in early life are better integrated in every way when they reach maturity; and are therefore likely to be both happier and more effective.' (HarperCollins, paperback, £6.99)

Hard Drive: Bill Gates and the Making of the Microsoft Empire

James Wallace and Jim Erikson

The compelling warts 'n' all story of how a whiz-kid computer programmer became a multi-billionaire and one of the most powerful businessmen in the United States, by two investigate reporters from the *Seattle Times*. It tells how he missed months of high school to work in computer programming but still sailed into Harvard, how Microsoft was founded, and how it was that a bunch of computer 'nerds' could outman noeuvre IBM in the computer industry, and includes interviews with Gates' friends, ass sociates, rivals and former employees. (John Wiley, paperback, £8.99)



THE MNEMONS ARE COMING

An account of the inaugural Mnemon weekend by Penelope Dablin (UYHCM 685).

We were a disparate group as we sat around in Simpson's bar on Saturday morning 21st May. There were eight of us, nine when Tony arrived. What were we doing there? I'm not sure that most of us knew what we were letting ourselves in for but we had leapt at the chance of spending a weekend with Tony working on memory systems - and here we were.

Eventually Tony fought his way through traffic jams and roadworks to outline his plans for the weekend.

Who were we? We were a new group - the Mnemons - a team of memory specialists. Our goals for the weekend: to standardise the Major 100 images according to the rules; to standardise good images for SEM^3; to start using these systems - to memorise our lives and to memorise the list of top composers from Tony's book *Master Your Memory*.

Our goals for the future: to be a nucleus of memory specialists; to teach, encourage and generally pass on our knowledge; to use the systems to memorise lots of useful information; to go for Rainbow level in memorisation; to extend SEM^3 into infinity by adding further dimensions. Heady stuff!

We spent Saturday standardising the Major 100 images. The 'rules' to be followed were to use the letter of the alphabet nearest the beginning whenever possible and use the first reasonable word formed. Some numbers are more difficult than others, for example, 26 using the sounds n and ch or j, working through gives nach, naj, nash (rejected because it's spelt with a g, gnash), nech, nej, nesh, neech, neej, neesh, niche - ah, that'll work! Most are much simpler to reach as 11 - dad, 50 - lace, etc.

After a break for lunch we resumed to discuss the SEM^3 images. This led to even more heated discussions. On the simple Major 100 images we always had the rules to fall back on to arbitrate between alternatives, but here we were on much trickier ground. We unilaterally agreed to throw out all images that didn't start with the 'right' letter except when the whole sequence was a self-contained set like the rainbow and the solar system. So out went 'ocean' and in came 'church', out went 'honey' and in came 'newspaper', out went 'energy' and in came 'nuzzling'! The alternatives and ideas flew thick and fast, some images quite unprintable in a family magazine, others unprintable because I can't spell sound effects! By the end of the afternoon we had only one image outstanding, which was causing very heated exchanges. It was held over to be voted on in the morning.

We had worked hard, laughed a lot and were buzzing with the thrill of being in at the beginning of something very exciting.

Sunday was less intense in many ways. In the morning we worked on our own organising how we would memorise our lives. We agreed to attach our lives to the Solar System section of SEM^3 and then take the images out of the solar system and into outer space as we grew too old for the matrix to hold us any more! We started with 9001 (Sun Day) as January of the year we were born and used one image for each month. To make the calculation easier you leave four images spare at the end of every eight years (96 months). An example might clarify this. If you were born in June 1942, your base date is January 1942 on 9001. Then May 1994 would be 6 x 8 years (600) + 4 years (48) + 5 months on from 9000, that is image 9653, Jupiter Lamb. If you were born in May 1956 then the base date is January 1956 on 9001 and May 1994 is 4 x 8 years (400) + 6 years (72) + 5 months after 9000, that is image 9477, Mars Cake. It took us some time to be sure everyone was starting with the right image for 'now'!

Having got an image for the month we then split the month into weeks with further images. I used the number shape system for the weeks. So I now had an image

of Mars, a cake and a bun for May 1994, week 1. I then linked the important highlights from that week into that image giving a composite picture. As i write this two months later I can recall that was the week I was in the school playground sketching several of the lads, I also lost my temporary job and gained another. Moving on to week two with an image of a shoe, stamping in the cake on Mars. I recall my first day at the new job, going to the theatre to see Desire Under the Elms, and a medieval pageant at the castle. It really works!

On Sunday afternoon we got together as a committee again to memorise the first 20 composers on the list. It is fascinating to get a peek into other people's minds by the sort of images they create, but there is no substitute for using your own images. If you have created them, you 'own' them and are much more likely to remember them. We concluded by deciding who would memorise which lists and where on the SEM³ matrix we would put them, and then celebrated with a glass of champagne to round off a thoroughly enjoyable and very challenging weekend.

And what next? I started off by looking out old diaries and school reports to set more of my life into images. This turned out to be a wallow down memory lane as I was far too easily sidetracked by my life to get on with the memorisation!

On the list memorisation I have learnt the names of all the 100 composers in Tony's book, from which I have been inspired to go and look these people up in reference books, and even to go out and buy books to do the looking in! Before, many of these composers were not even names to me, but now some of them are beginning to become real people with real characters. William Byrd and Thomas Tallis (the latter a surprising omission from the list) were given a monopoly by Elizabeth I to publish music and manuscript paper, Carlo Gesualdo was a Prince of Venosa, and was a violent, passionate man who murdered his first wife and her lover. I've even been converted to Classic FM!

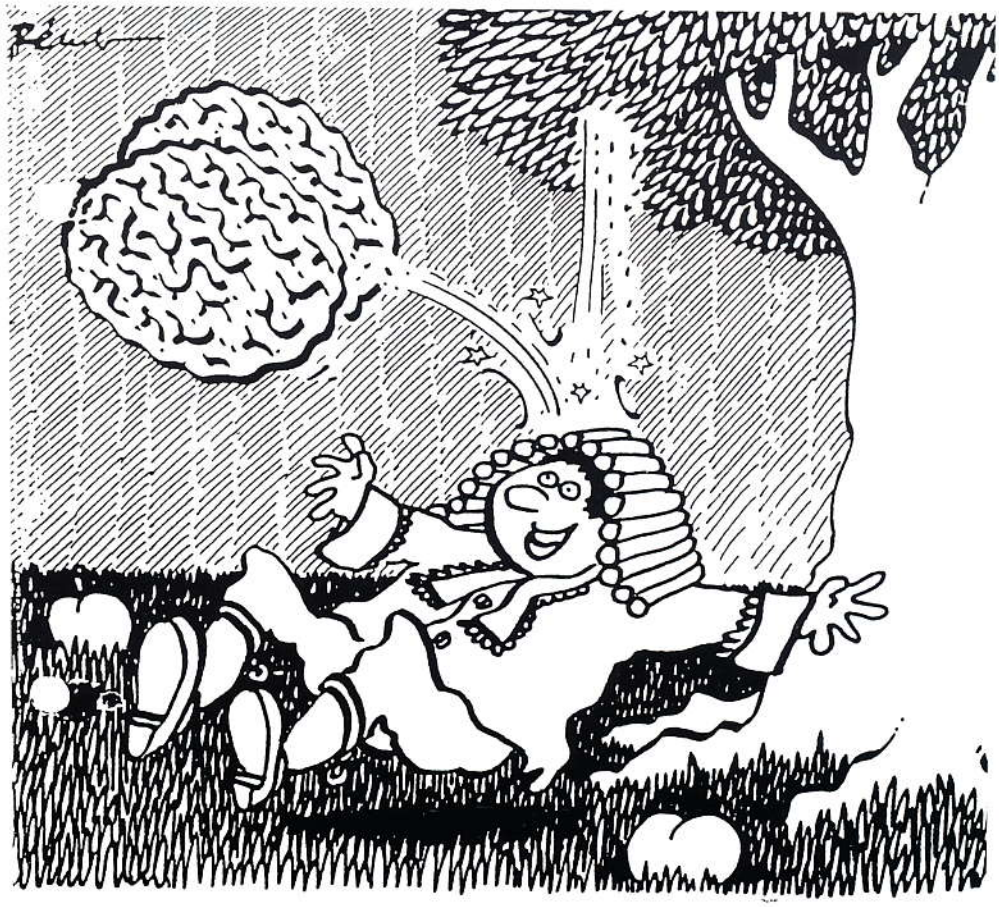
After the composers I tackled the names and Atomic number of the elements. As I am currently doing a science course with the Open University I found this very relevant. I can actually draw up a complete Periodic Table now, from memory, and this makes much more sense of what I've been learning in my course about the order of energy levels in electron shells.

