

THE PHYCOLOGIST



The Newsletter of the British Psychological Society

Editor: **Bruce Osborne**

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Editorial

A recent publication (*Science Policy Priorities 2001, Institute of Biology Publication*), produced on behalf of the Affiliated Societies of the Institute of Biology, makes interesting reading. Three major areas of concern were identified, lack of long term investment in science, the poor public understanding of science and the importance of sustainability. One of the most alarming facts identified is a ~20% decline in investment in UK Science as a proportion of GDP post 1986. Underlying this reduced investment was an increasing reliance on short term, goal orientated R&D funding and a decrease in fundamental or 'blue skies' research. Whilst we might argue about the relative merits of 'fundamental' versus 'applied' investigations the absence of long term funding must be worrying irrespective of our views about these two approaches to scientific research. As the *Science Policy Priorities 2001* document clearly identifies it is the absence of any coherent career structure caused by a reliance on short-term contracts that often makes science unappealing. It is always a surprise to those outside the academic community to realise that no formal career structure exists within higher education institutions. My own experiences indicate that students are less likely to start a postgraduate programme of research now largely because of the absence of future opportunities, compounded by poor financial support. In the past I believe there was an expectation of a lectureship after a successful and productive PhD thesis. Now there are few opportunities, nor is there the same opportunity to change direction to pursue other interests. Don't get me wrong, progress to a lectureship should not be automatic, but there should be some flexibility in the system. The worry is that able researchers that have much to contribute are leaving science for alternative careers.

Peter Fay, whose obituary appears on page 6 was clearly a remarkable man who, despite a number of setbacks in his early career, maintained a resolve that enabled him to eventually pursue an academic career. From a position as a technician in 1957 at University College London, where his ability was recognised, he became a Professor at Westfield College in 1978 along the way making a major contribution to our understanding of the heterocysts of cyanobacteria. Without this inner resolve, coupled with a climate of flexibility and understanding this contribution would have been lost.

I should also take this opportunity to remind everyone of the forthcoming Jubilee Meeting that will be held at the University Of Greenwich in London early in 2002. This is an important

meeting for the BPS, celebrating 50 years since the inauguration of the Society and a number of excellent speakers have already agreed to participate. Importantly the format for the meeting and the contributions are different from the normal Winter Meeting and details are given on page 3. Be sure to send in your abstracts and registration forms early before the deadline!

Finally, an apology, through an oversight on my part **Dick Crawford's** name was missing from the 'New Overseas Vice President's ' article. It was suggested that I run a competition to see who could identify the author but, on reflection, I think that Dick is much too well known and there were too many clues for this to be a viable proposition!

BPS WINTER MEETING 2002: CELEBRATING 50 YEARS OF THE SOCIETY

January 2-4th 2002 will see the society celebrating its 50th birthday. As a result the Jubilee meeting will be rather special and different from normal, featuring a range of invited talks (no parallel sessions) that we hope will cover the diversity of research within phycology, showing what we have achieved and where we are going.

The meeting will be held in London, partly at the University of Greenwich in the Old Naval College, Greenwich and partly at The Natural History Museum in central London. Accommodation has been arranged in Greenwich, and we will coach participants to the Museum from the hotels. The society gala reception and dinner will be held in the 18th Century Painted Hall in the Old Naval College on the 4th of January, followed by live music. It will also be possible for interested persons to visit the Botany Department at the NHM over the weekend after the meeting.

The scientific programme will include: Systematics (populations and species, from pico to macro); Models incorporating algae; Manipulation of algal populations; A Founders' Symposium; Physiological

advances. Speakers who have already agreed to participate include: **Matt Dring, Chris Maggs, Gill Malin, Michael Melkonian, Brian Moss, Jeanine Olsen, John Raven, Colin Reynolds, Dave Scanlan, Lucas Stal, Tony Walsby and Dave Williams.** The Manton prize presentations by students will also be part of the main programme. There will also be a formal poster session during the day and participants are encouraged to present a poster.

