

**THE ASSOCIATION
FOR THE STUDY OF PEAK OIL AND GAS
“ASPO”**

NEWSLETTER No. 73 – JANUARY 2007

ASPO started as a network of scientists and others, having an interest in determining the date and impact of the peak and decline of the world’s production of oil and gas, due to resource constraints. Now, independent national affiliates are in existence or formation in Australia, Austria, Canada, China, Egypt, France, Germany, Ireland, Israel, Italy, Japan, Korea, Mexico, New Zealand, Norway, Portugal, Russia, South Africa, Spain, Sweden, Switzerland, United Kingdom and the United States.

Missions:

1. *To evaluate the world’s endowment and definition of oil and gas;*
2. *To study depletion, taking due account of economics, demand, technology and politics;*
3. *To raise awareness of the serious consequences for Mankind.*

Foreign language editions are available as follows:

Spanish: www.crisisenergetica.org

French: www.oleocene.org (press “Newsletter”)

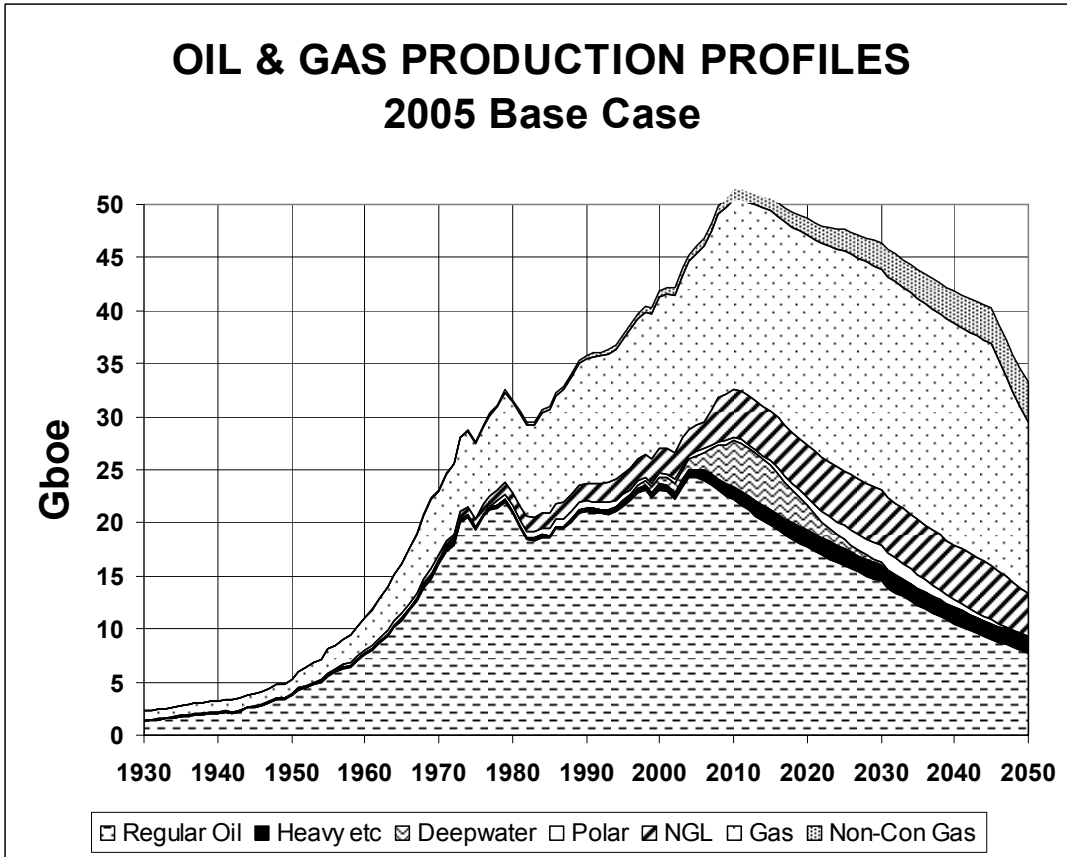
CONTENTS

- [781. Regional Assessment - THE EAST](#)
- [782. Signs of Recession](#)
- [783. Angola joins OPEC](#)
- [784. The Bolivarian Revolution](#)
- [785. Weapons of Mass Destruction](#)
- [786. Depletion in Russia](#)
- [787. Peak Oil’s Ancestor: the Peak of British Coal Production in the 1920s](#)
- [788. Final Frontier for Investors](#)
- [789. Depletion in Iran](#)
- [790. Population](#)

