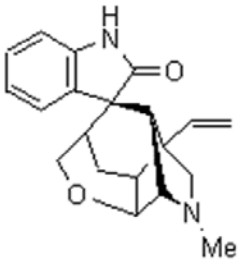
Professor Gurnos Jones

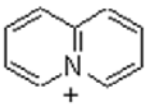
A Tribute

Gurnos Jones was born in Clydach, a small village in South Wales in December 1928. It was here at the local school that he began his academic career at the remarkably early age of three and a half. Whether this was due to an early recognition of his ability or an attempt to reduce the local unemployment rate of 90% by creating teaching posts is not clear: with hindsight we presume it was the former. This was the only period in which Gurnos has lived in Wales. The family emigrated from Wales to England when he was six and at the age of nine Gurnos was a pupil at Samuel Brunt's Grammar School in Mansfield, Nottinghamshire where he was assigned to the arts course. Among his fellow pupils at this time was another fledgling organic chemist – John G. Topliss. Although forced to follow a predominately arts curriculum with little science or mathematics, by the sixth form Gurnos was "hooked on maths" and a transfer to the sciences led to the award of a Notts. County Senior Scholarship and a place to read chemistry at the University of Sheffield.

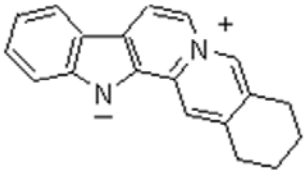
Sheffield was a grim industrial city in the late 1940s: much of its centre had been destroyed. However, the Chemistry Department at the university was strong and there were a number of outstanding chemists on the staff, including R. D. Haworth (Head of Department), Stuart "Soapy" Laurence and T. S. "Tommy" Stevens. In this environment the young Jones's enthusiasm for organic chemistry thrived. He graduated with 1st class honours in 1949 and began his research career by studying for a PhD under the supervision of Tommy Stevens.



1 gelsemine



2 quinolizinium ion

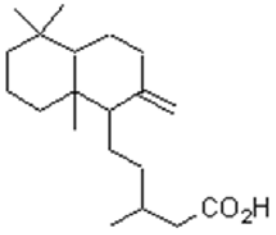


3 sempervirine

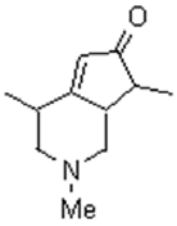
At that time Stevens was actively engaged in studying the rearrangement that bears his name. However, this was not his only research interest and the Jones PhD project was in natural product chemistry. In particular, he was required to isolate samples of gelsemine 1 and determine its structure. This was a tough assignment. The structure was eventually determined not by classical methods but by X-ray crystallography. However, it was during this period that a future research interest was initiated. While waiting for more starting material for extraction of further supplies of gelsemine, Stevens suggested that he investigate routes to the quinolizinium ion 2 which occurs in the structure of the alkaloid sempervirine 3, whose structure had been determined simultaneously by Stevens and by Woodward. Hence, a long-standing interest in heterocyclic chemistry began. Gurnos has fond memories of his time in Sheffield and remembers Tommy Stevens as a "brilliant chemist and a wonderful supervisor." He was awarded a PhD in 1952. His external examiner was Lord Todd and the oral examination lasted fifteen minutes!

Completion of the PhD led to the award of an Ellison Fellowship to work with Prof. F.E. "Freddy" King at the University of Nottingham. Here he investigated a hardwood gum from British Guyana from which he isolated and determined the structure of eperuic acid 4 using classical methods, and "no instruments other than a UV single beam spectrometer." Eperuic acid was the first member of a class of bicyclic terpenes and a scientific high point of this period was King's presentation of these results to an evening meeting of the Chemical Society at Burlington House.

Nottingham was followed by a brief and unsatisfactory period in the Civil Service, working in the Colonial Products Laboratory in central London. Dissatisfaction with the routine nature of this work led the young and recently married Gurnos Jones to apply successfully for the post of Assistant Lecturer in Organic Chemistry at the recently founded University College of North Staffordshire – later to become the University of Keele. Gurnos took up this appointment on the 1st January 1955, probably not realising that he was to spend the remainder of his career in this institution and play a major role in its development.