We will be holding the auction after dinner on the second evening and I encourage everyone to try and contribute an interesting item for that, as well as being prepared to buy. All the proceeds go towards supporting student attendance at meetings, workshops, field courses, etc.

Accommodation arrangements are rather different this year, and because we have blocked booked rooms in two hotels (at reduced rates) we are asking for reservations earlier than usual. Please note that the rates are per room and most of the rooms sleep 2, although some can sleep 3. Breakfast is included in the Holiday Inn Express price, but not in the Ibis price. The Ibis Hotel is within

walking distance of The University of Greenwich, and next door to Café Rouge where the buffet, dinner and auction will be held. The Holiday Inn Express is a short bus journey from Greenwich. However we will be arranging a shuttle service for participants who stay there. We will also have coaches from Greenwich to the NHM and back for that day.

On both scientific days lunch will be available in the venue. You are strongly advised to book for lunches, as time will be short and choices outside limited. Similarly, we have negotiated a special value price for the buffet and dinner at Café Rouge (drinks can be purchased from the bar) and encourage you to attend these and enjoy relaxing with other members of the society. There will be an additional subsidy for the buffet, so you really will not find the equivalent as cheaply elsewhere!

Please note it is very easy to reach Greenwich by public transport (mainline train, DLR, underground, bus and even riverboat), but parking space is very limited. Therefore you are advised to travel by public transport if at all possible. Details will be sent to those who book. For those flying into London, you might note that London City Airport is just across the river from Greenwich and is often a good option when travelling from Europe.

We look forward to sharing this celebration with you.

Eileen J. Cox (President)

CALL FOR ABSTRACTS

For the 2002 Winter Meeting in Greenwich, the society will celebrate its 50th anniversary. For this year only, the winter meeting will depart from its usual format as follows:

1. There will be series of symposia given by invited speakers.
2. Students will be able to present papers if they wish to enter the Manton Prize.
3. The remainder of the programme will be posters. Students will be able to enter for the BPS prize for the best student poster.

There will be a timetabled session when people will be able to present their posters.

We therefore cordially invite you to submit your abstract either for a poster or for the student Manton Prize.

Please provide the information requested in the box below and send your abstract by e-mail attachment as an rtf or doc file to Dr Juliet Brodie, j.brodie@bathspa.ac.uk by 19th October 2001.

TITLE OF POSTER (OR PAPER IF ENTERING FOR THE MANTON PRIZE)

Author J., Another F. D. & Third P. H.
Full address of Institution(s)

Abstract which should be no longer than 150 words.

Please indicate at the bottom of the abstract if you wish to be entered for the Manton Prize or the student Poster Prize.

THE BPS AUCTION

In keeping with the 50th anniversary winter meeting we are hoping to have a special auction. So perhaps you would like to free up a little space in your office by passing on an item of phycological interest to the Society. Items might include books, prints, jewelry, t-shirts, photographs, journals, reprints artwork – anything with a phycological flavour! All proceeds go to the Scientific Meetings Fund to support students attending phycological

meetings and courses. Last year we gave £3,838 to students and we are seeking to expand this support. I am sure you agree this is a worthwhile cause. Please let me know if you have any items to donate and if you have a difficulty in getting the item to the meeting, contact me and I will do my best to arrange the logistics.

Jane Lewis: lewisjm@westminster.ac.uk

NOMINATIONS FOR ORDINARY MEMBERS OF COUNCIL

Nominations are invited for several ordinary members of Council. Candidates should be BPS members, should be nominated by a current BPS member and should indicate their willingness to serve on Council. Nominations, with a letter of support should be sent to the secretary Juliet Brodie by the end of October 2001.