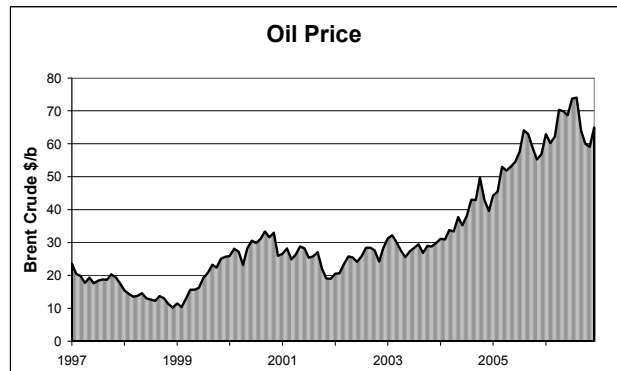
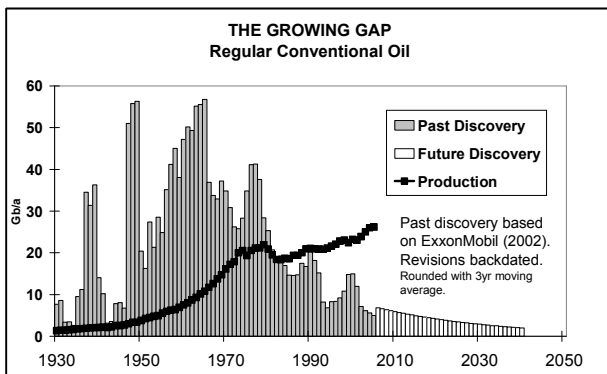
Index of Country & Regional Assessments with Newsletter Reference (*revised)

Abu Dhabi	42	Chad	59	Iraq	24	Oman	39	USA	23
Algeria	41	China	40	Italy	43	Peru	45	Venezuela	*67
Angola	36	Colombia	*62	Kazakhstan	49	Qatar	58	Vietnam	53
Argentina	33	Denmark	47	Kuwait	38	Romania	55	AFRICA	68
Australia	28	Ecuador	29	Libya	34	Russia	31	EURASIA	69
Azerbaijan	44	Egypt	30	Malaysia	51	Syria	*60	EUROPE	70
Bolivia	56	Gabon	50	Mexico	35	S. Arabia	*66	L.AMERICA	71
Brasil	26	India	52	Netherlands	57	Trinidad	37	N.AMERICA	72
Brunei	54	Indonesia	*61	Nigeria	27	Turkey	46	THE EAST	73
Canada	48	Iran	32	Norway	25	UK	*68		

