Alfred Bader Fonds

Correspondence - General

re: Kroto, Harry, Sir
Nobel Laureate 1996

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KROTO, HARRY, SIR
Nobel Laureate

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AT BRIGHTON

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01 July 1996

Dr A R Bader
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Bexhill-on-Sea
TN39 3QE

Dear Alfred

I was so pleased Isobel and you could come over for Harry Kroto's lecture and subsequent celebration last Friday. The accompanying photocopies of Harry's overheads may be more than you need. I have included all those containing quotes, together with the list of supporters of the program (including yourself). Please let me know if you require anything else.

As I mentioned to you briefly, we are again going through a difficult period as the EPSRC, in their infinite wisdom, have rejected our chemistry-oriented fullerene submission. This means that as things stand we will lose Adam Darwish - our top-class postdoc - in late September, with serious consequences to our research effort. I will follow your advice, make an approach to King Hussein of Jordan, and let you know the outcome.

As it is likely that we will meet again during your current visit to the UK it remains for Carole and me to send you our very best wishes. I look forward to meeting you towards the end of the year.

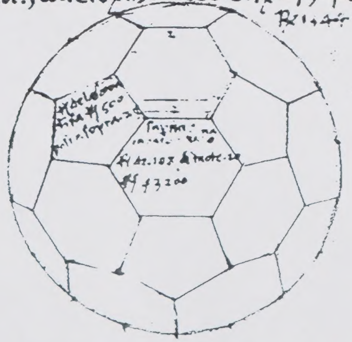
With kindest regards.

Yours sincerely

D R M Walton

Piero della Franciesca

continentiſ corporiſ .32. baſium / de quo petitu fuit. Et latuſ pentagoni eſt 2. Modo inveniendus eſt diameter circuli ipſius continentiſ. Tu habeſ in .xxvii. primi / quod quando latuſ pentagoni eſt .4. / diameter circuli continentiſ eſt R. eiuſ ſumme quam facit R. 204 4/5 ſuperiuſ poſita 32. Cuius capiaſ 1/4 ſicut radicis. Habebiſ 2 / addita R. 4/5. quod detrahe ex .14 1/2 / addita R. 101 1/4. Reliquum eſt .12 1/2 / addita R. 84 1/20 taliſ eſt axis pyramidiſ pentagonalium & ſuperficieſ unius baſiſ pentagonaliſ eſt radix ſumme / quam facit R. 500. ſuperiuſ poſita .25. & ſuperficieſ earum .12. eſt radix ſumme quam facit R. 10368000. ſuperiuſ poſita 3600. Nunc pro ſuperficie 20 baſium exagonarum / quarum cuilibet habeſ latuſ quod eſt 2. & ſunt pro qualibet baſe .6. trianguli equilateri / quorum cathetuſ erit R. 3. quod multiplicatum cum medietate baſiſ: quod eſt .1. conficit R. 3. quod eſt ſuperficieſ uniuſ trianguli / & quelibet baſa eſt .6. triangulorum & 20 baſium. que in .6. multiplicate conficiunt .120 / quod redactum ad R. conficit 14400. multiplica per .3. conficit 43200. & R. 43200 / eſt ſuperficieſ corporiſ .20 baſium exagonarum. Et ita habeſ quod ſuperficieſ corporiſ 20 baſium exagonalium eſt radix .43200. Et ſuperficieſ 12 baſium pentagonalium eſt radix ſumme / quam facit radix 10368000 / ſuperiuſ poſita 3600. que eſt ſuperficieſ totiuſ corporiſ 32 baſium. Nunc videndum reſtat de quadratura. Ideo capiaſ 1/3 ſuperficiei 20 baſium exagonalium que erit .4800. quod multiplica cum axe qui eſt .10 1/2 / addita R. 101 1/4 conficit .50400. addita radice 261700000 / & R. eiuſ ſumme / quam facit radix 261700000 ſuperiuſ poſita 50400. tanta eſt quadratura 20 pyramidum exagonalium. Nunc pro 12 pentagoniſ. Capiaſ 1/3 ſuperficiei ipſarum / quam ſciſ eſſe 3600. & R. 1036800 / cuius tertia parſ erit 400. & radix 128000 multiplica cum eiuſ axe quem ſciſ eſſe 12 1/2. R. 84 1/20 conficit .5000. & R. 19800000 / & R. 10752400 & R. 1[illegible]8000



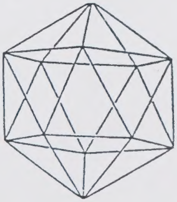
Partial Translation of a Book "Aromaticity (in Japanese)" by Z. Yoshida and E. Osawa, Kagakudojin, Kyoto: 1971, pp. 174-178.