The next list I'm working on is great writers. The list is perhaps a little nationalistic in that all the writers are English speaking - what about Tolstoy, Sartre, Rousseau and others? But one has to prune by some criteria. Their names are easier to memorise than the composers because they almost all have English sounding names, and I can form an image with people I know with the same name. For every George (Orwell, Eliot, Byron), my old headmaster gets built into the image somewhere!

So what's my conclusion? To memorise anything takes commitment and desire, without which you won't succeed. However, given the commitment and the desire, using the systems greatly simplifies the process. And actually committing the information to memory has widened my general knowledge and is increasing my enjoyment of many facets of life and my ability to remember more in those areas. My brain is really beginning to feel like a piece of Velcro: it grabs at everything going by!

My brain is really beginning to feel like a piece of Velcro: it grabs at everything going by!

See *Use Your Head* club news for details on the next meeting of the Mnemons.



Major System - 0 through 99

	0	1	2	3	4	5	6	7	8	9
00	saw	day	Noah	ma	ra	law	jaw	key	fee	bay
10	daze	dad	dan	dam	dairy	dale	dash	deck	daffy	dab
20	NASA	net	nan	name	nar	nail	niche	nag	navy	nab
30	mace	mat	man	ma'am	mare	mail	mash	mac	mafia	map
40	race	rat	rain	ram	rara	rail	rage	rack	rafia	rap
50	lace	lad	lane	lamb	lair	lily	lash	lake	lava	lab
60	chase	chat	chain	chime	chair	cello	chacha	check	chaff	check
70	case	cat	can	cameo	car	call	cage	cake	cafe	cab
80	face	fad	fan	fame	fair	fall	fish	fag	fife	fab
90	base	bat	ban	bam	bar	ball	bash	back	beef	babe

Self-Enhancing Master Memory Matrix

		0-99	100-199	200-299	300-399	400-499	500-599	600-699	700-799	800-899	900-999
0000-0900	*Vision*		dinosaur	nobility	moonlight	ravine	lightning	church	concorde	fire	paintings
1000-1900	*Sound*	sing	drum	neigh	moan	roar	lap	shh	gong	violin	piano
2000-2900	*Smell*	seaweed	tar	nutmeg	mint	rose	leather	cheese	coffee	forest	bread
3000-3900	*Taste*	spaghetti	tomato	nuts	mango	rhubarb	lemon	cherry	custard	fudge	banana
4000-4900	*Touch*	sand	damp	newspaper	mud	rock	lather	jelly	grass	velvet	bark
5000-5900	*Sensations*	swimming	dancing	nuzzling	mingling	rubbing	loving	shaking	climbing	flying	peace
6000-6900	*Animals*	zebra	dog	newt	monkey	rhino	elephant	giraffe	kangaroo	fox	bear
7000-7900	*Birds*	seagull	duck	nightingale	magpie	robin	lark	chicken	kingfisher	flamingo	peacock
8000-8900	*Rainbow*	red	orange	yellow	green	blue	indigo	violet	black	grey	white
9000-9900	*Solar System*	Sun	Mercury	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neptune	Pluto

INTELLIGENCE ABOUT INTELLIGENCE

Planet of the Computers

Will computers be better than humans one day? Controversial scientist Marvin Minsky, founder of the Massachusetts Artificial Intelligence Laboratory, believes so. Indeed, he even claims that humans may eventually be able to 'download' their personalities into computers, and in this way become more intelligent and reliable, whilst this could also extend life-span, as by making copies of oneself one could undergo experiences one would otherwise avoid. 'If each person has 100 million precious memories - and that is what their mind is, in some manner - and a few thousand processes, then all we have to do is figure out what those are and copy them,' says Minsky.

Minsky's theory, which is controversial to say the least, is that consciousness is not mysterious at all: it only requires that one part of the mind be able to monitor the behaviour of other parts as the brain is basically the same as a very complicated computer. Since some computer programs are already able to retrace processing steps, computers are therefore, in his view, already 'extremely conscious'. Of course, Minsky's definition of consciousness is not one that all scientists would subscribe to. Oxford mathematician Professor Roger Penrose, author of the best-selling *The Emperor's New Mind*, believes that although some mental actions may seem similar to a computer, consciousness itself is founded on 'an essential non- algorithmic ingredient', in other words, it functions entirely differently to any existing or possible computer, which must have a set of rules to follow, so that attempts to replicate human consciousness in computers are doomed. For example, how can one ever model 'common sense', 'judgement of truth', 'understanding' or 'artistic appraisal'.

Clearly, despite the development of highly sophisticated brain scanners to analyse the brain at work, the conscious brain contains many more secrets that have to be revealed before scientists can understand exactly how it works, let alone whether it is possible to replicate it with a computer. As Professor Richard Gregory says, 'There is no theory of consciousness. The best one can do is point at where one might be expected to find it.' But the final word rests with Christopher Longuet Higgins, a pioneer in AI research at Sussex University: Consciousness is so much in the news today 'because neuroscientists and neurophilosophers have recently discovered what fun it is thrashing around on one another's territory.'

Watch out for Tony Buzan's interview with Marvin Minsky in a future issue.

Since some computer programs are already able to retrace processing steps, computers are therefore, in his view, already 'extremely conscious'.

POETRY CORNER

The Creative Solution

I toil, I fret, I read, I sweat
I toil, I fret, I read, I sweat
I fill my mind with so much data
I fill my mind with so much data
And more data and more data
Until my mind is churning and churning,
striving and yearning, churning and churning,
striving and yearning to find the
solution to my quest.