The General Depletion Picture

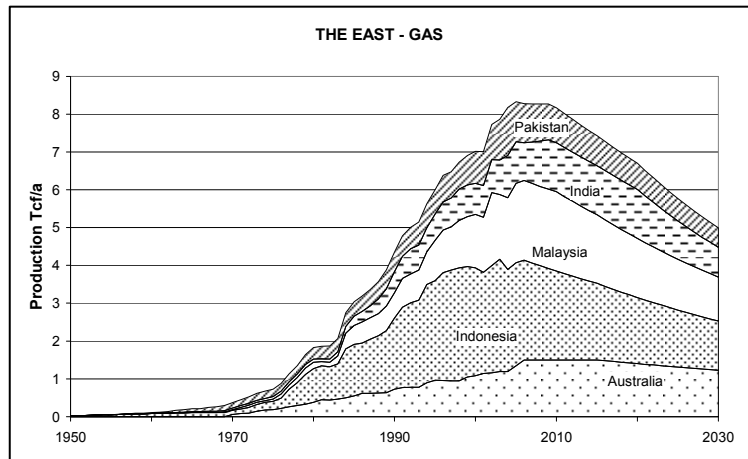


ESTIMATED PRODUCTION TO 2100								End 2005		
Amount			Gb	Annual Rate - Regular Oil					Gb	Peak
Regular Oil			Mb/d	2005	2010	2015	2020	2050	Total	Date
Past	Future	Total	US-48	3.6	2.8	2.2	1.7	0.4	200	1971
Known Fields	New		W.Europe	5.0	3.4	2.3	1.6	0.2	75	2000
967	788	145	Russia	9.2	8.5	6.9	5.7	1.5	220	1987
	933		ME Gulf	20	19	19	19	11	680	1974
All Liquids			Other	29	27	23	20	8	725	2004
1043	1457	2500	World	66	61	54	48	21	1900	2005
2005 Base Scenario			Annual Rate – Other Categories							
M.East producing at capacity (anomalous reporting corrected) Regular Oil excludes Heavy Oils (inc. tarsands, oilshales); Polar oil; Deepwater oil, & gasplant NGL			Heavy etc.	2.3	3	4	4	4	150	2021
			Deepwater	3.6	12	11	6	0	69	2011
			Polar	0.9	1	1	2	0	52	2030
			Gas Liquid	6.9	12	13	14	11	354	2035
			Rounding		1	2		-2	-25	
Revised	20/08/2006		ALL	80	90	85	75	35	2500	2010



production amounts to 12.7 Tcf/a, while consumption stands at about 11 Tcf with the balance being presumably exported in the form of LNG. The five major producers are Australia, Indonesia, Malaysia, India and Pakistan with a combined endowment of about 500 Tcf, producing 10.9 Tcf and consuming 12.7 Tcf. As of to-day, production appears to have passed a peak in 2004, but that may be overtaken by an overall peak around 2010 before the terminal decline sets in. The major consumers are Japan (2.94), Australia (1.91), India (1.29) and Malaysia (1.23), as measured in Tcf/a. On a per capita basis, Singapore leads at 55 bcf/a, followed by Malaysia (44.5), Australia (44.5) and New Zealand (36), with the regional average being 5.4 bcf/a.

Looking ahead, it is evident that the looming energy crisis will have a severe impact, due particularly to the excessive population. Australia which is relatively under-populated will no doubt come under pressure to admit more immigrants from the region. Indonesia, which has no good reason to remain a member of OPEC, may move to conserve its remaining oil and gas reserves, and may well see the emergence of separatist movements as the diverse people of the archipelago seek greater control of their own destiny. Both Australia and India have substantial coal deposits, whose production will no doubt be stepped up, possibly with an adverse impact on the climate, and they may well develop nuclear power. But overall, region has been largely spared the excesses of the Age of Affluence, and is relatively well prepared to revert to simplicity. Japan, Australia and New Zealand probably face the greatest challenges in adapting to the Second Half of the Age of Oil.



782. Signs of Recession

Oil prices seem to have resumed their upward trajectory, after the temporary retreat which coincided with the US election. Commentary in several quarters seems to hint at the onset of recession reflected in falling property values in Australia, Britain and the United States, undermining the validity of the massive debt behind it. The dollar too weakens. A further surge in oil prices, reflecting the capacity limits, may trigger more recession, sufficient to cut oil demand in which case prices may collapse, heralding a sequence of vicious circles made up of price shock – recession – price collapse – economic recovery – price shock which is likely to mark the post-Peak transition.

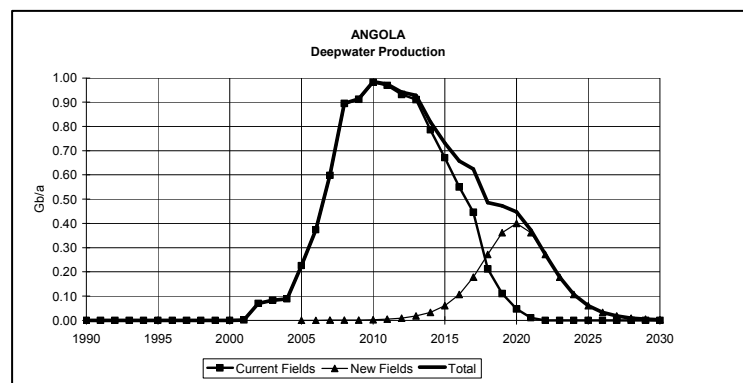
Europe meanwhile presses Russia to deplete her energy resources more quickly to keep it supplied, which would hardly be in her national interest. Britain announces parallel plans to rebuild its nuclear arsenal as its media publicise accusations that Russia was in some way behind the curious death of an exile who was found to be radioactive in London. The Government has declined to name the targets it has in mind for the nuclear weaponry, but it appears to be less than an efficient way to kill Afghan tribesmen or resistance fighters in other places. It may succeed, however, in supporting the arms industry and help counter recession.

