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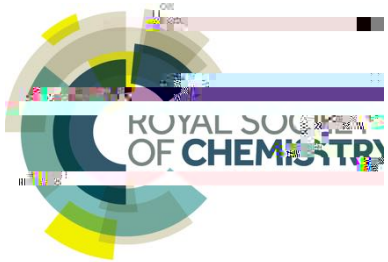

Historical Group

NEWSLETTER
and
SUMMARY OF PAPERS

Editor: Dr Anna Simmons

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Contents

ABOUT THE RSCHG

The Royal Society of Chemistry Historical Group (RSCHG) was founded in 1975 for RSC members interested in all aspects of the history of chemistry and the chemical industry.

10.49 *Introduction to the Day* Dr Michael Jewess

10.55 *Discovery of the Phenomenon of Polarisation of Light*
Prof. John Steeds, FRS (University of Bristol)

11.35 *Discovery of Optical Activity and Chirality in Molecules*
Prof. Alan Dronsfield (University of Derby)

12.30 Lunch: this is not provided but there are many cafés and bars close by.

Session 2: The Science from about 1890

Chair: Dr Jane Skelly (Lewis Carroll Society

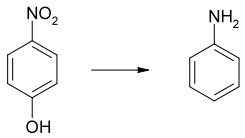
Birmingham Children's Hospital Charity. For UK orders the book is available to purchase directly from Birmingham Children's Hospital for £12.95 with free P&P at

Mark I. Grossman, “John Dalton’s “Aha” Moment: The Origin of the Chemical Atomic Theory”.

José Ramón Bertomeu Sánchez, “Lead Poisoning in France around

Ramsay and Lord Rayleigh's paper which announces the discovery of argon. "Argon, A New Constituent of the Atmosphere", was published in the *Philosophical Transactions of the Royal Society, London, A* 1895, 186A,

It was clear to Duisberg that the process could be rendered more profitable if a use could be found for the 4-nitrophenol by-product arising from the nitration of the phenol. Typically, the nitration of phenol yields 30-40% of the 2-isomer and about 15% of the 4-isomer. Bayer was accumulating vat-loads of the latter product with no apparent commercial use. Works chemist Oskar Hinsberg was given the job of converting the waste nitrophenol into a marketable medication [4]. Success came within a matter of weeks. Presumably he was guided by knowledge of the formulae of the existing antipyretic drugs. His


NO2
OH
NH2

Aspirin – The Culprit

The first stage in the elimination of phenacetin from the body is its conversion into acetaminophen (itself later marketed as *paracetamol*), and aspirin potentiates the nephrotoxicity of this product. Most of the acetaminophen is converted into water-soluble glucuronides and sulfates and excreted via the urine, but 5-15% is oxidised to N-acetyl-*p*-benzoquinoneimine (NAPQI) [7]. If the phenacetin is consumed alone, there is usually sufficient glutathione in the kidneys' papillae to detoxify this imine safely, by formation of the glucuronuride. If the phenacetin is ingested alongside aspirin (acetyl salicylic acid), the latter is hydrolysed to salicylate, which depletes the glutathione in both the kidney's cortex and papillae. Thus the imine, deprived of its excretory route via the urine, remains longer within the kidney with the potential to inflict

It was an era of developing science and technology with new ideas and opportunities. Evelyn continued her studies at Wolverhampton Science and Technical School in Garrick Street, an institution that provided technical, scientific and commercial evening classes. In 1902, Evelyn, now aged twenty

is likely that Evelyn's interest and expertise in dietetics began at this point in her career.

Evelyn's time in Toronto was cut short by her mother's illness and subsequent death, and she returned to Wolverhampton in 1922. Although she was invited back to Toronto, her career thereafter remained rooted in the West Midlands. Serendipity undoubtedly played a role here. Her cousin, Dr Leonard Parsons, was an eminent paediatrician at Birmingham Children's Hospital. He looked after children with a variety of wasting disorders and had become aware that the way forward in understanding these medical conditions was to investigate them with chemical analyses. Knowing Evelyn's

Her department at BCH began to grow, with an assistant and a PhD student, and in 1925 the laboratory moved into larger rooms, now in the basement of the hospital in the outpatient building. She continued developing new micro methods suitable for use with the small volumes of blood from babies and infants. It is often been said that children are not just small adults, and nothing is more true when considering clinical chemistry in children. The concept that there would be different levels of chemicals in children of different ages was something Evelyn appreciated very early on, and she established reference interval data on large numbers of children, including young infants and babies for several different analyses for the first time. The most remarkable study was that of plasma protein over 150 babies using only 0.01ml plasma specimens.