Then I rest.
And rest and wait.
And let it all happen.
How will my mind open the gate?
A dream, perchance a dream?
Maybe in nature as I walk and wonder?
Or as I sit and think about the wild blue yonder?

The answer comes from within
within the mind
within the vastness of the mind,
which is always trying to help.
But I must believe, I must relax.
For that altered state of mind -
to allow the gate to open.

Then it comes, then it comes, then it comes -
the solution to my quest.
From the deep recesses of my mind
like a lightning bolt,
nature's own electrifying energy.
It illuminates all round
And round and round and round I go.
For now I know:
the creative solution to my quest.
And rest.
Until the need to travel again.

Sean M. Kelly (UYCHM 859) kindly submitted the following poem on the subject of creativity.

Dear Sir,
With reference to the letter in the Summer 1994 issue, I have written the following rhyme. It is intended as a mnemonic aid to memorising the 24 most common musical chords of four notes (usually referred to as sevenths). Each line of the piece is a phrase representing one chord. The rhyme, which is mainly in a bizarre form, can be committed to memory in a few hours. Chord inversions (i.e. different note order for each chord) can be made by changing the word order representing the first three notes and still make a sensible phrase. It should be helpful for keyboard and guitar players, and around this basic structure can be built more complex variations such as diminished and augmented chords etc.
Yours sincerely.
F. McKeown (UYHCM 1095)

Explanation:
1. Chords are made up of a minimum of three notes. By adding a note it has a fuller tone and is then called a seventh chord.
2. The first letter of each line of verse indicates the chord.
3. The first letter of each word indicates the notes of the chord.
4. An 'M' appearing in the first word indicates a minor chord.
5. 'S' and 'H' appearing in any word indicates the note is sharp (i.e. it is moved up a semitone from the natural position).
6. 'F' and 'L' appearing in any word indicates the note is flat (i.e. it is moved down a semitone from the natural position).

Example: Fshm7 = F Sharp Minor7
Indicated by 1st letter of line = F
First letter of each word = F-A-C-E
'M' in first word indicates minor
'SH' in first word indicates F Sharp
'SH' in third word indicates C Sharp
Fourth word indicates it is a 7th Chord
Result: Fsharp-A-Csharp-E are the 4 notes to strike, which are easily remembered by the mnemonic, 'FreshMan's Auto Crashed Eurorail'
(c) Frank McKeown 1992

The Editor welcomes correspondence on any topic. Please send your contributions to Byron Jacobs, *Use Your Head* Magazine, 23 Ditchling Rise, Brighton, Sussex BN1 4QL, or fax on 0273 - 675486.

Chord Symbol	Mnemonic	Chord Symbol	Mnemonic
A7	**A**rtist's **CuSH**ion Explodes **G**allery	G7	**G**oat **B**utts **D**opey **F**oxes
Am7	**AM**y's **C**anary **E**ats **G**rass	Gm7	**G**a**M**e **BafFL**es **D**octor **F**rinx
B7	**B**igger **DaniSH FiSH A**rrive	Afl7	**AfFL**uent **C**ount **EfF**usive**L**y **G**rate**FuL**
Bm7	**BiM**bo **D**rops **FaSH**ions, **A**las	Aflm7	**AirFiLM**er **B**uzzes **EnFieLd GolFL**inks
C7	**C**rook **E**yes **G**old **BiFocaLs**	Bfl7	**BeautiFuL Di F**aced **AfFL**iction
Cm7	**CarM**en's **EfFortLess G**rand **B-FLat**	Bflm7	**BeFLumM**oxed, **DeFiLed F**inn **AFL**oat
D7	**D**ice **FreakiSH**ness **A**ngers **C**roupier	Dfl7	**DutiFuL F**ather **AfFabL**y **B**usy
Dm7	**DuM**bo **F**inds **A**nneka's **C**at	Dflm7	**DeF(L)**a**M**atory Editor's **AfFiLiate's B**oat
E7	**E**agle **GaSH**es **B**anker's **D**og	Efl7	**EfFuL**gent **G**oalie's **BifFbalL**'s **DeFL**ated
Em7	**EM**u **G**uides **B**ubble's **D**escent	Eflm7	**EnFLaM**ed **GadFL**y **BeFouLs DriFtsaiL**
F7	**F**ix **A**uction **C**rate **EfF**icient**L**y	Fsh7	**FiniSH**ed **ASH**can **CruSH**ed **E**lephant
Fm7	**FuM**igate **AwFuL C**oast **EfFL**uent	Fshm7	**FreSHM**an's **A**uto **CraSH**ed **E**urorail

NEURAL NETWORKS

Neural networks are based on the most powerful computer of all, the human brain. Matt Nicholson examines an exciting technology that could transform your PC.

Many of us still think of computers as 'electronic brains', but in fact most computers have little in common with the human brain. Despite enormous leaps in technology, the fundamental design of the modern PC has not substantially changed since electronic computers first appeared. The limitations in this design are beginning to become apparent and these are in the very areas where the brain excels, so perhaps it is not surprising that computer designers are looking with renewed interest at neural networks.

The modern PC uses a single central processor acting on instructions and data stored in a shared memory. This design, called a 'von Neumann machine' after its principal instigator, has dominated the industry since the Second World War. The modern central processor may be capable of processing millions of instructions every second, instead of a few hundred, but the underlying architecture is the same.

Although there is still room for improvement, it is generally accepted that the von Neumann machine is not going to provide the solution to many of the problems facing the computer industry today. Real-time voice or image processing, for example, require a quantum leap in computing power which is only likely to come from systems where more than one processor is working on the problem at the same time.

However, the human brain can recognise the face of a friend in a crowded street effortlessly, a processing feat that remains firmly in the realm of science fiction as far as even the most powerful of conventional computers is concerned.

It has long been realised that the brain is a massive parallel processing machine. Indeed, back in the early 1960s computer scientists were playing with designs that used many simple computing elements, functionally similar to human neurons, linked in complicated networks. Such networks have proved particularly adept at pattern recognition, which is the essence of a whole host of tasks including voice and image processing. At the time the von Neumann machine was just getting into its stride, so such ideas rarely ventured outside the laboratory. Now that we can see its limitations, neural networks are attracting more interest.

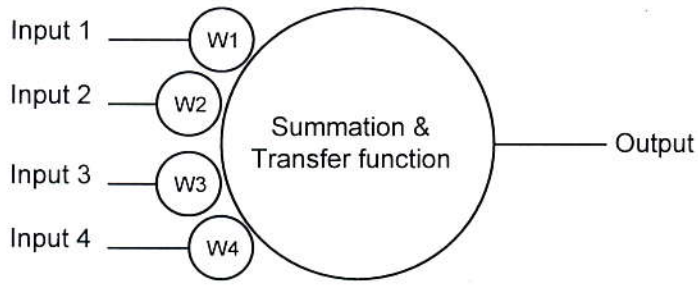
The Human Touch

The neural network is only loosely modelled on what we know of the human brain, but it does exhibit many of the same characteristics. For a start, it needs to be trained before it can produce useful results. This means presenting the network again and again with examples of the patterns we want it to recognise until it can reliably detect the pattern without our help. The network effectively learns by example, in much the same way as a child learning to read or write (see *What is a Neural Network?* opposite).