783. Angola joins OPEC

In most regards OPEC has ceased to be a meaningful entity in so far as natural depletion now does the job of curtailing production to support price, which was its primary mission following the example of the Texas Railroad Commission, when the United States faced a glut.

Angola's deepwater fields gave it a second lease of life but are likely to peak soon and decline steeply, but it can remain an exporter for about another ten years since its consumption is only 50 kb/d (0.9 Gb/a).

Even so, a meaningful membership of OPEC probably can't last more than a few years. Perhaps it speaks of the Government trying to defend itself from possible pressure by the foreign countries, whose companies are developing its oil, some of whom are developing military bases in the vicinity.



784. The Bolivarian Revolution

Ugo Chavez returned to power after a landslide victory at the polls in oil-rich Venezuela, and has now been joined by his friend Rafael Correa who won the election in Ecuador, having proposed to reject a regional free-trade Treaty. Ecuador's substantial oil revenues are currently wholly dedicated to servicing foreign debt, and the country even abandoned its own currency, the *sucre*, some years ago. Accordingly, some positive major changes may be in store for this beautiful country which straddles the Andes and extends over large tracts of the Amazon headwaters. It has ample natural resources to support its modest population of 13 million in a traditional sustainable way, with the banana crop being a useful earner of foreign exchange. Meanwhile Fidel Castro, who seems to have become something of an inspiration for Latin America, retreats from public life in ill-health at the age of eighty years, posing questions about the succession on the green island of Cuba.

785. Weapons of Mass Destruction

President Bush and Mr Blair looked rather uncomfortable when they met the press in response to the recent US Government report by the Iraq Study Group which described the invasion of Iraq in less than enthusiastic terms. The President explicitly defended his decision to invade on the grounds of his concern for *energy supply*.

Countries presumably had the sovereign right to decide on the rate at which they deplete their resources but certainly any decision to restrict exports might have caused a form of *Mass Destruction* for the US economy as the country imports over 60% of its oil.

786. Depletion in Russia

Russia's Minister of Natural Resources, Yuri Trutnev, stated on December 8th that some of the foreign companies operating in the country are producing oil at above agreed rates of extraction, with as much as 10% of the country's production being in violation. The rights granted to the foreign companies are of a fixed duration, giving them a motive to extract as fast as possible.

The Minister added that the recovery factor had fallen from 45% to 30% over the past ten years. If so, this would be the precise opposite of developments in other countries where reported recoveries have tended to improve, albeit in part as a consequence of being under-reported initially to comply with strict Stock Exchange rules. In general, reserves tended to be over-reported under the Soviet system, so in part the Minister's statement may reflect a correction.

It would appear from the statement that the Russian Government is aware of the underlying resource depletion imposed by Nature. If so, it has every good reason to restrict exports to preserve as much as possible for domestic use, even if some of its foreign customers are re-arming themselves with new nuclear weapons.

(Mos.news.com 10.12.06 : reference furnished by John Busby)

787. Peak Oil's Ancestor: the Peak of British Coal Production in the 1920s.

By Ugo Bardi www.aspoitalia.net ugo.bardi@unifi.it

Dec 10, 2006

We are just a few years away from *Peak Oil*; the moment when the worldwide oil production will start an irreversible decline. What should we expect to happen at the peak and afterwards? History is not a direct guide, since there are no past cases of an important global commodity, such as oil, peaking. However, there have been regional peaks which had global effects. The best known case is that of the US oil production that peaked in 1970 which brought the first great oil crisis in the years that followed. But that was not the first case of a major resource peaking and declining; there was another major peak almost half a century before: *Peak Coal* in Great Britain, in the 1920s.

The geological past left to Great Britain an endowment in coal unparalleled in any other region of Europe. Exploitation started in the Middle Ages and, already in early 18th Century had become an exponentially growing industry. Coal fuelled the British industrial revolution, and was also connected to political power, allowing Britain to construct the first, and so far the only, truly world empire in history. The importance of coal is hard to over-estimate. During the period of expansion of the industry, a British miner could produce almost 250 tons of coal per year (Kirby 1977). Even taking into account that about 20% had to be used for mining more coal, the productivity of a coal miner, in energy terms, was hundreds of times larger than that of an agricultural worker. At the height of its empire, Britain employed more than one million miners (Kirby 1977). It was the superpower of the time, being challenged only by other coal-producing States. In the First World War, British coal fought against German coal: British coal won.

