

Inter Micro – The First 60 Years¹

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SUMMARY

This year marks the 60th anniversary of the first microscopy conference with which Walter McCrone was concerned. To mark the event, the 2008 'Evening with Brian' took the form of a cruise on Lake Michigan during which Brian J. Ford gave an account of the past sixty years. In his illustrated lecture, Brian recounted the history of the conferences from a personal perspective and, with a series of video inserts, reminded delegates of times past. This paper is based on that presentation and sets out Brian's account of a unique series of meetings.

ORIGINS

At eight o'clock on the morning of Thursday, June 10, 1948, Professor Paul L. Copeland rose to his feet and cleared his throat. Neatly attired in dark suit and tie, he welcomed the assembled delegates to an unusual meeting: an assembly of light and electron microscopists. The gathering was in the Stevens Hotel, Chicago. When the hotel first opened, back in the 1920s, it was the largest in the world. It stood between Seventh and Eighth Streets and had 3,000 guest rooms with ballrooms, restaurants, retail shops, and meeting facilities. Within a decade, as the depression hit Chicago, the hotel was in receivership but it revived after the war and was eager to welcome this pioneering group of innovative scientists. Today, that hotel is the Chicago Hilton and Towers.

The meeting had been organised through the Armour Research Foundation and Illinois Institute of Technology and it brought together many of America's

leading microscopists. Although conceived as an experimental meeting (and a one-off if necessary) it struck a chord and went on to become one of the most successful and enduring conferences in microscopy. The idea for the conference had arisen from a conversation between two young Armour scientists. One was an electron microscopist, Charlie Tufts; the other was a light microscopist named Walter McCrone who retained his connection with the conference until the day he died.

Walter Cox McCrone was born in Wilmington, Delaware in 1916. Even in his early years, he had an earnest and knowing expression; one that clearly looked towards a future of inquiry and endeavor. In 1938 he went to study chemistry at Cornell, under E. M. Chamot and C. W. Mason. Under Professor Jack Johnson he read for a PhD. Johnson proposed he look at methods of synthesizing derivatives of cis-endomethylene-3, 6- Δ 4-tetrahydrophthalic acid anhydride, just the kind of topic in which a young chemist could immerse himself. McCrone was having none of it. He had personal passions even then, and instead devoted himself to the topic that was to dominate his life's work: Application of the Polarized Light Microscope in Organic Chemistry.

Jackson was not the only person whom McCrone had to convince. Mason himself had advised against this choice of topic. In Mason's view, microscopy was all sewn up, and there was no worthwhile research left to be done in the field. McCrone since speculated that they may have eased his path because they were keen to see the back of him. For instance, he had formed a trade union that successfully campaigned for stipend increases of 40 per cent. He also procured a master key

¹ Presented at Inter/Micro 2008, Chicago, IL

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The young Walter Cox McCrone pictured with his sister at Wilmington, Delaware. The photograph reveals he had an earnest sense of intelligence, even at this early age.

for the Baker Laboratory, with its fine views across campus to Cayuga Lake and the gorges. He used to help students work out what were the likely questions in their forthcoming exams, and even held beer parties up on the roof, when he wasn't slipping out to swim in the lakes.

Whatever the reasons, McCrone was promptly granted his PhD and – after ten enjoyable years at Cornell – he took up a post in the Armour Research Foundation, the contract arm of the Illinois Institute of Technology (IIT). It was there he met Charlie Tufts, who was working with the then new electron microscope. The two colleagues spent much time deep in discussion and in 1948 their conversations turned to a possible joint meeting between the two disciplines. Said McCrone later, "Charles Tufts was an electron microscopist. He and I started talking about a symposium on electron and light microscopy. We found that the microscopy community was ready and enthusiastic."



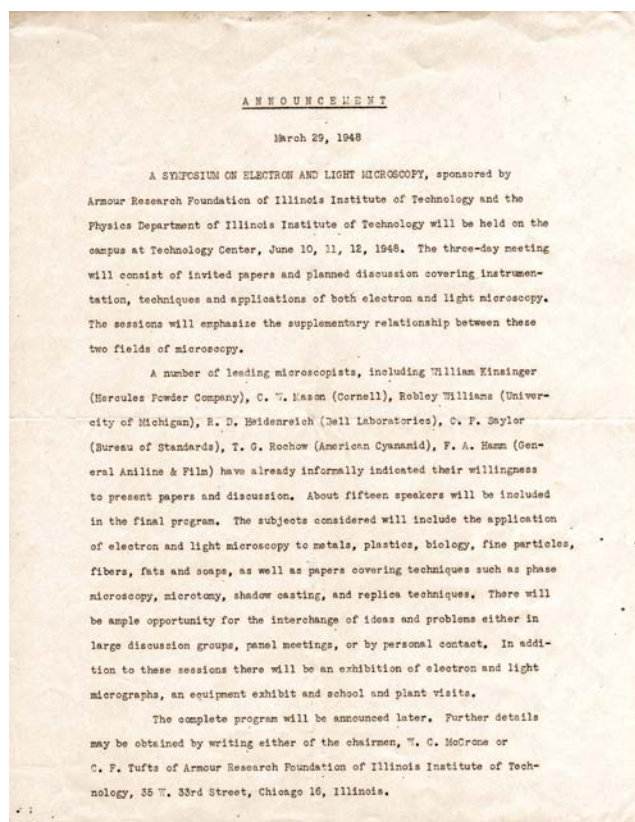
Walter McCrone and the research team at Armour in 1949. The second microscope conference was being planned. The only woman in this picture is not identified by name.

THE FIRST CONFERENCE

On March 29, 1948, Tufts and McCrone sent round their formal announcement, a typed, duplicated letter that set out what they had in mind. Their original intention was to hold the meeting on campus at IIT, and from the start the brief of the meeting was clear. "The subjects considered will include the application of light and electron microscopy to metals, plastics, biology, fine particles, fibers . . . there will be ample opportunity for the exchange of ideas and problems," they wrote.