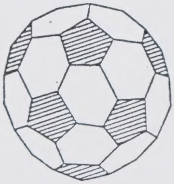
Translated by Eiji Osawa, November 10, 1986

5.6.2 Possibilities of Superaromatic Hydrocarbons

Let us temporary define the term 'superaromaticity' as the lowering of energy that might accompany when electrons delocalize over molecular orbitals on the surface of some three-dimensional solid having high spherical symmetry. Is there any possibility of ever realizing such a phenomenon with the familiar hydrocarbons?

Let us consider a possibility of realizing overlap, not between sigma bonds on the sphere, but between p_z orbitals directed perpendicular to the surface of sphere. If we should be able to achieve superconjugation by delocalization of pi-electrons over the surface of spherical skeleton composed of carbon atoms, then the sphere will have to be considerably large, so that the p_z-p_z overlap may not be much small than on a planar skeleton. If we follow the tactics of truncating a Platonic solid to produce spherical structure, the next member of such solids composed only of regular triangle is icosahedrane (149). Truncation of a vertex of this solid produces a regular pentagon. Truncation of all twelve verteces gives a beautiful 32-faced solid (150), which may be called truncated icosahedrane.[*3]

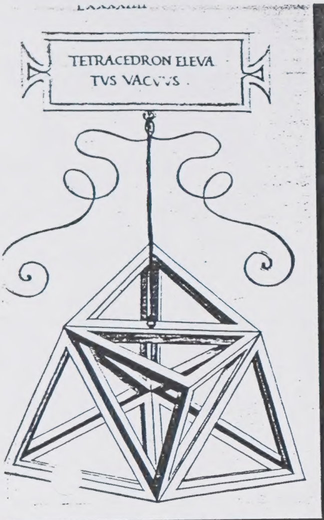




the same length. Then, C_{60}[*4] molecule that results from replacing 60 vertices with sp^2-hybridized carbon atoms does not seem totally unrealistic.

[*3] This solid has the same design as that appearing on the surface of an official soccer ball. Study the ball yourself.

[*4] (Note added during translation) $C_{60}H_{60}$ in the original print is the result of typographical error.



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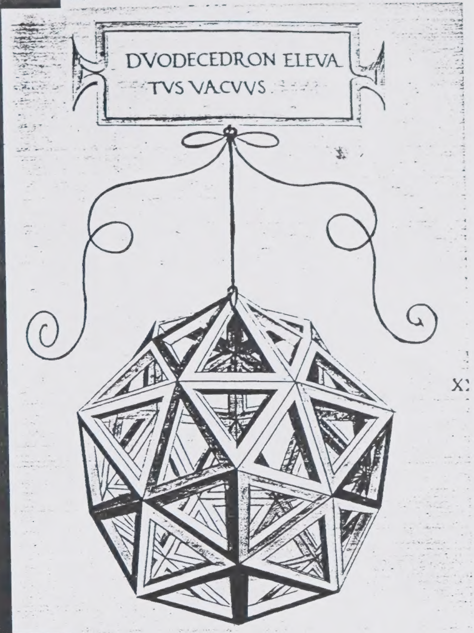

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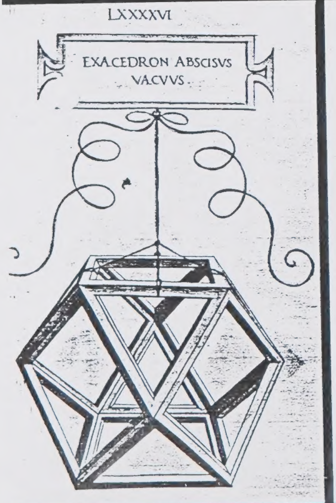