But coal couldn't last forever, even for the richly endowed Britain. Already in mid 19th Century, William Stanley Jevons had predicted, in his *The Coal Question* (1856), that depletion would one day make British coal too expensive for British industry. Jevons did n't state explicitly the concept of *Peak*

Coal but, in a qualitative sense, his analysis was similar to that of Marion King Hubbert for the oil production in the United States (Hubbert, 1956). And Jevons had been right: the peak of British coal production occurred in 1913. The British coal industry struggled to maintain production but couldn't reach that level again. The strain on the industry is also shown by the two miners' general strikes of 1921 and 1926 that caused a temporary fall of production. The downward trend became evident in the 1930s and could not be stopped. The British production followed a classic *bell-shaped* curve in good agreement with Hubbert's model, with a best fit of the distribution giving a peak in 1923, only ten years after the actual. Today, coal production in Britain is less than one tenth than it was at its peak.

The peak of the British coal production was a turning point in history; never before had a major energy producing region started its decline. There are impressive analogies for the case of the British *Coal Peak* of 1923 and that of the American *Oil Peak* of 1970. In both cases, the countries were producing at peak about 20% of the world total. In both cases, the worldwide consequences were important. Before the peak, Britain was exporting about 25% of its domestic production, and this amount had been growing exponentially together with production. After peak, exports started to decline, causing a shortage of coal in the world market. In the case of the US, oil exports were not important before the peak (DOE 1993). But, after the peak, the US oil imports soared rapidly, leading also to shortage on the world market. The

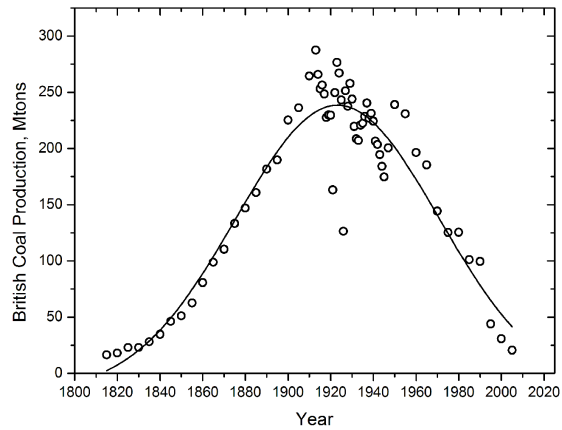


Figure 1. British coal production from 1815 to 2004. The data from 1815 to 1860 are from Cook and Stevenson, 1996. The data from 1860 to 1946 are from Kirby 1977; the data from 1947 up to present are from the British Coal Authority (accessed 2006). The production data are fitted with a Gaussian function which approximates the Hubbert curve. The maximum historical production is in 1913 with 287 M tons, the maximum of the fitting curve is in 1923.

oil shortages in the 1970s gave rise to the price spikes causing the *Great Oil Crisis*. A similar spike took place in the 1920s for coal (Australian Gov., 2006) although it was less pronounced. Most likely, the coal spike was less abrupt because the price controls that had been put in place during the war were only slowly relaxed in the 1920s. Coal prices stayed high in the 1920s, but fell with the market crash of 1929.

Many regions of Europe depended on British coal, so the lack of coal was felt everywhere. Several events that followed the British coal peak may be related to the reduction of the availability of energy: the decline of the British Empire, the *Great Depression* of the 1930s, as well as the general political upheaval of Europe in the 1920s and 1930s. The Italian newspapers of the 1920s and 1930s are full of insults against Great Britain for not sending to Italy the coal that Italians felt entitled to have. It reflects the kind of attitude that western countries adopted against the Middle East oil producers in the 1970s. But, if British coal was dwindling in the 1930s, German coal was still on the increase; its peak would only arrive in the 1940s. Germany never produced as much hard coal, namely the best quality, as did Britain, but in the 1930s it had the advantage that it could still increase its production, whereas Britain's was declining. In the 1930s, Italy abandoned her traditional ally, Britain, for Germany because only Germany could provide the coal that the Italian industry needed at a price that Italians could afford. Only later on, would they realize that the price of German coal was to be much higher than it had seemed.