These are very important appointments and provide an opportunity for individuals to have

a role in shaping the future of the Society whilst maintaining its pre-eminence as the primary phycological institution in these Islands. It also provides good and valuable experience for all phycologists, particularly the younger ones, whatever your particular interests. In fact the broader the interests of Council members the better, as this is the way that the Society keeps abreast of all the new developments in phycology. So why not take this opportunity and get someone to support your nomination!

HISTORICAL CORNER

The 'New Botany' and the Teaching of the Algae

Part 2

Under Thiselton Dyer at South Kensington the 'type system' was firmly integrated into the botanical course and in the time available would have met the requirement of the knowledge that could be assimilated. Equally important was the accompanying 'sound, thorough, practical elementary instruction' (Huxley's own words). Thiselton Dyer resigned from his Dublin post in 1873 but continued his link with South Kensington until 1880 after his appointment in 1875 as Assistant Director at Kew. S.H. Vines as Assistant joined him for the 1875 summer course, the year of the latter's graduation from Cambridge. Vines returned to Cambridge as lecturer in 1876 and set about

introducing the 'New Botany' there, not without difficulties at first. Experience under Sachs and de Bary brought further refinements. Vines became Reader at Cambridge in 1883 and Sherardian Professor at Oxford in 1888. Bower met the 'New Botany' for the first time in 1877, his final year at Cambridge, under Vines' tuition. Bower was an assistant at South Kensington in the late 1870's. H. Marshal Ward was a student in the 1875 summer course and goes down in botanical history as the one who fainted on one occasion with excitement engendered by his practical work. After graduation at Cambridge in 1880 he researched on coffee disease in Sri Lanka, then taught at Owen's College, Manchester and Cooper's Hill College before appointment to the Cambridge

Chair in 1895. He never forgot his South Kensington days – hence ‘The Cause’. F. W. Oliver, at Cambridge in the mid – 1880s, would have been taught by Vines. P. Geddes also studied under Huxley between 1874 – 1877 and brought the new approach to Dundee in 1888. Two books by Sachs were opportune developments. His 1868 *Lehrbuch der Botanik*, was translated into English by A. W. Bennett and Thiselton Dyer and published as the *Textbook of Botany* in 1875 and his *Lectures in Plant Physiology*, translated by Marshall Ward, followed in 1887. These two books gave the first full accounts of botany as a comprehensive discipline. This was the goal of all the protagonists of the ‘New Botany’.

The South Kensington establishment became the Normal School of Science in August 1881 with Huxley as Professor of Biology and also Dean, this last title of much amusement to him and his friends. Bower was appointed lecturer in Botany there in 1882, with courses now extending over an academic session. Bayley Balfour, appointed to the Glasgow Chair in 1879, immediately set about establishing a botanical teaching laboratory there and through him the ‘New Botany’ came to Glasgow, and then to Oxford in 1884 and to Edinburgh in 1888. Bower followed Balfour at Glasgow in 1885. With his teaching now extended beyond medical students to include those from science and the arts he eventually obtained in 1901 a building designed for his teaching and research requirements – the first purpose built botanical institute in Britain. In the last two decades of the 19th century and into the 20th the four oldest Chairs of Botany in Britain were occupied by leading supporters of the ‘New Botany’.

With the ‘type system’ entailing an evolutionary survey of the plant kingdom the algae became established in teaching programmes. At Glasgow in 1886 Bower gave 51 lectures to medical students including two on algae describing *Pleurococcus*, *Spirogyra*, *Oedogonium*, *Vaucheria* and *Fucus*. His 51 lectures to ‘First BSc’ in 1901 included 39 on the biology of flowering plants, 2 on gymnosperms, 4 on ferns, 1 on mosses, 2 on algae and 3 on fungi. The green algae included unicellular forms and the same filamentous genera as in 1886, with *Vaucheria* and *Botrydium* as siphonous