One problem immediately arose. The meeting was due to start on June 10, just six weeks away! There was little time to make formal arrangements, but the eagerness of post-war microscopists to foregather and discuss their burgeoning new disciplines gave them no shortage of speakers. The lack of a strict format gave the meeting a sense of informality, and this proved to be one of its greatest assets.

The meeting that Professor Copeland opened was a snapshot of American microscopy. Phase contrast was one major topic, and their speaker was Nobel Laureate Professor Fritz Zernicke who had pioneered this revolutionary technique. Professor C. W. Mason spoke on the role of the microscopist 'viewed at high and low power'. Cecil Hall of MIT spoke on the analogies between light and electron microscopy, and R. D.



First announcement.

Heidenreich of Bell Telephone Laboratories had been investigating the electron microscopy of metallic alloys. There were papers on organic pigments, electron diffraction (from the General Electric Company), and several papers on phase contrast.

There were presentations on pigments (from Cyanamid), crystals (from Eastman Kodak), high speed microtomy (G.E.C.), and a range of EM techniques. Biology was restricted in scope, though there was a paper on the electron microscopy of the tubercle bacillus (BCG) and on bacteriophage viruses. And there was a technical exhibition, with displays by American Optical, Bausch and Lomb, General Electric and several others. On the evening of Friday June 11 a banquet was arranged with guests from Mexico, Toronto and Cornell, followed by a presentation on the crystallization and fusion of abrasives and refractory materials by Mr Henry N. Baumann of the Carborundum Company. It is noteworthy that his lecture was illustrated by movie film – at the time a relatively rare innovation.

The unusual nature of the meeting gave it widespread appeal and there were some 200 registrants. Not only was an interdisciplinary conference on microscopy a lure for everyone involved in this rapidly expanding science, but at that time institutions and companies were happy for employees to attend. What's more, they willingly paid their costs and gladly gave time off. The registration fee was \$5.00 and a hotel room at the Stevens Hotel cost delegates \$8.00.

McCrone and Tufts were eager to gain feedback from this spectacular launch. They had asked Theodore G. Rochow of the Cyanamid Company for his response, with no punches pulled. On July 26, 1948 he wrote a lengthy missive setting out his feelings. One section in particular stands out today: "The informality which accompanied this year's symposium should be a part of this tradition," he wrote. In Rochow's view, this was the ideal way to encourage the exchange of cutting-edge thinking. He also pointed out that findings could be discussed "a long while before they would appear in print".

These were prophetic observations. The haste with which the first meeting was arranged gave it an air of informality that lives on to this day. There is no 'top table' at our banquets; leaders in the field are usually seated next to relative newcomers and the free interchange of ideas remains a hallmark of our annual meeting.

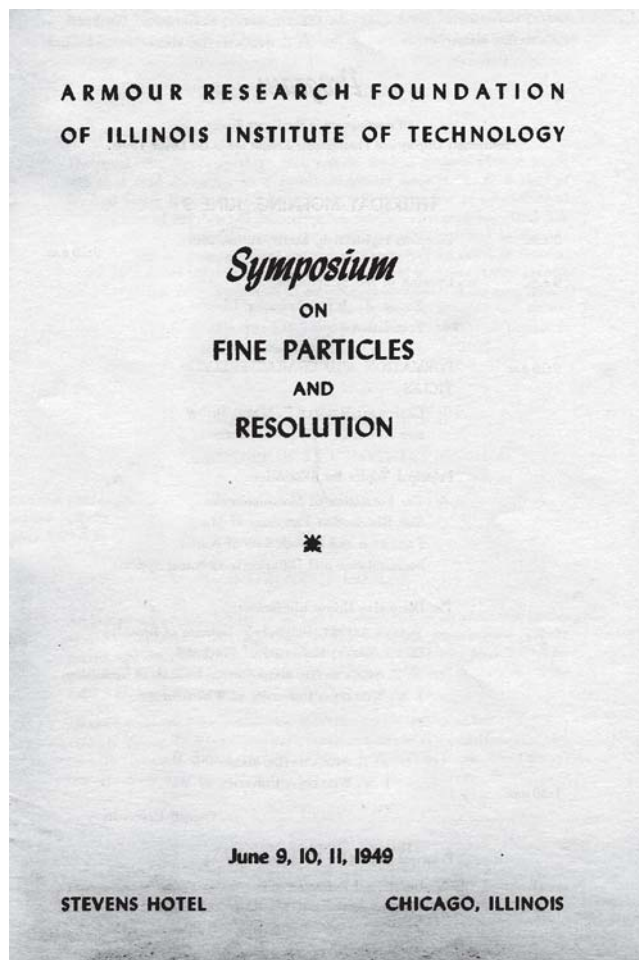
MICROSCOPY 1949

The next year's conference at the Stevens Hotel was a symposium on 'Fine Particles and Resolution'. As Gary Laughlin has since pointed out, this was in many ways the first meeting on what we now call nanotechnology. The program was by this time professionally designed and properly printed, and one can see a looser conference structure. Rather than single presentations, speakers were supplemented by panels to broaden the discussion. Perhaps the previous year's banquet speech had gone on too long, for the speaker for this second conference in 1949 – C. E. Barnett of the New Jersey Zinc Company – was firmly promoted, in print, as spending 'a few minutes' telling of his work. Time was also set aside for what was described as 'brief descriptions' of others working with fine particles and there would be discussion 'if time permits'. Clearly, people had over-run during the previous year's conference!

One of the speakers was Roger Loveland, who later wrote a masterful two-volume book entitled *Practical Photomicrography*. I warmly reviewed it for *New Scientist*

I think that the informality which accompanied this year's symposium should be a part of this tradition. I believe informality is appreciated by both leaders and audience and that it acts as a catalyst for the interchange of ideas. Informality also encourages the expression of the latest empirical data and experiments which would otherwise have to wait for sufficient time and effort for incorporation in a written paper.