In the 1950s, after the turmoil of the Second World War, the problems caused by the British coal peak were solved — for a while — by switching to oil. Likewise, after the turmoil of the oil crisis of the 1970s, the problems caused by the US oil peak were solved — for a while — by switching to other productive regions. In both cases, neither the public, nor the politicians, nor the economists saw the relationships between the political and economic events of the time which were related to the peaking of oil and coal production. In the 1930s, whole books were written on coal (Neuman 1934) but the word *depletion* was hardly mentioned. In 1977, Kirby wrote more than 200 pages on the history of the British coal industry during the peak period without ever mentioning the question of depletion. Apparently, people could not grasp why, while there was still coal to be extracted, production would decline. They didn't understand that it is not physical availability that counts, but the cost of extraction that increases with progressive depletion. It was a concept that Jevons had already understood almost a century before but had not survived in mainstream economics. The case of the US oil peak was similar; peaking was generally ignored by economists, even though Marion King Hubbert had predicted it correctly. All that happened afterwards was attributed to political causes. Both peaks were soon forgotten.

Today, it is global oil production which is peaking. It is something we are all seeing, but it is not *politically correct* to mention the fact. Peaking is a momentous event, but it hints at a reality that most people would rather ignore: the finiteness of mineral resources. We may well ignore the global peak, too, just as most people ignored the British coal peak of the 1920s and the US oil peak of 1970. Yet, we won't be able to ignore its effects.

References

- Australian Government, the Treasury, 2006 (accessed)
www.treasury.gov.au/documents/1042/HTML/docshell.asp?URL=02_Resource_commodities.asp
 Coal Authority, 2006 (accessed) www.coalminingreports.co.uk
 Cook, C and Stevenson, J. 1996. *The Longman Handbook of Modern British History, 1714-1995*.
 Longman 3rd Edition. London and New York:
 DOE 1993, DOE/EIA-0572 Report,
 Hubbert, M.K. (1956). *Nuclear Energy and the Fossil Fuels*. Presented before the Spring Meeting of the
 Southern District, American Petroleum Institute, Plaza Hotel, San Antonio, Texas, March 7-8-9, 1956
 Kirby, M. W., 1977 *The British Coalmining Industry, 1870-1946*, The Macmillan Press Ltd, London and
 Birmingham.
 Neuman A.M. 1934 *Economic Organization of the British Coal Industry*; Routledge.

788. *Final Frontier for Investors*

The December 8th issue of the CIBC World Markets report, published by this prestigious Canadian bank, opens with an article entitled *The Final Frontier*. It explains how the decline of *Regular Conventional* oil production can be offset for a few years by the costly tar sands of Canada, offering investors a *final* opportunity. It is noteworthy that this investment house, which sees the Peak Oil issue more clearly than most, evidently — to judge from the figure credits — relies in part on the Wood MacKenzie industry database which is relatively reliable.

The investment community generally prefers to hunt in packs, but a pack needs a leader. It looks as if CIBC is a good candidate although it has rivals including Charles Maxwell of Weeden & Co on the New York Exchange, who also clearly grasps the Peak Oil situation, offering sound advice.

(Reference furnished by Chris Skrebowski)

789. *Depletion in Iran*

Business Week of December 11th carries an interesting article on the flagging output from Iranian fields, which, with soaring domestic demand, may curtail exports. The article emphasizes that its fields are old and heavily depleted, but is misled by exaggerated official reserves, as reported in the *BP Statistical Review*, which leads it to suggest a simplistic solution in the form of new investment. No doubt, modern technology can lift production, but at the cost of accelerated depletion, which may be far from the national interest. That said, it evidently does need additional refining capacity as it spends \$5 billion a year on product imports. The reality of its oil situation may explain its interest in developing nuclear energy to meet its future needs.

(Reference furnished by Walter Youngquist)

790. *Population*

Society has always had taboo subjects that are unmentionable in polite circles. One has been to question the scale of the holocaust which has landed several people in jail ; another has been population ; and a third has been *Peak Oil* although it now becomes mentionable, despite cries of disgust by the flat-earth community. The following Open Letter by William Stanton touches on one of the taboos, which diplomatic editors avoid, but it does seem worth including, despite the risks, on account of its relevance to *Peak Oil*.