representatives and *Fucus* as the brown alga. *Caulerpa* was included in a lecture on plant body construction. The ‘First BSc’ course of 1920 was much the same as in 1901, with the addition of *Polysiphonia* and *Nemalion*. The six practical sessions in 1920 commenced with plasmolysis using *Spirogyra* – a much-favoured exercise, described by F. Darwin and E. H. Acton in their 1894 *Practical Physiology of Plants*. The remaining sessions involved examination of fresh material of the ‘types’ described with the exception of preserved material of the reproductive stages of *Oedogonium* and *Vaucheria*. Bower had earlier on accepted that there could be criticisms of too rigid a use of the ‘type system’ and stated that it should not be too ‘servilely followed’. In his 1891 *Practical Instruction in Botany* he listed 15 algae from which suitable ‘types’ could be chosen. At Cambridge under Marshall Ward the second (Lent) term of the first year was devoted to an evolutionary study of the biology and classification of fungi, algae, bryophytes, vascular cryptogams and Conifers.

There was a distant academic institution where again the algae received due attention. During the first three decades of the 20th century at University College Aberystwyth the Professor of Botany was J. Lloyd Williams. He had a notable record of phycological research, including work on fertilisation and development in *Fucus*, a series of papers on the Dictyotales and papers on the gametophytes and fertilisation in *Laminaria*. His lectures on algae to the first year class of 1919 are recorded in the notebook of P. W. Carter, who subsequently became Lecturer there, carried out research on *Padina* and was a founder member of the British Phycological Society. The notes recorded 12 lectures given over four weeks and commencing on Tuesday 18 November 1919. Lectures 1 and 2 were on *Chlamydomonas*, 3, 4 and 5 on *Spirogyra*, 6, 7 and 8 on *Vaucheria*. The last four lectures were on brown algae, with one on form and structure in *Fucus* and *Ascophyllum* and one on fucoid zonation. With the College Rocks just across the road from the building where the lecture was given this one on zonation is understandable. The last two lectures were on fertilisation in *Fucus*. There were eight accompanying practical sessions.

It is evident from the few examples quoted that the primary teaching on algae followed similar paths over the years with the 'types' studied – unicells, filaments, siphonous forms in the green algae and *Fucus* in the brown algae. As stated by one biographer of Huxley in 1959 '...the 'type system'.... spread across the world and still remains the common mode of biological teaching'. It could be said with some certainty that some or all of the genera studied in the 1880 – 1920 period would still have been the first introduction to the algae for many present day members of the BPS. Whilst there may well have been examples of unimaginative and pedantic presentation, when taught with enthusiasm, this provided a sound basis for later specialisation. Those who propagated the 'New Botany' in the late Victorian period did not regard themselves as pioneers but as 'missionaries', setting out to ensure that botany occupied its rightful place in the sciences in Britain, a process continued by their protégés. The increased attention to algae in elementary courses was one outcome of their 'mission'. In

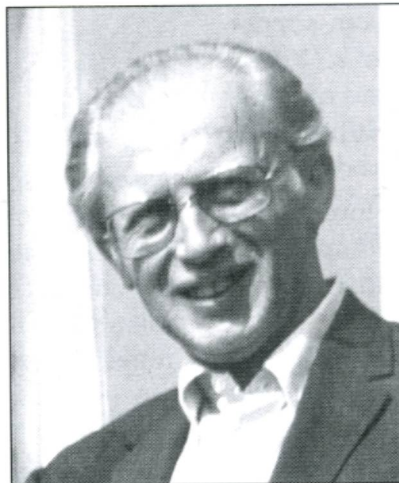
time their vision of a suitable elementary botanical course came under fire from those wishing to see a greater emphasis on physiology, genetics and ecology. The debate entered the public arena in 1918 – 1920.

A student's notebook is a time – capsule of views and events at the time. In 1788 Robert Cowan in Glasgow noted that phlogiston was a component of air. F. W. Carter's notes on 18 November 1919 included an introductory viewpoint that bacteria could have evolved by the 'deterioration' of green algal unicells and that the latter could have existed before bacteria. On the 4 December a small note preceded the lecture on *Fucus* – 'Day of the great fight – Beckett v Carpentier'. This was the European Heavyweight Championship between Joseph Beckett, the British Heavyweight and Georges Carpentier, his French counterpart. There is no subsequent note of the result: Carpentier won in the first round!