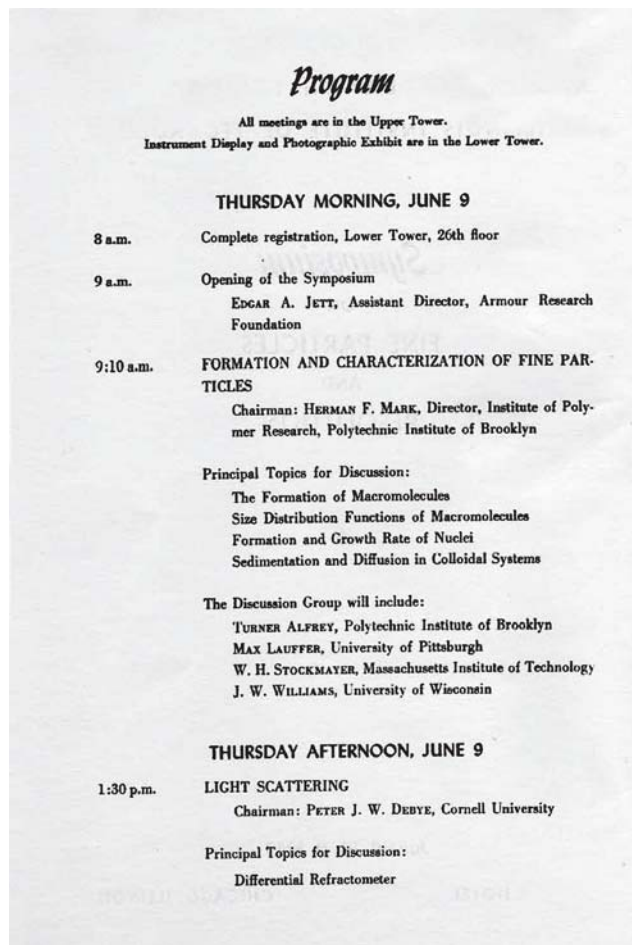
Part of Rochow letter



Front cover 1949 program.

magazine in 1970 and then bumped into Loveland in a taxi queue in Pittsburgh, Pennsylvania. As two strangers, we agreed to share a cab into town – the line of cabs at the airport had long since disappeared and we were waiting in vain for more to appear – and fell into conversation on the journey. Only then did we discover that this was the man I'd been so keen to meet, and that I was the author of the review he had hoped one day to encounter.

A more recent coincidence centers on Gary Nicholls who has come to lecture from Pfizer Research, UK. He is one of the many Inter/Micro regulars whom we have



Sample page 1949 session.



The author (standing) at home with Dr. John McArthur whose portable microscope is still in production today. Dr. McArthur described its development at the 1962 conference.

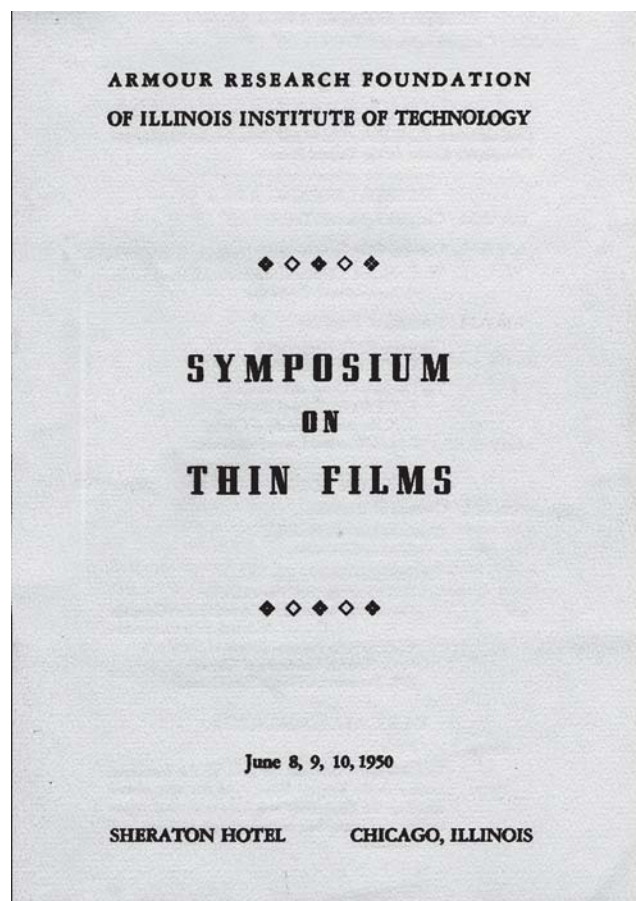
entertained at our Cambridgeshire home – and in his case there was an added reason to visit. His mother lived in a house right alongside our village green, a matter of yards from where I sit, writing these words. Sometimes it is, indeed, a small world.