Letter to the Editor, *New Scientist*
 22 November 2006

Issue number 2578 of *New Scientist*, celebrating 50 years of the magazine, features *the latest thinking on the biggest questions* (editorial, p 5). Forty-six *leading scientists*, invited to predict “the biggest breakthroughs of the next 50 years”, speculate on matters such as gravitational waves and parallel universes. Not one of them, surprisingly in view of Earth's current environmental and energy crises, addresses the even bigger question: *will vastly expensive and energy-hungry scientific research survive until 2056?*

Your supplement: *Fifty Years of New Scientist* illustrates the problem. In 1962 Sir Julian Huxley called for “control of the present excessive rate of population increase” (p 14). As he spoke, world population was about 3.2 billion. His warning went unheeded. Political correctness ruled that the subjects of his lecture, overpopulation and eugenics, quickly became taboo in the West.

Forty-three years later, Fred Pearce lamented (p 32) *Time is running out, and fast. Rising carbon dioxide levels and higher temperatures will soon set in motion potentially catastrophic changes* Pearce did not mention that world population had reached 6.4 billion, and was growing by 80 million a year.

Now that humans are pressing so hard on the global environment that climate change (probably) and mass extinction of species (certainly) are well under way, one would expect constructive discussions, working out how to avoid Pearce's catastrophic changes, to figure largely in your pages. They do not. Reducing greenhouse gas emissions, a subject that you do address, is a no-brainer. They will never be significantly reduced as long as the number of emitters is growing by a billion every 13 years.

Jack Parsons of the Optimum Population Trust has exposed the BBC's long-term avoidance of the subject of population growth in his book *Treason of the BBC* (2006). *New Scientist* has been equally irresponsible. As a reader/subscriber for 30 years I have noted that the urgent need to reduce population almost never features in your pages. Since 1986 I personally have sent you 18 letters about the dangers of overpopulation. None were published or acted upon. You did issue a token forecast, "Judgement Day" (28 April 2001), but it avoided drawing conclusions.

In 2003 *New Scientist* refused to review my book: *The Rapid Growth of Human Populations 1750 - 2000; Histories, Consequences, Issues, Nation by Nation*, which brings Malthus up to date. Your review editor, Maggie McDonald, told me that other subjects were more deserving of the magazine's limited space.

Malthus has always been right. The population crisis he predicted has been delayed, not cancelled. Darwinian competition between billions of people trying to survive on dwindling resources, especially fossil fuels, will have to reduce world population by more than 90 per cent before it can settle down at sustainable, pre-Industrial Revolution, levels. Whether the reduction is achieved by classic Malthusian agents: war, famine and pestilence, or in less painful ways organised by human intelligence, depends on us. Can we, *in extremis*, face and debate reality, or will we, as usual, take refuge in denial?

Dr William Stanton

Calendar - Forthcoming Conferences and Meetings

ASPO members and associates [shown in parenthesis] will be addressing the subject of Peak Oil at the following conferences and meetings. Information for inclusion in future newsletters is welcomed.

December 1 National Assembly, Korea, [Alekklett]

December 12 COFORD Forest Energy Conference, **Tullamore**, Ireland [Higgs]

2007

January 19 Lecture, Bayreuth University, **Bayreuth**, Germany [Campbell]

January 20-24 Conference, **Nairobi**, Kenya [Alekklett]

January 26 One Planet Agriculture, **Cardiff**, Wales [Campbell]

February 10 Local Community Meeting, Co. Kerry, Ireland [Campbell]

February 21 Boole Lecture, University College, **Cork** [Campbell]

March 10 Minerals, Energy & the Environment, ASPO-ITALIA, **Florence**, Italy [Bardi]

May 28-30 Planning for Oil Depletion ASPO-SOUTH AFRICA Conference **Cape Town** [Ratcliffe]

September 17-18 ASPO-6 International Conference, Ireland

NOTE

This newsletter is produced and distributed for perusal primarily by ASPO members. Permission to reproduce items from the Newsletter, subject to acknowledgement, is expressly granted.

Compiled by C.J.Campbell, Staball Hill, Ballydehob, Co. Cork, Ireland.