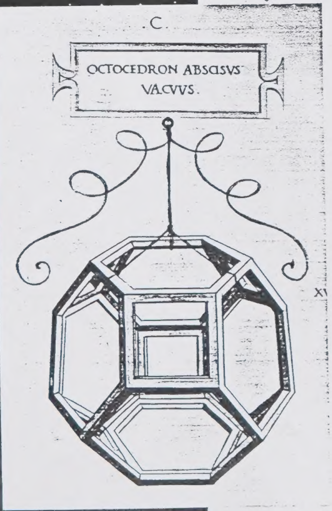

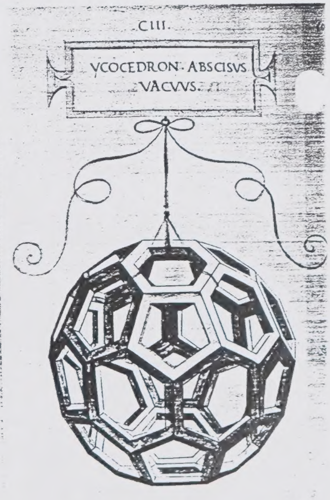

Brighton
Evening
Argus

Carbon copy of a secret of life

by Alex Bellos

SCIENTISTS at Sussex University are leading the world in one of the most exciting chemical developments of the century.

Together with researchers in America and Germany they have discovered a new form of carbon, the chemical that is the key to life.

The find has been compared to the discovery of DNA 36 years ago.

Pure carbon had previously been thought to be only present in diamonds — the hardest substance in the world — and graphite, one of the softest.

The new carbon, nicknamed the "buckyball", has molecules the shape of footballs, but only a billionth of a metre wide.

Fantastic likeness
Harry!

Scientists have suggested the new carbon could be used as the world's smallest ballbearings in tiny robots used for unclogging arteries or mixed with metal it could be used as a super-conductor.

The research is being pioneered by Prof Harry Kroto, Dr David Walton and Dr Roger Taylor, of Sussex University.

In a joint statement, they claim it is one of the most amazing discoveries of this century.

"Carbon is the first element man ever knew of. It gives us some insight into the structure of soot. This is very important because soot is very common and we know little about it. It sounds silly, but this is one of the biggest advances in modern day science."

The scientists are critical of the little support given by the British Government.

They said: "It has taken us ages to get a tiny amount of money compared to what we need. We are being beaten by the U.S. because they certainly have Government money."

Opting-out row

HEALTH OFFICIALS have been accused of failing to consult residents over plans to make a hospital self-governing.

Councillors say Littlehampton residents are being left out in the

Managers of the priority care unit, which includes Littlehampton Hospital, mental health care and care for the elderly, announced last month they are considering breaking away from the health authority.

Worthing and Shoreham's South-

it came with a vengeance,

Can scientists shake off their mad media image?

American physicists are campaigning to change the way they are portrayed on screen, but **Geoff Brown** believes the absent-minded professor is here to stay

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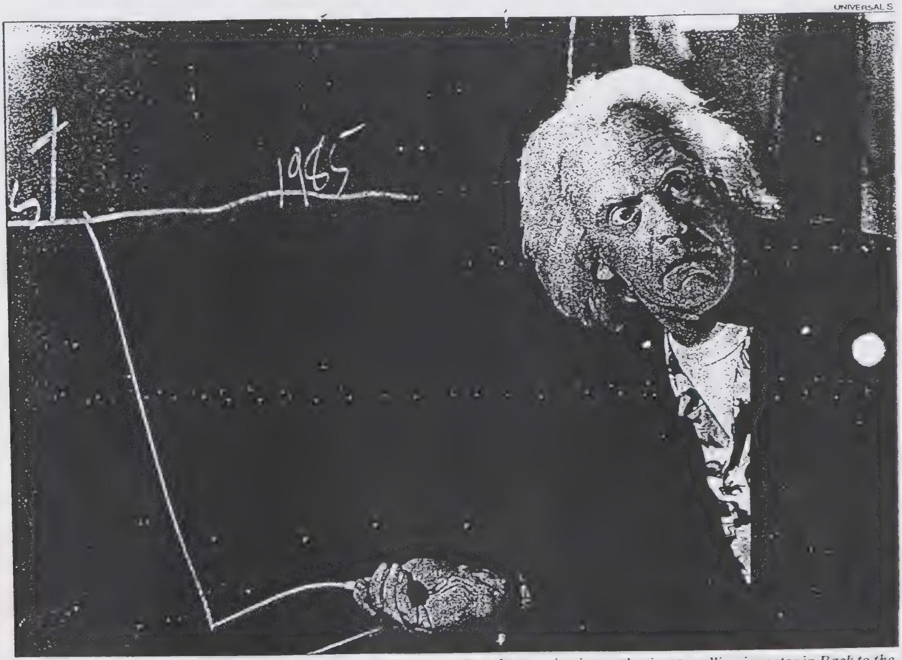