THE 1950s

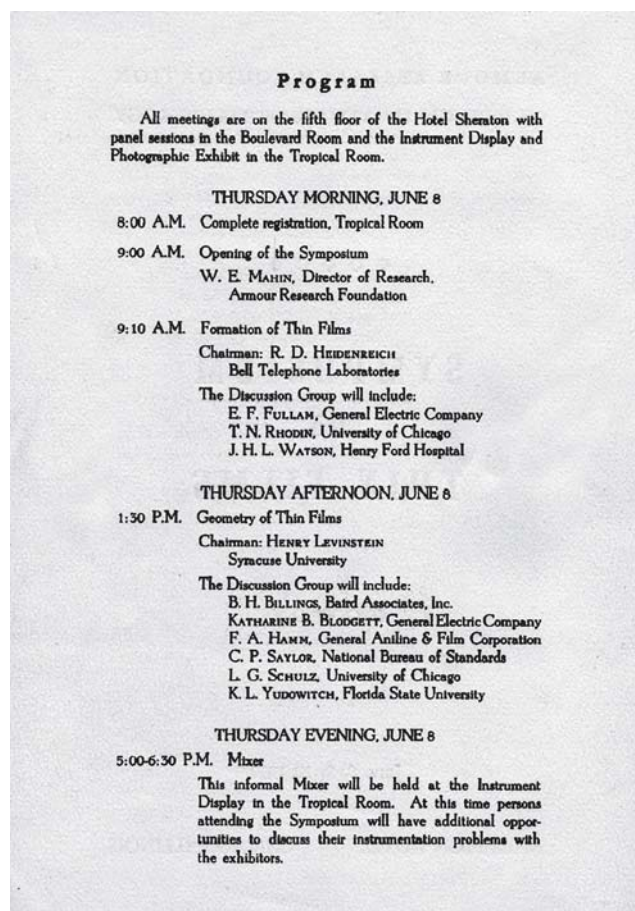
By 1950, when the meeting transferred to the Sheraton hotel, informality had become the backbone of the conference. The single theme of this more modest affair was the study of thin films, and rather than a large number of separate scheduled presentations, they tried out discussion groups on topics like the formation of thin films (Thursday morning), geometry (Thursday afternoon), structure (Friday morning) and research problems (Friday afternoon, continuing on Saturday). On the Friday evening Charlie Tufts organised sessions on the latest developments in elec-

tron microscopy, to help everyone keep up to date. His speakers came from the Philips Company in the Netherlands, and from R.C.A.

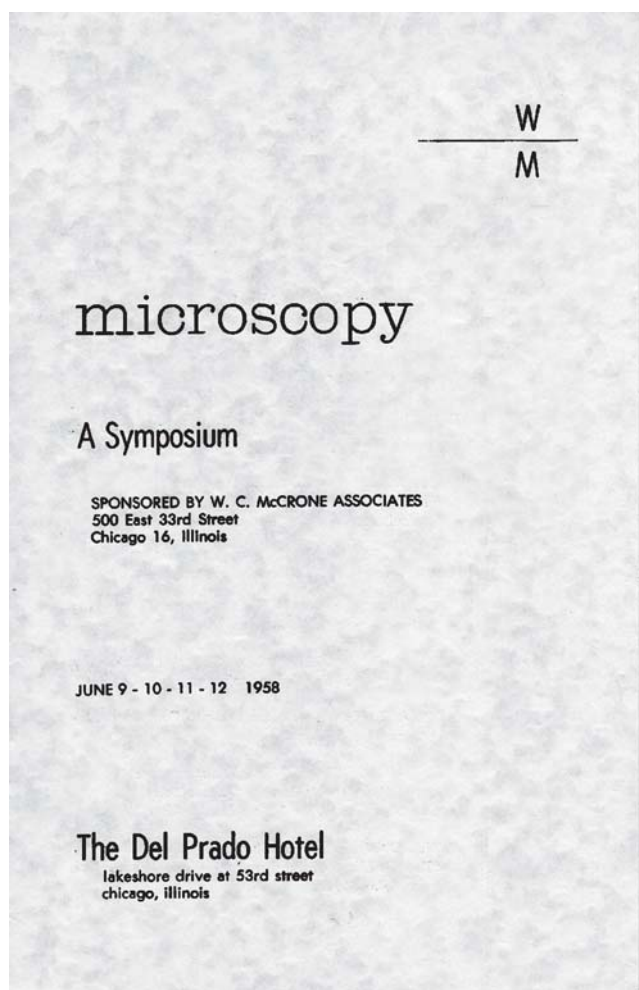
Walter McCrone's work as a consultant was meanwhile continuing apace, and one day he visited Arthur D. Little in Cambridge, Massachusetts. They were the first management consultancy (founded in 1886) and employed a young analytical chemist whom I can describe only as a demure power-house named Lucy Beman. She had qualified in 1945 with a BA degree in chemistry from Wellesley College, Massachusetts and it was a common interest in microscopy that drew the two together. In 1957 they were married, and Lucy McCrone – who remains a skillful microscopist – was to become a constant presence at the symposia. With Lucy's encouragement, Walter McCrone decided to realize his own vision and went on to found McCrone Associates (in 1956) and then the McCrone Research Institute (in 1960).



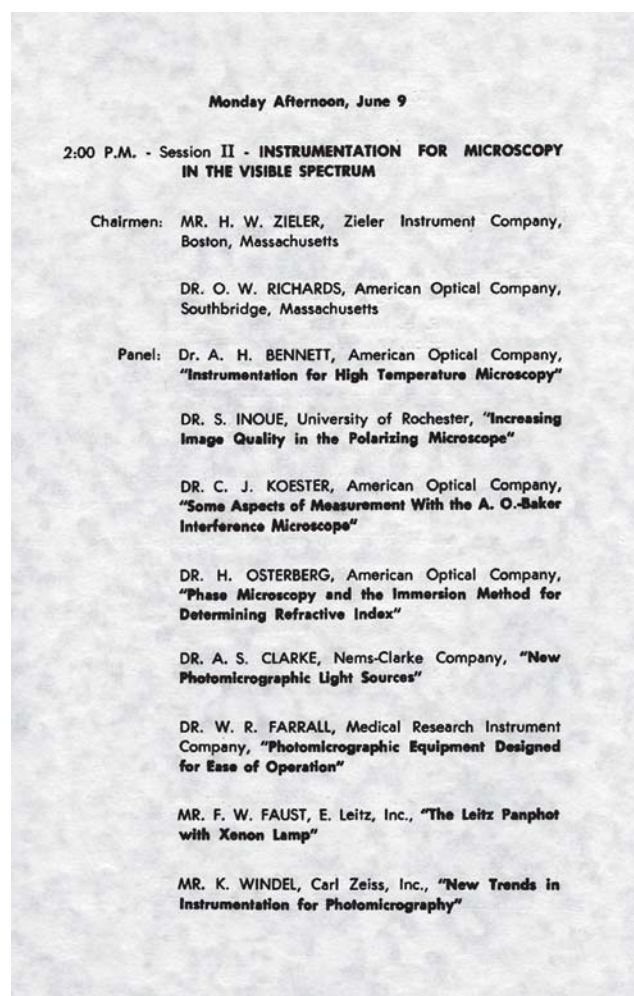
Front cover 1950 program.