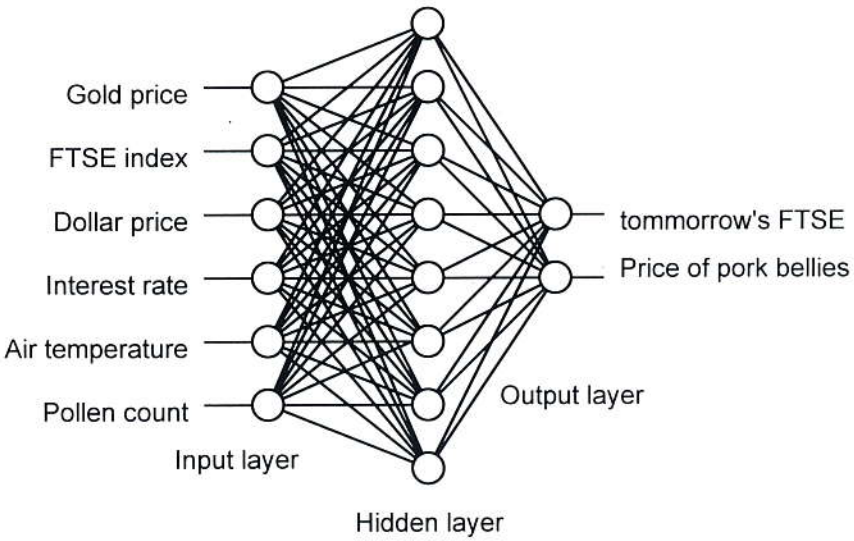
Research conducted recently by scientists from the University of Toronto, Carnegie Mellon University and University College, London has shown even more striking similarities. First they trained a four-layer neural network to categorise a vocabulary of 40 nouns in terms of 68 semantic features, effectively teaching it to read. They then added a further three layers to convert the semantic classifications into phonemes which could be reproduced over a loudspeaker, allowing the network to speak.

What was particularly significant is that disrupting some of the weightings, particularly on the hidden layers, reproduced many of the characteristics of the dyslexic. The network might, for example, mis-read the word 'cat' as 'cot' and end up pronouncing 'bed'.

WHAT IS A NEURAL NETWORK?



Inside a single neuron: Each of the input signals is multiplied by a weighting (W1 to W4 above) and the results added together. The total is then subjected to a transfer function which determines the neuron's output.



A complete neural network consists of many neurons linked together. This particular configuration has each of the neurons in one layer connected to all the neurons in the next, and is defined as a three-layer feed-forward network.

The basic building block of a neural network is the neuron, so called because it works in a fashion vaguely similar to the neurons found in the human brain.

Each neuron is a fairly simple device, deriving a single output from a number of inputs. Each input is first subjected to a weighting which determines the influence that the input has on the neuron's output. These weighted values are then added together and subjected to a transfer function which determines the resulting output. This might be a threshold function, where the output of the neuron is zero until the sum of the weighted inputs reaches a certain trigger value at which point the neuron 'fires' and the output becomes one, or it might be something more complicated.

A neural network is constructed by connecting hundreds or even thousands of these neurons together, so that the output of one neuron becomes the input of another. One of the most common configurations is the three-layer feed-forward network, shown here.

In this example we are trying to predict the FTSE (Financial Times Stock Exchange 100-share index) and the price of pork bellies from a number of factors that we think might be relevant, such as the current share index, the price of gold, and so forth. We have a huge database of figures for the past ten years, so the first thing to do is to train the network.

Training involves adjusting the weightings on each neuron input until the network as a whole generates acceptable results for every entry in the database. This is a fairly laborious process requiring the whole database to be presented to the network over and over again, making minute changes each time. Various algorithms are available for calculating how the weightings should be adjusted, and the whole process can take days if not weeks on a conventional PC.

However, once trained, the neural network can make predictions from fresh data with surprising accuracy, provided all the relevant factors are represented. The weightings on irrelevant inputs are likely to fall to zero so that, in this example, the pollen count would end up with little or no influence on the output, but if important factors are not represented then the network will prove unreliable. Choosing the correct input parameters is just one aspect of neural network design.

Von Neumann machines are delicate creatures: if even a small part is damaged, the chances are that the whole machine will cease to function. In the same situation a neural network not only continues to function but, if training continues after the damage is done, effectively heals itself by adjusting the weightings on undamaged neurons to compensate. This inherent resilience to component failure has led to considerable interest from the military where their pattern recognition abilities have obvious applications in smart weapons and automatic surveillance systems. Indeed it gives neural networks an inherent advantage wherever safety is paramount, as in aviation, health care, the nuclear industry and so on.

However, neural networks can be useful wherever there is a need to find patterns in data too complex or too chaotic for conventional mathematical models. They have proved particularly effective where data is changing over time, as in financial markets where neural networks have attracted considerable interest. In Japan, for example, one major securities company has used a neural network to advise on the buying and selling of shares, after training it on 33 month's worth of historical data. The network is reported to have out-performed conventional statistical methods by a factor of 19 percent, which represents a considerable return on a £1 million portfolio!

Neural networks are currently proving themselves in a wide range of industries. Oil companies are using them to make sense of seismic data; credit card companies are using them to detect fraudulent transactions; security companies are hooking them up to video surveillance systems; hospitals are using them to provide an emergency diagnosis of heart conditions. Indeed, the Department of Trade and Industry has put nearly £6 million into The Neural Computing Technology Transfer Programme to promote their use in UK businesses.

Electronic Brains

Most of these systems emulate the neural network in software rather than build it in hardware. Even on a fast 486, such emulations can take days to train, but once trained can respond quickly to new data. Only if rapid analysis is required, as in real-time image recognition, or where the network needs to train in real time, do hardware implementations become necessary.

One example is the NI1000 Recognition Accelerator, the result of a joint development between Intel and Nestor, a company specialising in optical character recognition. This chip contains some 3.7 million transistors configured as 1,024 neuron circuits capable of performing 20 billion operations a second. As far as character recognition goes, a system based around the NI1000 is expected to operate at least 400 times as fast as conventional systems. The chip is expected to appear on a 16-bit PC expansion card sometime this year.

Scientists at Hitachi's Central Research Laboratory in Tokyo reckon that real-time speech and video analysis require a neural network containing at least a million neurons and capable of processing over 1,000 million connections a second. They propose to develop such a network on a silicon chip, and have already constructed a scaled-down version containing 1,000 neurons.

Looking further ahead, but closer to home, scientists from Trinity College have been working with Hitachi Europe's laboratory in Dublin to develop a neural network that uses optoelectronic arrays containing layers of gallium arsenide just a few atoms thick. A commercial product is many years away, but it will process literally at the speed of light, which means it will be able to train in real time.

TALKING TO NEURO BABY

One of the more unusual applications is Neuro Baby, a character created by Naoko Tosa from Musahino Art University, Tokyo with help from Fujitsu. Neuro Baby is a 3D computer image that responds to the tone of your voice. Talk nicely to him and he smiles and giggles. Become angry and he starts to scream.