A. D. Boney

OBITUARY

Peter Fay (1913-2000) and the Heterocyst *Recollections of his Westfield days*



I watched Peter Fay as he pipetted a green suspension into a flask, attached it to a Warburg manometer and checked that it was secure. He connected the manometer to a complex arrangement of rubber tubes, screw clips and gas cylinders and, as he rechecked each joint and clip, gave a small nod of

satisfaction. His movements were a little hesitant but precise; he held his head to one side and pursed his lips as he ruminated about all the tiny details of his equipment. It was 1962 and I had just started as a postgraduate student with G. E. Fogg, who had moved to the new Chair of Botany at Westfield College

London in the splendid new Science Buildings, all polished hardwood floors and teak benches. In those days, before tuition fees, students could freely enroll from abroad and Fogg had attracted research students and technicians from many countries.

Peter Fay spoke softly with a Hungarian accent, a quiet, unexcitable, friendly man of indeterminate age. I quickly became acquainted with him but details of his past and background emerged only slowly over many years. In 1962 Peter had just been awarded his PhD. He had obtained a post as a technician at University College London with Tony Fogg in 1957 with the agreement that he could undertake research and write up a thesis in his own time. Sensitive to the feelings of other technicians, he did not reveal his previous academic career and at first kept these arrangements to himself. In 1961, when Fogg moved to the new Chair of Botany at Westfield College, Peter Fay moved with him and, with a number of other research students (Rosalie Cox, H. D. Kumar and Arthur Marker), helped set up much of the equipment in the new building.

Fogg's research group at that time was concerned with two themes, nitrogen fixation by blue – green algae (later cyanobacteria) and extracellular production by microalgae. Peter Fay worked on aspects of nitrogen fixation by *Chlorogloea fritschii* and *Anabaena cylindrica* and collaborated closely with Rosalie Cox¹. The latest technique for measuring the N₂ – fixation was to expose the organism to an atmosphere enriched with the stable isotope of nitrogen, ¹⁵N, and then to determine the ¹⁵N:¹⁴N enrichment ratios with a mass spectrometer. The Botany Department had just acquired an AEI MS7 mass spectrometer and a gram of ¹⁵N, the latter at a cost equivalent to a research student's annual grant. The isotope was in the form of an ammonium salt that had to be converted to N₂ gas by liberating ammonia gas and oxidising this to N₂ over heated CuO. For this Peter constructed a labyrinth of glass tubes, stop – cocks, Toepler pumps and vacuum pumps; the arrangement offered the awful possibility of losing the entire sample of ¹⁵N₂ at the wrong turn of a stopcock. Peter wrote out a detailed protocol and asked me to

rehearse the procedure as though we were in the countdown for a missile launch. Peter used the generated ¹⁵N₂ to confirm N₂ – fixation by *Chlorogloea fritschii*; his culture of this blue – green was thought at the time not to possess heterocysts. H. D. Kumar, a talented Indian student, pointed out that the heterocysts were present but, unusually, were smaller than the vegetative cells¹⁰.

Heterocysts became the focus of Peter's research; a serendipitous discovery resulted in my first collaboration with him. In attempting to isolate cell wall fractions of *Anabaena cylindrica* I tried to break the cells with a French press, but I failed to generate sufficient pressure: the vegetative cells broke but the thicker – walled heterocysts survived. Peter developed a density gradient centrifugation protocol to separate the heterocysts⁸ (and subsequently also the akinetes³) from the cell fragments and he measured the rates of respiration, photosynthesis and nitrogen fixation by the heterocysts⁸. Better methods of heterocyst isolation were later developed but this work was instrumental in initiating studies on heterocyst function and differentiation, which became the dominating topic in cyanobacterial circles worldwide. Peter himself made a number of fundamental discoveries, in particular, that the heterocysts lost the pigment phycocyanin, but not chlorophyll, during their development². L. W. Jones and J. Myers in Texas (who Peter later visited⁴) had shown the involvement of phycocyanin in photosystem 2; Peter argued that heterocysts would be incapable of oxygenic photosynthesis but might be capable of photophosphorylation.