Sample page 1950 session.



Front cover 1958 program.



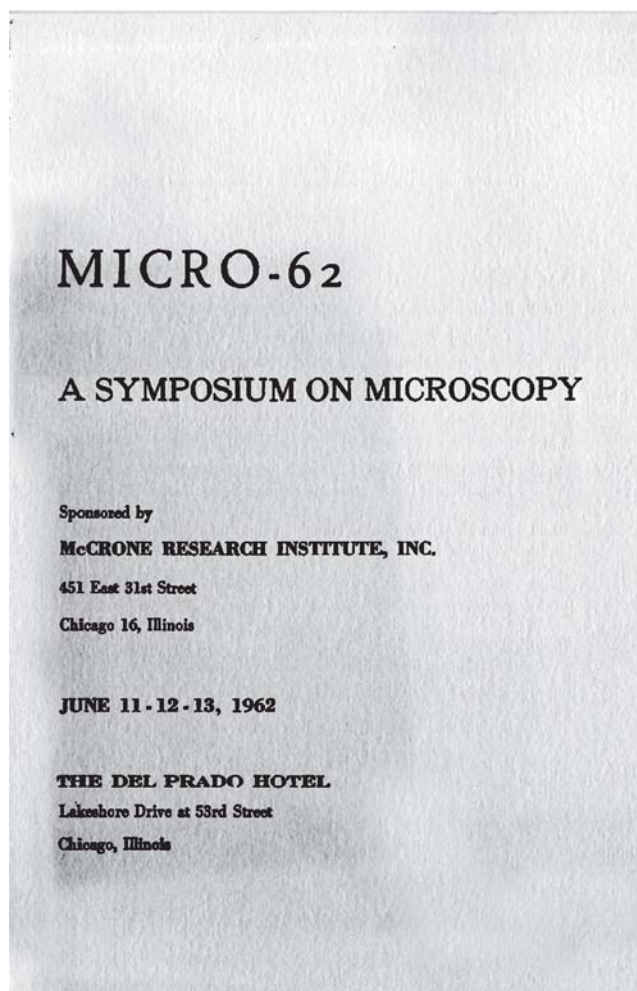
Sample page 1958 session.

After the small 1950 meeting, Tufts had become less involved. By 1958 the symposium was entitled, simply, 'Microscopy, a Symposium'. The program reminded delegates that it was sponsored by W. C. McCrone Associates and the conference took place at the Del Prado Hotel on Lake Shore Drive at 53rd Street, Chicago. The program was closely organised and tightly timed. Although the informal discussion-group structure was still there, named speakers tackled specific topics. They ranged from 'Interference and Phase Microscopy' and 'Spherulites in High Polymer Films' to 'Birefringence in Polystyrene' and the microscopy of 'Nylon Fabric after Impact' – seven contributors in the morning, ten in the afternoon! Seventy speakers were named in the program that year. The crowded program was back.

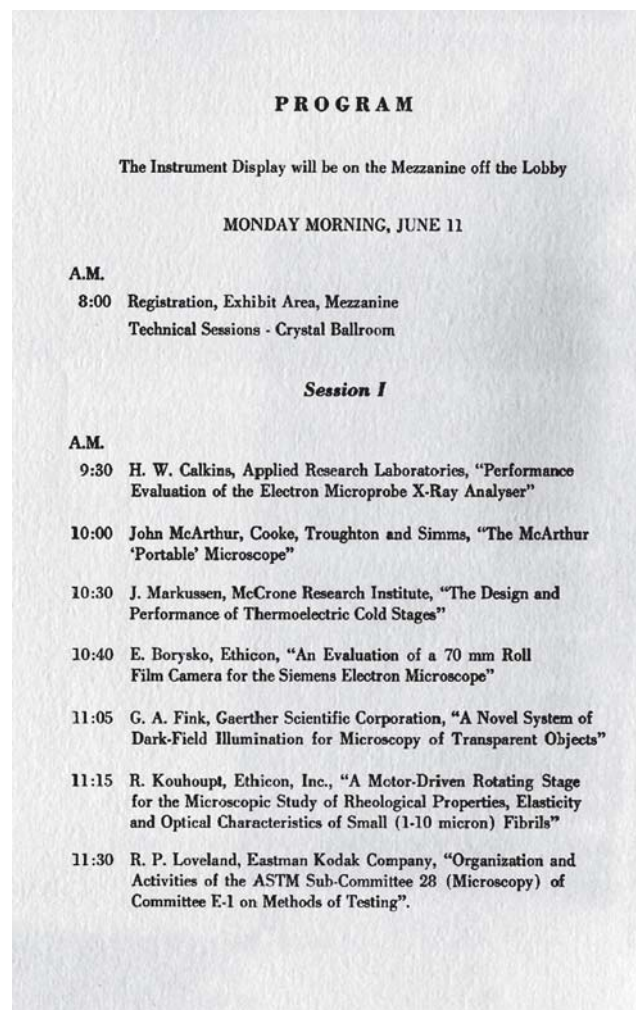
Among them was the young Shinya Inoue, who returned thirty years later as our banquet speaker. The after-dinner speech on the evening of June 10, 1958 was given by John Bunyan, then the President of the Royal Microscopical Society. Bunyan later invited me to work with him on the microscopy of wound healing mechanisms, and in due course he contributed the Foreword to my book *The Revealing Lens, Mankind and the Microscope*, which was published by Harrap in 1973.