Frankenstein's legacy: Christopher Lloyd continues the cinema's tradition of nutty scientists as the time-travelling inventor in *Back to the*

Nothing is more characteristic of the British ruling class of the present time than their contempt for science and technology[1], the material basis for the production of the wealth which sustains them, unless it is their scorn for theory in general. For example, this year The Times published a major article[6] to the effect that "The national curriculum puts a quite unrealistic emphasis on science and mathematics, which few of us ever need." This promotes a cargo-cult society where food comes from the supermarket and computers come from the Far East and nobody need understand how they work. In the Victorian period even the SPCK (Society for the Propagation of Christian Knowledge) could produce "A Catechism of the Steam Engine" so that all could understand the forces changing society[2].

Alan Mackay 1995

Scientists have no way of measuring whether any pressure exists *now* on the human species to improve its intellect. But as they discover more about the earth and about our unity with other life, they can see all too clearly some of the origins and consequences of our present behaviour. For most of its existence the human species has occupied its biological niche as a parasite on the ability of green plants to collect solar energy, and as a predator of other animals that do the same. A few hundred years ago—a mere breath of time—a concentrated source of energy was discovered in the fossil fuels: essentially, the energy of old sunlight trapped by life and buried by the earth. Humanity has exploited this resource with all the restraint of a fox in a chicken house.

Aust J. Chem 46 265 (1993)

Sir John Cornforth

But the dilemma is this: the historical perspective that I have outlined is peculiar to scientists. But scientists are a small minority, and people conversant with science, let alone scientists, are a small minority in administration, government and (in most countries, including this one) business. The perspective of the politician does not usually extend beyond the next election. The unborn have no vote, whereas the easiest way to get the votes of the majority is to promise them increases in their power to consume. The average citizen's reaction is: "What did posterity ever do for me?" The administrator seldom has a scientific background, or any remit to consider an extended future. The businessman wants to make profits—the quicker the better—for himself or his shareholders. Among all these people there seems to be a general vague expectation, if they think of the matter at all, that the scientists are sure to find some way to rescue future generations from the shit into which the present one is dropping them. And

The proper role of government in capitalistic societies in an era of man-made brain power industries, is to represent the interest of the future to the present, but today's governments are doing precisely the opposite. They are lowering investments in the future to raise consumption in the present.

How is a capitalistic system to function in a brainpower era when brainpower cannot be owned? Most firms that now have this characteristic (law firms, accounting firms, investment banks) are not run by absentee outside capitalistic owners. They hire, pay, promote, make decisions, and select leaders in a very different manner from the General Motors or General Electrics of this world. When firms dominated by brainpower try to bring in absentee capitalistic owners, it doesn't work.

Lester Thurow
"The Future of Capitalism

global electricity industry. But at that time the best that Faraday can do is to scribble — as we know he famously said — "What use is a newborn baby?

If Faraday were alive today, this reply would disqualify his application for public money. At last week's launch of his first "corporate plan", Prof Richard Brook, chief executive of the Engineering and Physical Sciences Research Council (EPSRC), declared: "I would be suspicious of a scientist who could not explain why the work was being done in the first place."

When Prof Brook seeks relevance, he stresses relevance to the economy. This emphasis has made many researchers — their work motivated by the pull of curiosity rather than the push of managers — fear for the future of fundamental science. At stake is

Rob Margetts is Director of Research and Technology at ICI, and a member of the EPSRC User Panel.

But Rob Margetts balks when it comes to so-called blue-sky thinking, or research for its own sake; especially when there are effective means, in ICI's view, of steering its funds selectively to areas of excitement and industrial opportunity. He says: "I'm uncomfortable with the idea of blue-sky research because it implies an activity with little sense of direction."

EPSRC NEWSLINE - SEPTEMBER 1995

i seek not to know the answers,
But to understand the questions

The Radio Times Kung Fu