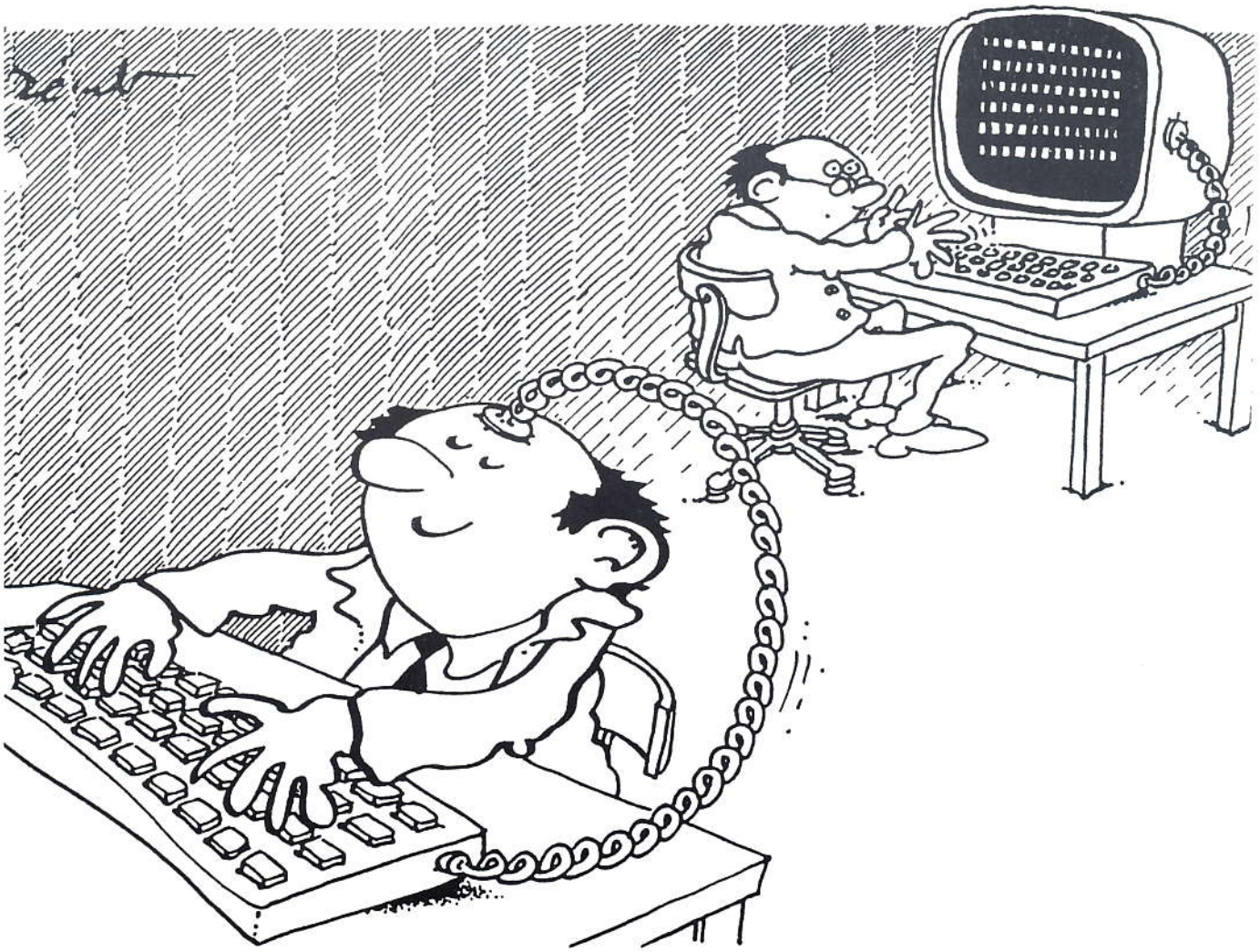
Behind Neuro Baby is a neural network that has been trained to categorise voice input according to four emotional variables: happiness, sadness, contentment and anger. Once the underlying emotion has been determined, an SGI Personal IRIS 4D workstation renders the appropriate expression on screen while an FM Towns PC (a multimedia PC made by Fujitsu for the Japanese market) generates the appropriate sounds.

For Fujitsu, Neuro Baby represents a step towards the development of believable personalities that could be used both in entertainment and as part of a user interface. An interface based around a neural network would be able to adapt to the abilities and preferences of the user, just like a human servant.

To put all this in perspective, the human brain itself contains around 100 billion neurons, each of which connects to up to 100,000 other neurons. Unlike current neural networks, not all the biological neurons are the same: those behind the retina for example, which pre-process data before it enters the optic nerve, are different to those in the cortex. Furthermore the topology of the human neural network is, like everything else in the natural world, the result of millions of generations of genetic selection.

It is unlikely that we will ever construct neural networks of this power, although 'never' is a dangerous word where technology is concerned, but we are likely to see neural net processors as standard components in PCs over the next few years, giving us machines that recognise our face and understand what we say.

This article first appeared in *PC Plus* magazine in January 1994. Reproduced by kind permission of Matt Nicholson.



RUNNING YOUR OWN BUSINESS: A TEDDY BEARS' PICNIC?

Do you believe that luck is the result of perseverance and hard work? If you do, you may share that Joan Bland blend of magic that has propelled her from 11-plus 'failure' to owner of the Asquiths chain of teddy bear shops and winner of the coveted DHL 'Women in Business' award. Curious to discover what it takes to become an entrepreneur, Neil McKee enjoyed lunch with Joan in her period restaurant above the Henley-on-Thames branch ...

N What made you embark on the entrepreneurial path?

J Actually, I was forced into it as I couldn't find a job! I had been a make-up artist for BBC television, but then I lived abroad for a while and when I came back to England it was very difficult to get a union card, so I had to find a job in civvy street. I needed a job with a car as I only had £100, so with no qualifications to speak of - I couldn't even spell, let alone type! - I went for a sales job. There were very few women sales reps at the time, but I got a job and was successful at it. I had no choice but to be successful, I had no money, it was winter and I had a child to support on my own. There was only one way to go, and that was up. Desperation is a good motivator.

N How did you come to get involved with teddy bears?

J Well, at the time I had a small design partnership with Ian Wainwright. The business was growing, but we had a very negative cash flow. Such a business needs financing but we were laying out money for printing and then waiting three to four months for payment. Nearly every month I was having to go back to the bank manager for more money, and we could not even afford to pay ourselves wages.

Living in Windsor, I noticed all the visitors and realised that there had to be a way to tap into this substantial tourist market and generate some cash flow. The solution was a retail business because this provides instant cash flow.

I found a tiny, tiny shop in Windsor, the smallest I thought the bank manager would lend me the money to take over. I saw it in the morning, and by midday that day I was in. But what was I going to put in it? We decided to sell promotional gifts and continue the corporate design business from above the shop.

Simultaneously, my aunt came over from the States. She was looking for a jointed teddy bear like the one she had as a child - and we couldn't find one anywhere. As I was a latent teddy bear lover, I decided to make them myself. They had to be expensive, made out of only the best materials, since the shop was too small to survive on a limited margin.