This deduction was the keystone in a large edifice, the theory that heterocysts were the site of N₂ fixation in filamentous blue – green algae. The development of this theory is another story: in brief, the impetus came from Bill Stewart, fresh from a summer in Wisconsin working with G. P. Fitzgerald and R. H. Burris; the foundations were the earlier observations of Tony Fogg, when a student of F. E. Fritsch. The evidence for N₂ – fixation in heterocysts, though compelling, was indirect. All species

then known to fix N_2 possessed heterocysts; ammonia inhibited both N_2 – fixation and heterocyst production; the first product of N_2 – fixation was ammonia, which diffusing from existing heterocysts would inhibit differentiation by neighbouring cells. Finally, only in the non – oxygenic heterocysts would the oxygen – sensitive nitrogenase be able to function in the light.

In the year that these ideas were put together, Peter Fay, Bill Stewart and I performed experiments together in an attempt to demonstrate N_2 – fixation by isolated heterocysts. The heterocysts were prepared under anaerobic conditions to prevent degradation of the oxygen – labile nitrogenase and they were provided with the reductant that they would have normally obtained from the neighbouring vegetative cells. After a year, however, we had not got experimental confirmation of N_2 – fixation. As Bill Stewart was leaving the group for the Chair of Biology at Dundee, we decided to publish the theory¹¹ and then work separately. In fact Bill had the first success; with his students Tony Haystead and Howard Pearson, he demonstrated nitrogenase activity in heterocysts by the acetylene reduction technique¹⁷.

After Bill left in 1968, Peter approached me with the suggestion that we should use autoradiography with the short – lived radioactive isotope of nitrogen, $^{13}N_2$, to demonstrate that N_2 – fixation was located in the heterocyst. We first performed parallel experiments with ^{14}C – labelled CO_2 to show that photosynthesis was restricted to vegetative cells of *A. cylindrica*. We then performed experiments with ^{13}N – labelled N_2 at the Hammersmith Hospital Cyclotron unit. Peter exposed the filaments on glass slides to $^{13}N_2$ at the cyclotron outlet and passed the slides through a hatch to me in a dark room for the autoradiography. After only 40 minutes – four half lives of ^{13}N – we developed the slides for the disappointing result: the number of silver grains surrounding the filaments, which would indicate the incorporation of ^{13}N , was no higher than in the unexposed control. The

activity of the ^{13}N source was too low; it provided for the fixation of only one ^{13}N atom per heterocyst in the half life of ^{13}N . (C. P. Wolk later successfully performed this experiment with a more active ^{13}N source and more sensitive nuclear track emulsions¹⁸).

Our unsuccessful attempt led us nowhere, of course, but I remember the collaboration with Peter as one of the happiest in my life of research. I think we both enjoyed the small-scale precision of the methods and the anticipation of solving the problem. During this period I shared in a number of his other interests, in painting and music, and I learnt more of his background.

Peter was born in Palanka, Hungary (now Croatia) on 30 September 1913. He obtained his first degree in zoology at the University of Budapest in 1946. He was appointed as Scientific Officer at the Institute of Education in Budapest in 1949 and did research in endocrinology. During this period he was proposed for a UNESCO scholarship. This later threw him under suspicion of spying by the Communist regime. Dismissed from his post he obtained employment as a schoolteacher, but shortly after was dismissed from that position also. In 1956, when the minefields were cleared from Hungary's western frontier with Austria, many Hungarian's fled the country. Peter and his wife, Maria, escaped to Austria and from their obtained asylum in the UK, where he had a cousin. In London the technician position at University College provide his way back to an academic life. Maria had been a ballerina in the Budapest ballet. In London she set up her own ballet studio, which was soon in much demand from dancers in the major companies. I cherish memories of visits to her classes with Peter and of parties with the ballet dancers at the Fay's home in west London.