MCCRONE RESEARCH AS SPONSORS

The connection between McCrone and the Royal Microscopical Society continued to make its mark during the 1960s. By this time the Chicago meetings were sponsored, as they are to this day, by the McCrone



Front cover 1962 program.



Sample page 1962 session.

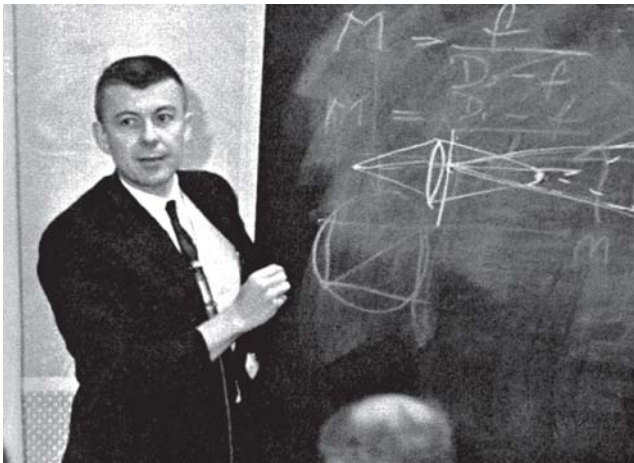
Research Institute (McRI) and were held on alternate years. The first conference of that decade was called Micro-60. This raised a few comments, for the RMS had used the term 'Micro' for some of their symposia (their present-day biennial conference is entitled 'Micro Science') and in 1962 the RMS was approached by Lucy McCrone to ask if they had any objection to the use of the term 'Micro' for the Chicago meetings. The RMS said they had no reason to object and the name 'Micro' became permanently attached to our conferences. Because the meetings had tended to take place in alternate years, the conference in 1962 was actually the ninth in the series.

Now that the series of meetings was successfully established, the McCrones began to look overseas. Walter McCrone had been in close contact with the

publishers of a journal named *The Microscope*, which had been founded by the grandly-named Arthur Lawrence Edward Barron. Walter acquired Barron's journal in 1962, added "and the Crystal Front" to the name and began publishing in Brighton, on the south coast of England, with Harold M. Malies as editor. It was resolved to hold one of the conferences in the town. The meeting was arranged at the Grand Hotel in 1963. This was the best hotel in the town, and indeed was later the choice of the Conservative Party for their historic conference in 1984 when the hotel was blown up by IRA terrorists. Five people were killed that night. I was in Brighton next morning, and watched the rescue operation from the stony beach; the sight of workers picking diligently through rubble, seeking survivors, looked like scenes a WW2 movie – but this was



A surviving picture of the 1962 conference. Sponsored by McCrone Research Institute (as the conference is to this day) the meeting was based at the Del Prado Hotel on Lakeshore Drive, Chicago.



The young Jack Dodd, who remained a regular participant until after his retirement, took his research on schlieren microscopy as his topic during the 1962 conference.



In 1968, a mews in Hampstead was given a name that's unique in London streets. Doris Nelson negotiated for the McCrone name to be commemorated.



At the 1965 exhibition, Walter C. McCrone (with Dr. Clayton Matthews) meets Dr Karl Jung of Leitz Incorporated (right) at the scientific exhibition.



Martin Scott, Gene Grieger, Irma Quackin and Dale Bush.

devastatingly real. In the modern world it has almost become familiar.

The foreign venue worked well enough for Micro-65 to be planned in England. Professor Robert Barer hosted the next English meeting at Sheffield University. Barer was a distinguished cell biologist, and I later came to know him through the Royal Microscopical Society conferences. Members of the Royal Microscopical Society had been invited to each conference ever since John Bunyan's visit and in 1966, back in the United States, the meeting was actually named 'RMS-Chicago-66'. This was the thirteenth in the series, and at that conference a young Dr Jack Dodd gave a lecture on Schlieren microscopy. Jack remained a regular contributor to the meetings for decades. Dr George Svihla of the Argonne National Laboratory presented a paper on Leeuwenhoek's research into the yeast *Saccharomyces*. Svihla had constructed microscopes that illustrated how Leeuwenhoek had documented yeast cells, and many years later he invited me to stay at his home in Ogden Dunes, Indiana, where he and his wife lived within a stone's throw of the famous whistling sands. He showed me his experiments, and the tiny microscopes he constructed. And he showed me round his home, too, which was distinguished by having a shallow pond for a roof in which grasses grew, keeping the house comfortably cool in the heat of high summer. He was always a pioneer.

The return of the conference to England in the following year took the 1967 meeting to Cambridge University, where their Honorary Chairman was Professor Vernon Cosslett. He and I first met at a Royal Microscopical Society meeting in Oxford University. I had been elected a Fellow back in 1963, when you had to submit published work and be recommended by Fellows. At that time the letters FRMS were accepted as a qualification in their own right, but as the Society became ever more anxious to boost membership – and applied ever looser criteria for Fellowship – they were eventually told that they could no longer use the 'letters after the name'. The Society, after all, possessed a Royal handle, and such matters were taken seriously. From that time on, members could describe themselves as a 'Fellow of the Royal Microscopical Society' in words, spelt out in full, but no longer as an FRMS.

I knew Cosslett as Ellis, his second name, which he always preferred. He was at the Cavendish Laboratory – where I now carry out my scanning electron microscopy – and was President of the RMS. The last time I saw him was at his home in Cambridge shortly before he died, in 1990. By that time he could no longer speak, and was severely disabled; but he could hear

well enough and we sat as I gave him news of mutual friends and tried, as well as I could, to update him on what had been happening in the world outside. The 1967 meeting was held at Churchill College, a sparse brown brick building that looks like a vast public lavatory a mile or so from the city center and the base for the Cambridge Society for the Application of Research, of which I am now the President. There we organize fortnightly meetings on scientific topics, and in November 1997, Walter and Lucy visited us at home in Cambridgeshire, and Walter gave an unforgettable lecture to the CSAR.