N What would you say are the qualities necessary to become an entrepreneur?

Joan Bland receiving the DHL 'Women in Business' award from Prime Minister John Major.

J Oh, I think 'need'. And you have to have ambition - and money, too. When you think how Marks & Spencer started - he was an emigre who didn't have anything. You just have to go out into the big wide world and make it work ... and take risks. I think it is easy for people who don't have anything to take big risks, because they don't have too much to lose. The more successful you become the more you have to lose, but then you have more experience and the risks are more calculated, less chancy. But to begin with, you have to rely on your instincts, go with your gut reaction. At the start logic doesn't come into it, if I had listened to anybody I would never had gone into teddy bears, nor would I have taken any of my current shops.

You must have the determination to see things through. Have a goal. If you have one you will find a way to achieve it. As soon as you achieve it, you will find another goal. Have a vision at the end of the tunnel - then you'll find the steps. You will have a few knocks - but you jump up and find another solution. You can't be down about it, you've just got to learn from the experience. You grow slowly - with your experience. This builds credibility and a good name.

You must have the courage of your convictions, and not be down-trodden. Be humble, take the knocks and bounce back, and learn from your mistakes. Just think of mistakes as a learning experience - don't let them get you down. Because once you've made a mistake, you won't make that mistake again. In the future it may save you a lot of time, a lot of effort, and possibly a lot of money, so think of it as great experience.

Be confident in yourself, listen to others, take calculated risks - and accept your mistakes. Trust your intuition - all entrepreneurs are able to do this. Entrepreneurs are not really managers, they are leaders. So, build a good team, know your weaknesses and try and get the gaps filled in your business. Accept your own weaknesses. Learn to delegate - delegate, delegate, delegate!

N What role have MindMaps played in your business success?

J I have only just discovered MindMaps and started using them. They are really good in so many different areas of business: in planning advertising campaigns, promotional campaigns, making presentations, providing an overview of goals, etc. It is a good way of seeing things quickly. I have also used Tony Buzan's memory techniques, particularly linking, for memorising customer's names.

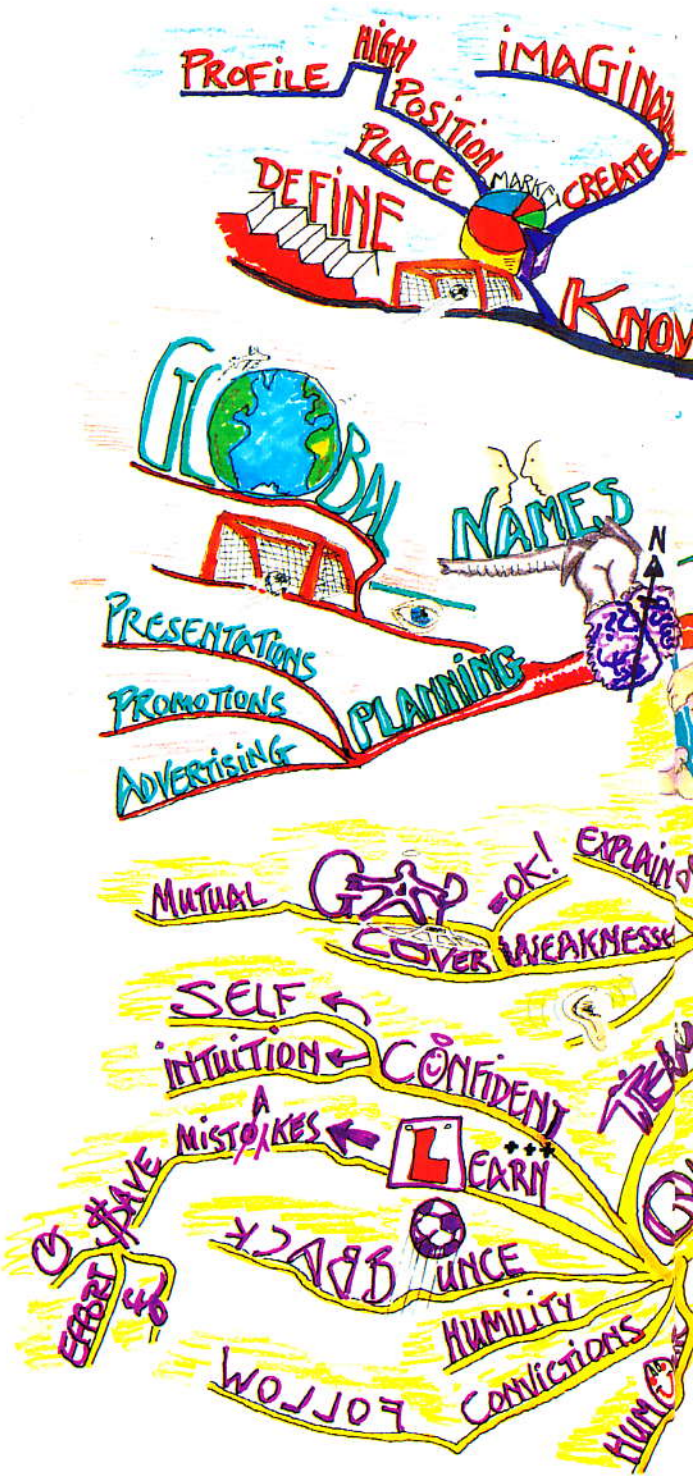
N What are the secrets of 'making it happen'?

J There are seven key elements: **1 Know your goal. 2 Define the steps towards that goal. 3 Know your market place.** It is silly producing things that nobody wants. You can create a need. You can create awareness. No adults wanted teddy bears before, but you can make them so attractive that you create a market. I pitched myself at the adult market, not the children's market. I created a collector's market - and then other shops copied me. To begin with I was very resentful, but then I took it as a compliment. I couldn't produce enough teddy bears to franchise anyway. My competitors in turn created more teddy bear lovers - and they now come to the teddy bear's Mecca - to Asquiths. I stay ahead of the market by creating new bears. **4 Know your position in the market.** Get to the top and stay there by keeping a high profile and keeping the media informed. **5 Quality.** There must be quality, you need to be the best. Whether you are number one or number two, you have to be the best number one and number two. You have to give value for money so that people don't feel cheated. **6 Treat your staff well.** Employ nice staff and pay them well. Generate a good atmosphere and get people happy about you. Our staff are very loyal and we spoil them rotten! I don't employ sales people and could not bear anybody trying to sell a teddy bear. People come and the bears choose them. Our staff just explain the qualities of the bear and their personality. A lot of things have to be given a hard sell, but not teddy bears. **7 Make sure you have a positive cash flow and that you are not under-financed.** Be honest with your bank manager and get the best possible accountants to advise you. If you are to be number one you need the best bank and the best accountants.

N How do you keep yourself motivated when things are slack?

J Things are never slack! In quieter moments I apply myself to the serious thinking tasks associated with building a business. If you are doing well, your competitors will be watching you and you have to be on your toes.

N What is the best thing about being an entrepreneur?