4 eperuic acid

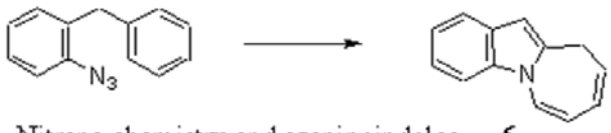


5 tecomanine

The move to Keele provided the opportunity for independent research. The 1950s were times of rapid change in chemical research. Although still deeply interested in natural product chemistry, it seemed to Gurnos that X-ray crystallography was the future for structure determination of natural products and he made a deliberate decision to move his research interests into heterocyclic synthesis. His first research student at Keele (Ted Glover) synthesised quinolizinium bromide in quantitative yield and a long-standing interest was established. This was the beginning of many

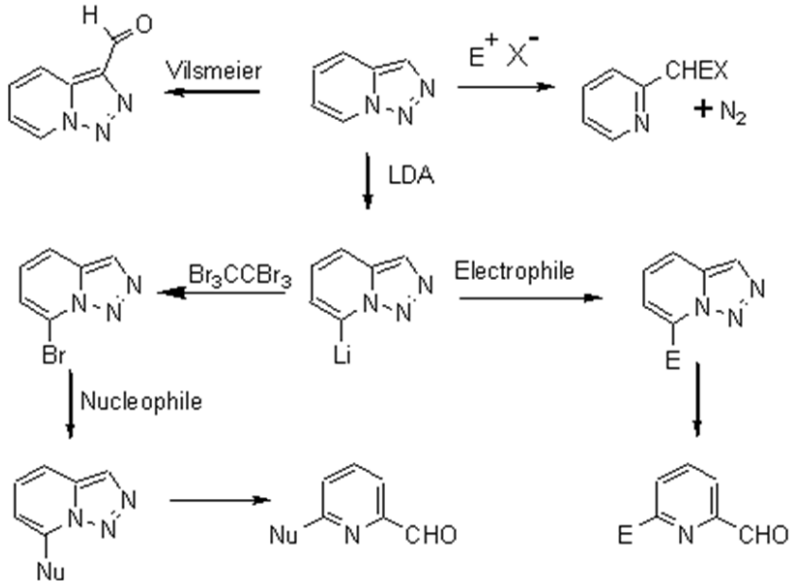
studies of bicyclic heterocyclic molecules with bridgehead nitrogen atoms, including aza-αzulenes and, more recently, triazoloquinolines.

Space does not permit a detailed account of these and other studies but it is interesting to note how Gurnos's regular attendance at international meetings and sabbatical visits influenced his research (and teaching). In 1962 Gurnos spent a sabbatical leave as a visiting scientist at the NIH in Maryland where he worked with Bill Wildman and Hank Fales and established the structure of the alkaloid tecomanine 3 (now using NMR as well as UV). This visit enabled him to attend a Gordon Conference and prompted him to return two years later to the 1st Heterocyclic Gordon Conference. Here he met a number of leading heterocyclic chemists, including Al Meyers, Leo Paquette, Ted Taylor and Alan Katritzky, all of whom have had a significant influence on his scientific activities. Indeed, Gurnos Jones enthusiastically supported Alan Katritzky when he suggested to him in 1966 that one of the new Chemical Society subject groups should be devoted to heterocyclic chemistry. The first meeting of this group was in fact held at Keele in 1967 and Gurnos Jones was the first Secretary/Treasurer and subsequently Chairman of the Heterocyclic Group (1979-1981). This group has been hugely successful: the biennial Grasmere meeting has an international reputation and Gurnos has never missed one.



Nitrene chemistry and azepinoindoles **6**

In 1973 the Joneses spent six months at the Australian National University in Canberra where Gurnos was a Visiting Professor. Here he established links with a number of Australian heterocyclic chemists. In particular, an association with Bill Crow led to an interest in flash vacuum pyrolysis and nitrenes. This interest influenced the bridgehead nitrogen chemistry, especially the preparation of azepinoindoles 6 (Equation). Subsequently, a study of triazolopyridine chemistry (Scheme) led to an interest in lithiation reactions and a regiospecific pyridine synthesis, which was certainly influenced by his interactions with Al Meyers. More recently, the triazolopyridine chemistry led to a fruitful collaboration with Belen Abarca at the University of Valencia, Spain and an interest in the Vilsmeir reaction that has resulted in two substantial and comprehensive reviews for Organic Reactions.



Scheme 1. Triazolopyridines and a regiospecific synthesis of 2,6-disubstituted pyridines.

Gurnos has always played a full and active role at the University of Keele as it has developed from a new, and sometimes controversial, University College with innovative teaching methods to a thriving research based university. He was Head of the Chemistry Department for ten years, Dean of the Science Board and has served on almost every committee in the university. Among other things, Gurnos has always been a keen walker and a regular tennis and squash player. He was Chairman of the Physical Recreation Committeee of the University for twenty years and President of the Mountaineering club for thirty years. In retirement Gurnos continues to maintain an active interest in heterocyclic chemistry. He appears in the department most days (usually around coffee-time and tea-time) and regularly attends scientific meetings in the UK and elsewhere. Recent years have seen a developing interest in wine and it has to be noted that trips abroad these days are strongly influenced by the wine-making reputation of the region. This expertise is of great benefit to the steady stream of scientific visitors to Keele who enjoy Pat's excellent cooking and Gurnos's fine wines.

Chris Ramsden,
Keele University
August 2000

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