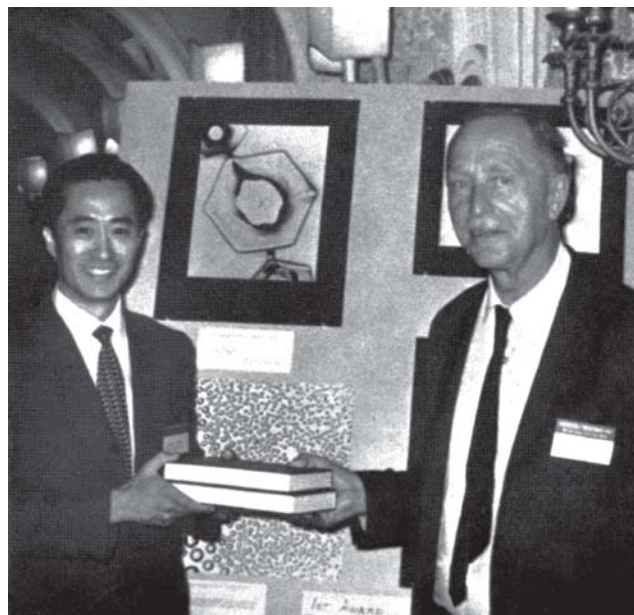
THE DAWN OF INTER/MICRO

By the time of the next Chicago conference in 1968, the name had changed to Inter/Micro. It has been with us ever since. By this time, McCrone had changed the format of *The Microscope and Crystal Front* and had begun to develop it as a mainstream journal for microscopy with Dawn Riley as the editor. Under its new title of *The Microscope* it was gaining increasing interest among microscopists and was fast becoming the house journal of Inter/Micro. By 1968 Walter and I were in contact and at his suggestion I submitted my first research paper to Dawn Riley. It concerned the formation of platelet-like bodies by a human granulocyte and its acceptance for publication in *The Microscope* marked the beginning of a long relationship. Walter extended an invitation for me to speak at his next conference, for Inter/Micro 69 was scheduled to take place at Imperial College, London. It was the first time that Walter and I met. Walter said he was glad to see something with a biological slant in the program, and was keen to encourage me to speak on my research, so in 1969 I spoke on my investigations of hemostatic mechanisms. This was an exciting field to investigate, and my discoveries were published in the popular press. The research went on to be featured in the 'highlights' section of the McGraw Hill *International Yearbook of Science and Technology* for 1970. A more recent account of the research was published in the scientific literature in 2006 and also in 2007, so it has remained current since my lecture to Inter/Micro 69 in London, almost 40 years earlier.

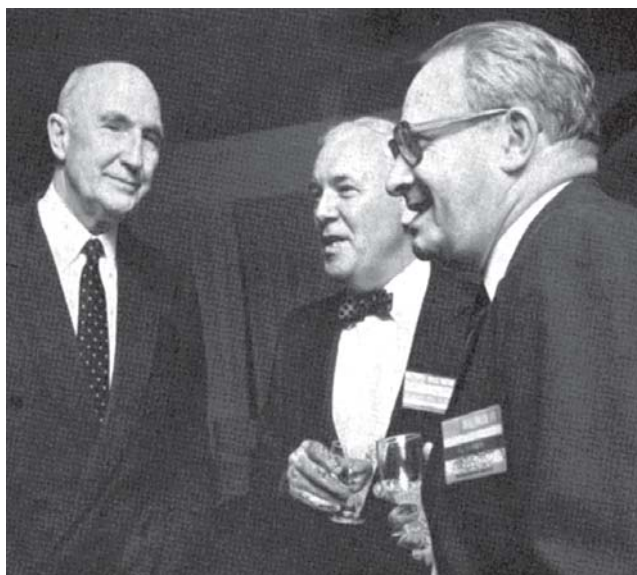
During the early 1970s the conferences continued to alternate each year between America and England. In 1971 the meeting returned to Imperial College and with the added catchment of the RMS it attracted almost 200 delegates from 15 countries. One of the speakers was John McArthur who had developed his successful portable microscope during his work on ma-



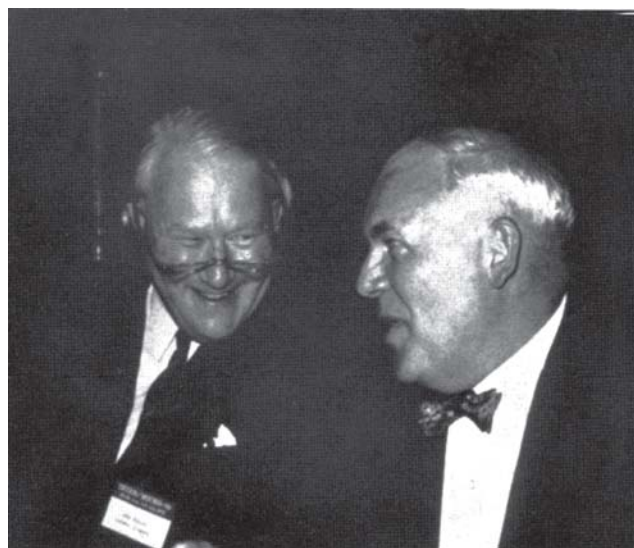
Dawn Riley edited McCrone's new journal, The Microscope, and is here reminding Roy Currence of Xerox Data Systems to renew his subscription at the 1970 conference.



Dr Roger Cheng, winner of the 1970 photomicrography competition, is presented by Czech microscopist Dr Vladimir Sekera with his prize – the two-volume work on photomicrography by Roger Loveland.



The Chairman of the Board of Governors at Imperial College, London, Lord Sherborn (left), with Dr. McCrone and conference Chairman Professor Robert Barer (right) at Inter/Micro 71.