The early seventies saw the break – up of the blue – green group at Westfield: after Bill Stewart established his own group in Dundee, Tony Fogg became Director of the Marine Science laboratories at Menai Bridge and I went to Berkely, California. Our last collaboration was a book on the blue – green

algae¹². Peter remained at Westfield, where he completed pioneering studies of the ultrastructure⁹ and differentiation of heterocysts begun earlier with Norma Lang, on sabbatical leave from Davis, California^{14,15}, and on their physiology, with S. A. Kulasooriya¹³ from Sri Lanka and Laura de Vasconcelos⁹ from Brazil. Later in the decade, with Joe Rother, he performed parallel studies on cyanobacterial akinetes¹⁶, relating the conditions that stimulated their formation and germination to the annual cycle in lakes. With his last student, Michael Wyman, Peter investigated responses of planktonic cyanobacteria to the underwater light climate in lakes¹⁹.

Peter Fay was not ready for retirement when he reached 65; restarting in his mid - 40's had left him a career of only 20 years and much that he wished to accomplish. Fortunately, appointments as Senior Research Fellow and Emeritus Professor extended his research career; the down side, however, was that the Westfield College site was closed in the 'rationalisation' of London University and the staff moved to the Mile End Road site of Queen Mary College. Peter, with many of his former colleagues, was aghast when the splendid Westfield science buildings, in their garden setting were bulldozed and left as derelict wasteland. Rather than move to the new Queen Mary and Westfield College, Peter moved his research to University College, where he had made his fresh start 25 years earlier. When I visited him there, I found him self - contained and contented in a small office - cum - laboratory with his blue - greens growing in improvised tanks. There he spent a productive period working on akinete germination; he wrote his small monograph, 'The Blue - Greens'⁵, and with Chase Van Baalen, from Texas, he edited the advanced textbook 'The Cyanobacteria'⁷. In 1994 he produced a weighty review on the heterocyst and in 1988 his last experimental paper, on akinete viability⁶.

In his retirement Peter maintained his interest in cyanobacteria; I remember his delight on reading about the discovery of circadian rhythm genes in cyanobacteria by Kondo and

Golden. He travelled with Maria when she visited ballet schools in Europe and Canada, where his daughter from an earlier marriage lived. In his last years, lived out in Highgate, he became frail but kept his inquisitive charm, sustained by Maria's devotion and care.

Peter Fay. Westfield College, University of London: Research Fellow, 1962; Lecturer, 1966; Reader, 1972; Professor, 1978.

References

- ¹Cox, R. M & Fay, P. (1972). Special aspects of nitrogen fixation by blue - green algae. III. Differentiation and nitrogenase activity. *Proceedings of the Royal Society of London Series B* **172**, 375-366.
- ²Fay, P. (1969). Cell differentiation and pigment composition in *Anabaena cylindrica*. *Archives of Microbiology* **67**, 62-70
- ³Fay, P. (1969). Metabolic activities of isolated spores of *Anabaena cylindrica*. *Journal of Experimental Botany* **20**, 100-109.
- ⁴Fay, P. (1970). Photostimulation of nitrogen fixation in *Anabaena cylindrica*. *Biochimica et Biophysica Acta* **216**, 353-356.
- ⁵Fay, P. (1983). *The Blue - Greens*. The Institute of Biology. Edward Arnold, 88pp.
- ⁶Fay, P. (1988). Viability of akinetes of the planktonic cyanobacterium *Anabaena circinalis*. *Proceedings of the Royal Society of London Series B* **234**, 283-301.
- ⁷Fay, P. & Van Baalen, C. (1987). *The Cyanobacteria*. Elsevier, Oxford, 543pp.
- ⁸Fay, P. & Walsby, A. E. (1966). Metabolic activities of isolated heterocysts of the blue - green alga *Anabaena cylindrica*. *Nature* **209**, 94-95.
- ⁹Fay, P. & de Vasconcelos, L. (1974). Nitrogen metabolism and ultrastructure in *Anabaena cylindrica* II. The effect of molybdenum and vanadium. *Archives of Microbiology* **99**, 221-230.
- ¹⁰Fay, P., Kumar, H. D. & Fogg, G. E. (1964). Cellular factors affecting nitrogen fixation in the blue - green alga *Chlorogloea fritschii*. *Journal of General Microbiology* **35**, 351-360.
- ¹¹Fay, P., Stewart, W. P. D., Walsby, A. E. & Fogg, G. E. (1968). Is the heterocyst the site of nitrogen fixation in blue - green algae? *Nature* **220**, 810-812.