Asquiths Teddy Bear Competition

Can you answer these teddy bear questions. If so you could win an Asquiths teddy bear of your own. Answers to the Editor, Byron Jacobs, 23 Ditchling Rise, Brighton BN1 4QL by 30 November 1994.

1 Who is the bear of little brain?

2 Where did the name 'teddy bear' originate?

3 Whose aunt is 'Aunt Lucy'?

4 Which company made the first articulated teddy bear?

5 What year did Asquiths start?

J It satisfies your creative needs. Of course it's also very rewarding to see someone wearing your T-shirts, and to hear kids say 'this is a really cool shop,' knowing that you've created it. The downside is the family sacrifices and not being able to go on the kind of holidays that others take for granted, though this has lessened as the business has grown.

N What is your guiding philosophy?

J I just think that anything is possible. I have always believed that if you want anything, you can get it. If you have a goal, you can reach it - provided you want it enough.

FOOD FOR THOUGHT

An MOT for the Brain

The first of a series of articles by James Longworth

I feel very honoured to have been given a slot in this prestigious publication, and I hope that you will enjoy what I have to say. I plan to pass on to you some of my thoughts, and to take you on a mental perambulation through the intertwined neurons that they call your mind. I hope that I will also be able to give you some provide you with some mental exercise ... all will be revealed.

For my first article I thought that there would be nothing better than to start at the top and work downwards, so to speak. I have something of a fetish for brain teasers, and IQ tests. I do not know why; I am not particularly brilliant at them, but I do enjoy indulging in them from time to time.

No one is born knowing how to do crossword puzzles or anagrams; even champion puzzle-solvers had to learn the ropes first. With practice, like everything, you can get exceedingly good, and even the most complicated of puzzles will seem easy. Nearly all puzzles have a trick or set pattern to them. Learning to spot the tricks, is, of course, part of the fun. Research suggests that brain teasers and puzzles may even help to improve the mind's ability to think and reason. Whatever it is about them, they are certainly addictive, and I hope that you find the small selection that I have for you of some interest.

To warm you up, I have chosen some basic mathematical problems:

1. I have some flowers in my hand. All of them are roses except two, all of them are tulips except two, and all of them are daisies except two. How many flowers do I have?

2. (Not particularly mathematical!) You have three boxes of draughts (checkers): one labelled 'red draughts', one labelled 'black draughts', and one labelled 'red and black draughts'. By a stroke of extraordinary misfortune each label is on the wrong box. By taking only one draught from one box, how can you label each box correctly?

3. A camera costs £100, including the case. The camera costs £80 more than the case. How much does the case cost?

4. A cake recipe calls for three cups of flour, but you only have a two-cup container and a seven-cup container, both of which are otherwise unmarked. How can you measure exactly three cups of flour using only these two containers?

Finally, I would like to share with you a puzzle that some have described as a masterpiece of its kind. It is called the Smith-Jones-Robinson classic. Its an absorbing mental challenge presented in concise and entertaining form. In one group of 240 people trying it, only six came up with the solution! The funny thing about this particular puzzle is that it is really not that difficult. It may well be that this is simply because I know the answer, but I can tell you that there is no catch in it. Some people have been known to work out the answer in about five to ten minutes. I have to confess that I was somewhat slower! I also recommend that you take note of everything ... every piece of information that you are given is important.

On a train, Smith, Robinson and Jones are the fireman, guard and driver, but NOT respectively. Also aboard are three businessmen who have the same names: a Mr Smith, a Mr Robinson, and a Mr Jones.

1. Mr Robinson lives in Detroit.
2. The guard lives exactly halfway between Chicago and Detroit.
3. Mr Jones earns exactly $20 000 per year.
4. The guard's nearest neighbour, one of the passengers, earns exactly three times as much as the guard.
5. Smith beats the fireman at billiards.
6. The passenger with the same name as the guard lives in Chicago. **Who is the driver?**

Best of luck to you with that one. If you would like to share some of your thoughts with me concerning problems of this type, then drop me a note with a stamp addressed envelope, and I promise to reply! James Longworth, Waynflete, Eton College, Berkshire SL4 6EY. Tel (0753) 867775.

Answers on page 38.

USE YOUR HEAD CLUB NEWS

Headboard

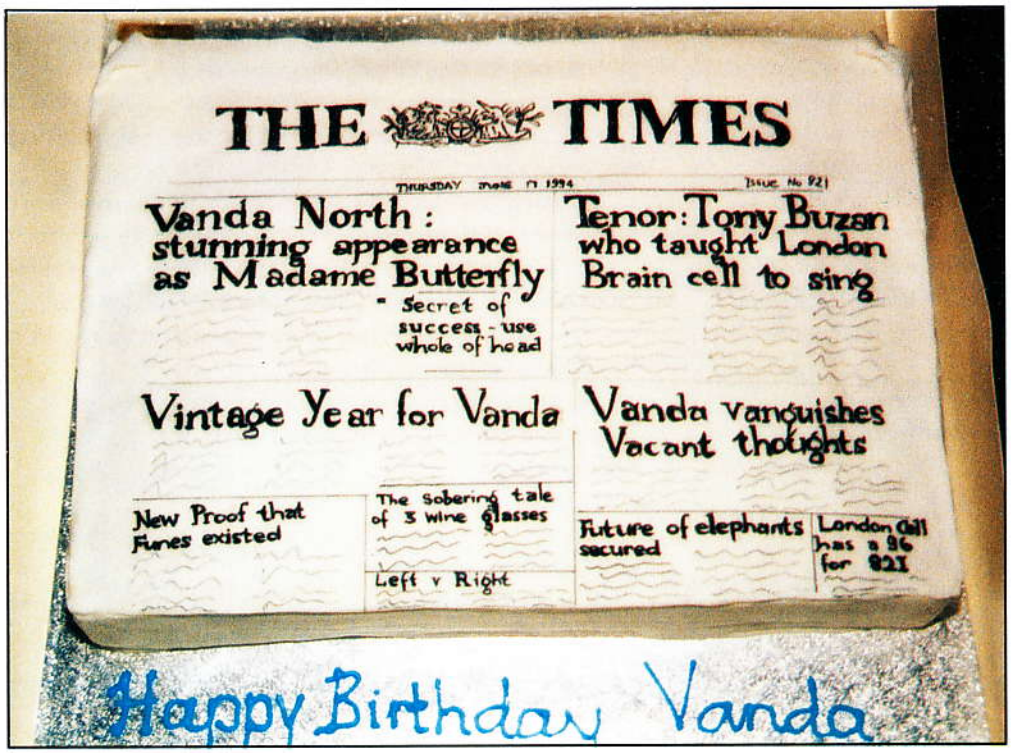
Carnival of the Mind

To celebrate the 21st birthday of the publication of Tony Buzan's book *Use Your Head* a Carnival of the Mind is being held at the Royal Albert Hall on the 21st April next year. This will be a major celebration of mental achievement and will feature events, displays and lectures. This is a day not to be missed. Everybody is welcome to come along and contribute, so start planning your own events now.

Look out for a full preview in the next issue.

London Cell Has a 96 for 821!