Contribution to Understanding Disease in Children

Evelyn was no longer simply supporting the research of Leonard Parsons; she was providing a clinical chemistry service for the whole hospital. MRC grants continued throughout the 1920s and 1930s when she worked with many hospital physicians of diverse specialities on a range of clinical disorders. In reading her publications, the attention to detail is striking, as are the large numbers of subjects in her studies. The scientist in her was evident, with great caution being emphasised when drawing conclusions where only small numbers were involved and/or there were methodological limitations.

In the 1930s, research with Leonard Parsons continued with investigating the effects of different diets on anaemia. For their initial work, Evelyn turned her hand to feeding different diets and measuring the size of the red blood cells in cohorts of rats. A common problem in childhood was rickets, and Evelyn describes how she used colonies of rats placed in gardens in different parts of Birmingham with differing

8. O. Folin and H.J. Wu, “A System of Blood Analysis”, *J. Biol.*

that excellent results would be obtained, for the duration of the totality at Camorta was calculated to be no less than 4 minutes 27 seconds, which is an unusually long period for a total eclipse. Unfortunately, however, though the whole of the forenoon was quite fine and the sky almost cloudless, and the party was successful in observing the external contacts at the beginning and end of the solar eclipse, during the progress of the eclipse clouds gathered in front of the sun, and of the period of totality absolutely nothing was to be seen of the sun, and only the shadow of the moon could be seen, making everything like night for this period.

The young physicist Arthur Schuster led the part of the expedition that was based in Siam. Jointly with Lockyer, he drew up an extensive report on the results of the expedition [8].

Meldola's Dyes


Sincerely yours
Raphael Mellhe

15. “The Photographic Image. Abstract of Friday Evening Discourse May 16, 1890”, *Proc. Roy. Institution*, 1890-92, 13, 134.

16. R. Meldola, “Photographic Chemistry. A Course of Three Cantor Lectures, March 9, 16, 23, 1891”, *J. Roy. Soc. Arts*, 1890-1891, 39, 787-795, 799-

The author states at the outset that the book relies on primary source material. That may be true in part. The chemical background, however, tends to rely mainly on secondary sources. The approach of von Hippel is in no small part dictated by his expertise in the field of ecotoxicology. There is also a more personal connection. His great-grandfather was the physicist

No

Donovan Moore, with a Foreword by Jocelyn Bell Burnell, *What Stars Are Made Of: The Life of Cecilia Payne-Gaposchkin* (Cambridge Mass., Harvard University Press, 2020). Pp. 320. ISBN 9780

many of the better-known pioneers of astrophysics and cosmology are

X-ray photograph.

organic chemistry. He found that after World War I growth reduced and he highlighted possible reasons tied to the public perception of chemistry and to the social establishment of chemists. Johnson emphasised the importance of data sources such as the *Chemisches Zentralblatt*, now fully available in electronic form, for historical studies of chemistry. Johnson also discussed the H. Plessner-C. von Ferber non-digital database for comparative studies of the evolution of the chemical community, which represents a target source to be digitised.

When discussing data for computational studies on the history of chemistry, Peter Stadler emphasised the highly structured data for the material system of chemistry available today in large repositories of chemical information. This gathers together information on substances and reactions. Stadler showed how a formal setting for chemical reactions, such as regarding them as graph rewriting rules acting upon molecular structures, may enable us to trace the historical rise of new reaction classes and even to solve questions of the sort “what if” by perturbing the data.

An instance of the highly structured data of the material system, discussed by Stadler, is the Reaxys© database, which results from the merging of the Gmelin and Beilstein Handbooks and incorporates chemical information from the most salient contemporary chemical literature. The exploration of Reaxys© to pose and solve historical questions was the subject of Guillermo Restrepo’s talk. Restrepo showed that the number of new substances taking part in chemical reactions (chemical space) has historically expanded in an exponential way following three clearly distinguishable regimes, with transitions

The meeting concluded with the general sentiment that computational methods constitute a suitable tool to complement methods of research in the history of chemistry. Crucially, the further advance of these approaches requires interdisciplinary work amongst historians, chemists, mathematicians, computer scientists and other specialists.

Jürgen Jost and Guillermo Restrepo
Max Planck Institute for Mathematics in the Sciences,
Leipzig, Germany

FORTHCOMING ONLINE SYMPOSIUM

The fortieth annual meeting of Dyes in History and Archaeology is being organised by the British Museum, London, and will take place