¹²Fogg, G. E., Stewart, W. D. P., Fay, P. & Walsby, A. E. (1968). *The Blue – Green Algae*. London. Academic Press, 459pp.

¹³Kulasooriya, S. A., Lang, N. & Fay, P. (1972). The heterocysts of blue – green algae. III. Differentiation and nitrogenase activity. *Proceedings of the Royal Society of London Series B* **181**, 199-209.

¹⁴Lang, N & Fay, P. (1971). The heterocysts of blue – green algae. I. Ultrastructural integrity after isolation. *Proceedings of the Royal Society of London Series B* **178**, 193-203.

¹⁵Lang, N. & Fay, P. (1971). The heterocysts of blue – green algae. II. Details of ultrastructure. *Proceedings of the Royal Society of London Series B* **178**, 185-192.

¹⁶Rother, J. A. & Fay, P. (1971). Blue – green algal growth and sporulation in response to

simulated surface bloom conditions. *British Phycological Journal* **14**, 59-68.

¹⁷Stewart, W. D. P., Haystead, A. & Pearson, H. W. (1969). Nitrogenase activity in heterocysts of blue – green algae. *Nature* **224**, 226-228.

¹⁸Wolk, C. P., Austen, S. M., Bortins, J. & Galonsky, A. (1974). Autoradiographic localisation of ¹³N after fixation of ¹³N labelled nitrogen gas by a heterocyst – forming blue – green alga. *Journal of Cell Biology* **61**, 440-453.

¹⁹Wyman, M. & Fay, P. (1986). Underwater light climate and the growth and pigmentation of planktonic blue – green algae. I. Influence of light quantity. *Proceedings of the Royal Society of London Series B* **227**, 367-380.

Tony Walsby

MEETING ANNOUNCEMENT
CYANOFIX FINAL SYMPOSIUM, TOMAR, PORTUGAL
25-29 September 2002

The European Science Foundation is currently funding a research programme on cyanobacterial nitrogen fixation (CYANOFIX), which comes to an end in 2002. A final symposium is being held in Tomar, Portugal from the 25-29 September 2002 as the culmination of this programme, entitled '*Cyanobacterial Nitrogen Fixation: From Molecules to Ecological Systems*'. The meeting will consist of invited talks and formal poster session devoted to topics ranging from evolution and taxonomy, ecology, physiology, biochemistry, molecular genetics and symbioses, as well as potentials and problems of research on cyanobacteria. Confirmed invited speakers include **Tony Walsby, Lucas Stal, Brian Whitton, Birgitta Bergman, Dave Scanlan, John Gallon, Patrizia Albertano, Thomas Happe, Bruce Osborne, Burkhardt Budel, Kaarina Sivonen,**

Annick Wilmotte, Enrique Flores, Stefano Ventura. Please note that the meeting will be restricted to 100 selected participants. Some financial support may also be available. For those interested in contributing and for further information contact:-

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See also the CYANOFIX web site
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