For those of you unfamiliar with the Major system, 96 for 821 translates into a 'bash' for 'Vanda'! Over 60 people attended the Central London meeting at Price Waterhouse on Vanda North's birthday, when both Vanda and Tony Buzan gave fascinating talks. It was a truly memorable evening and we will all remember Vanda's exciting preview of her book, 'Hope'. Fortunately Vanda's birthday cake was large enough for second helpings for a lucky few! The evening was rounded off by a very enjoyable meal at a lovely Thai restaurant in the company of Vanda and Tony.



USE YOUR HEAD CLUB CONFERENCE

Lady Mary Tovey reports

Once again our annual Conference was held at the Naval & Military Club in central London: this year on Saturday 25 June, with the theme 'Animal Intelligence'. The Conference was chaired by Sir Brian Tovey. Tony Buzan gave an excellent keynote speech and then exercised our intelligence and enlivened our spirits by giving us a general knowledge quiz on animal intelligence. Tony was followed by Terry Diggins who gave us a memorable demonstration of how to draw animals, and birds in particular. Our speaker after lunch was Vanda North, who gave us an amusing, witty and colourful account of the animals she has had as pets over the years (any speaker will tell you that probably the worst time to address an audience is after lunch, but Vanda was absolutely superb).

Many readers of this magazine will already be familiar (see 'Singing in the Brain', Summer 1994) with our next speaker, Professor David Hindley, who was a lecturer at Homerton College, Cambridge until he took early retirement in the 1980s. Since then, he has spent much of his spare time investigating the techniques by which birds compose their songs. By recording them and then slowing the recording down, he has discovered how incredibly complicated birdsong is. He played us several different recordings of birds, such as the corn bunting, goldfinch, blackbird and skylark, and then played a few recordings of his own compositions transcribed from birdsong - a wonderful highlight.

James Lee, with his customary competence, rounded the day off by giving us an update on all the *Use Your Head* clubs formed now in universities and schools throughout the country and produced very useful packs on how to set up a *Use Your Head* club, not only in universities and schools, but also in local communities (if anyone would like a pack, please contact Phyllida Wilson at the *Use Your Head* club office). As you can imagine, the day was packed with fun, laughter, great interest, new information and camaraderie. See you there next year!

Food for Thought Answers

1. Three flowers - one rose, one tulip and one daisy.

2. Remove a draught from the box marked 'red and black'. As all the boxes are incorrectly labelled, it will either contain all red draughts, or all black. Removing a draught will reveal which.

Let us assume the draught is black. There are two remaining boxes, marked 'red' and 'black'. The box marked 'red' cannot contain red draughts, as all boxes are incorrectly marked. Furthermore, it cannot contain black draughts as we have already located the source of the black draughts. It must therefore contain red and black draughts. By a process of elimination, the other box contains red draughts.

3. This can be solved with some simple mathematics:

a) camera + case = £100 b) camera - case = £80

From 'a' we can see that

camera = £100 - case

If we now substitute this formula for camera into 'b', we get

£100 - case - case = £80

Simplifying this gives

£20 - (2 x case) = £0 or (2 x case = £20)

Therefore the case costs £10 and the camera £90.

4. Fill the seven-cup container to the brim. Pour this container into the two-cup container until it is full. Five cups will now remain in the seven-cup container. Empty the two-cup container then refill it from the other and three cups will remain in the seven-cup container.

Smith-Jones-Robinson

From '2', we can see that the guard's nearest neighbour cannot live in either Chicago or Detroit, as the other resident would be equally near. Therefore the guard's nearest neighbour is not Mr Robinson (see '1').

The guard's nearest neighbour (a passenger) earns three times as much as him. Mr Jones earns $20,000 per year, which is not exactly divisible by three and thus he cannot be the guard's nearest neighbour.

The guard's nearest neighbour must therefore be Mr Smith, who cannot live in either Chicago or Detroit. Mr Robinson lives in Detroit (see '1'), therefore Mr Jones, by elimination, must live in Chicago.

Therefore, from the above and '6', we can see that the guard must be called Jones.

'5' tells us that Smith plays billiards with the fireman. He cannot therefore be the fireman and he is also not the guard (Jones is the guard). There is only one job left for him - Smith must be the driver.

EXCITING NEWS FROM THE SOUTH EAST

Sue Whiting writes:
As from this September there will be three new cells of the *Use Your Head* Club around London: Bracknell, Hemel Hempstead and SW London. There will therefore be a grand total of seven cells in the South East - the others being Canterbury, Central London, Marlow and Radlett.

The new cells will be on a workshop basis - following the Radlett cell format. With eight members, who attend *every* month, the Radlett branch use the Major system, are able to memorise packs of cards, have worked on SEM³, have used mind- mapping, have practised speed-reading techniques and enjoy juggling! This has all happened in one year with meetings lasting two hours, once a month! We do not even have a Buzan trainer or radiant thinker amongst our members.

Anyone interested in setting up a brain cell in their local area may contact me for guidance if they wish, It is not hard - you only need three (possibly even two!) people and a commitment to learn!! Remember that all members of these small workshop cells are still able to attend lectures at the Central London and Marlow cells.

Current Brain Cell contacts in SE England:

Bracknell	Ian Docherty	0344 862075
Canterbury	Warren Day	0227 760000 x 3824
Central London	Mikhail Roman-Pintilie	081 886 7106
Hemel Hampstead	Penelope Dablin	0442 67637
Marlow	Phyllida Wilson	0628 477004
Radlett	Sue Whiting	0923 853765
SW London	Lady Mary Tovey	071 373 4457

CHANGE OF ADDRESS

The London Cell now meets at The London School of Economics, Room A144, Houghton Street (off Aldwych), LONDON WC2. Nearest stations: Aldwych, Temple and Holborn (Underground); Charing Cross and Blackfriars (British Rail).

This Autumn there are monthly meetings between 7pm and 10pm on 14 October, 18 November and 16 December. For further details, please contact Mikhal Roman Pintilie, 93 Fox Lane, London N13 5AP. All welcome - you do not have to be a member.

NEXT ISSUE

The next *Use Your Head* magazine will appear in December, when our special theme will be Mind Sports and Mental Games. If you would like to contribute a piece on one of the featured subjects, or an article or letter of general interest, please contact the editor as soon as possible. Copy for the Winter issue is required by 15 October.
Use Your Head is your magazine!

ARE THERE ANY NEW MNEMONS OUT THERE?

Sue Whiting writes:
The next meeting of the Mnemons will be held in London on Saturday, 19 November (think of your dad waving a dab around!). Everyone is welcome, though new members are requested to contact me beforehand. You must know the Major system thoroughly (why not memorise some of your friends' phone numbers?) and you must bring along a copy of Tony Buzan's book *Master Your Memory*.

The day will commence with an introductory session for all new Mnemons, with some practice in memorisation. We will then be joined by the more experienced Mnemons for more memorisation work. To conclude the day everyone will be assigned a Mnemon partner, with whom to keep in contact while memorising items at home, before the next meeting in the Spring/Summer of 1995. If it is anything like the last meeting it will be great fun. Do come and join us.