John Bunyan, a direct descendant of his illustrious author namesake, was President of the Royal Microscopical Society when he spoke at Inter/Micro 70.

laria in the tropics. He and I later became firm friends; we met either at his home at Waterbeach, or at my home in Eastrea, for the rest of his life, and I remain in contact with his surviving family to this day.

From 1972, the even years were spent in Chicago (at the Sheraton-Blackstone that year) while the odd years saw the conference at Cambridge University. The next Cambridge meeting was held in 1973 at King's College, Cambridge, and it was the first at which I gave



Bob Caron and Rober Muggli with John Reffner and Walter McCrone at Inter/Micro.



Martin Scott and Mitch Sieminski with Nancy Daerr (center) and Walter McCrone (right) at Inter/Micro in the mid-1970s.

two presentations. I spoke on the role of microorganisms in environmental pollution control, and also gave a paper on the implications of my proposed new laws on biohazards. The subject of the former talk went on to grow into the science of microbial bioremediation, and the other talk led to safety laws being passed in many countries around the world. The audiences were so supportive, and encouraging; that has always been the hallmark of Inter Micro.

There were many adventures during that week, which Anna Teetsov vividly remembers. The delegates stayed in the student accommodation at Queen's College. The rooms, left empty for the summer vacation, were sparsely furnished and inefficiently heated. Queen's had been founded in 1448 and the windows looked out onto the River Cam (known, perversely, as Granta for the distance that it flows through Cambridge itself). The proximity to the river, with tourists



Walter McCrone introduces the banquet speaker at Inter/Micro 73 at Cambridge University, England. On his right, Anna Teetsov and her husband; on his left, guest speaker Dr. John H.L. Watson.

punting gleefully up and down, was appreciated by everyone. The delegates ate lunch and dinner in the hall at King's College, which had been founded by Henry VI (after whom it is named) and which had been finally finished by King Henry VIII in 1551. Few delegates had remembered the closing times for the college gates, and one night arrived back at their quarters too late to be admitted. Some found a narrow passageway that eventually allowed them in; others – more agile by far – actually scaled the outer wall like undergraduates to get back to their rooms.

I spoke at four of the Cambridge meetings through the seventies, and was honored to give the opening addresses in 1975 and 1977. British microscopist Gary Nichols, a regular speaker at Inter/Micro over the years, also attended the conference in 1977. At the time, he was working at Cape Asbestos Fibres in West London. Gary recalls the delegates unlocking the traditional low punts from the colleges and taking trips along the river late at night. "This was almost a tradition, immediately after the banquet," he recalls. "We raced for about an hour, until we were tired or the police came and shouted at us from a bridge."

Arrangements for the Cambridge conferences were being coordinated by the redoubtable Doris Nelson – London's first female stockbroker – and Sara Mark of McCrone Scientific Ltd, the consulting company that Walter and Lucy had established to handle their British contracts. After meeting Walter and the Nelsons, Gary decided to leave Cape Asbestos to join McCrone

Research Associates Ltd. (London) in 1978 and stayed there until December 1984. Gary attended, presented at and helped in the day-to-day running of the conferences at King's College, Cambridge in 1979, 1981, and 1983. He remembers them as "good, fun meetings with a splendid banquet in the college dining hall. That was helped also by the Cambridge beer festival which was held during the same week in the old Corn Exchange!"

The London premises of McCrone Associates were in a small lane which Doris managed to have officially named McCrone Mews. It is there, in Hampstead, North London, to this day. Doris Nelson and her husband Jamie were at Inter/Micro again in 2001 and remain active in their nineties. When I recently visited Jamie in Hampstead he showed me his newly invented equipment for recording the unique facets of gemstones, and he was making some of these devices for American gemstone dealers.

THE MCCORMICK YEARS

Thereafter the conference had returned to Chicago. In the 1980s, I was approached to see whether Inter/Micro could once more return to Cambridge University. I was regularly chairing conferences at Magdalene College so it was easy to make enquiries of the right people. For a time the prospects looked promising, but it was not to be. Inter/Micro settled down to an annual timetable in Chicago, and has remained there ever since. During the 1980s the conference was based each year at the curiously-named McCormick Inn, at the time a great tower block hotel just south of the Chicago Loop. The arrangements were now handled by Ms. Nancy Daerr, who would remain Dr. McCrone's assistant until his death in 2002. Nancy came to know the microscopist fraternity well, and helped to build on the sense of informal contact and social mixing for which the meeting had become renowned.

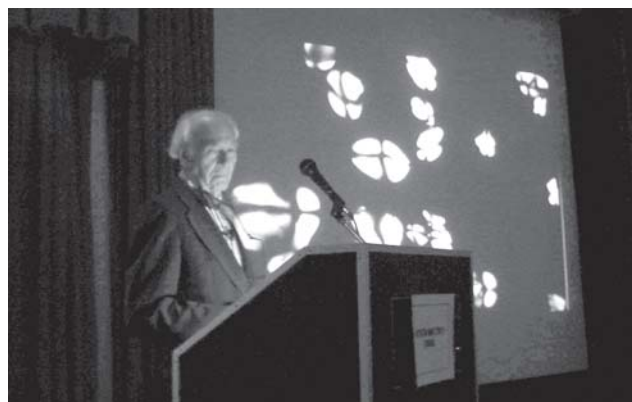
By this time, the conference had adopted its present-day pattern. There were 6/8 papers in the morning, and the same in the afternoon; in each case the chairman gave the last paper of their session. Looking back at Inter/Micro 82 it is intriguing to see the emergence of many familiar figures. John Reffner was there, speaking on the need for standards in microscopy. Hazel Bales was addressing the issue of particle identification; then Bill Bryant, who was with us even when bowed low with spinal illness, spoke on crystallography, Arthur Coates reviewed some of his case histories, and Leo Barrish looked at textile SEMs. We heard from such regular contributors as Jack Dodd, Dale Quackenbush, Wayne Niemeyer, Thom Hopen,



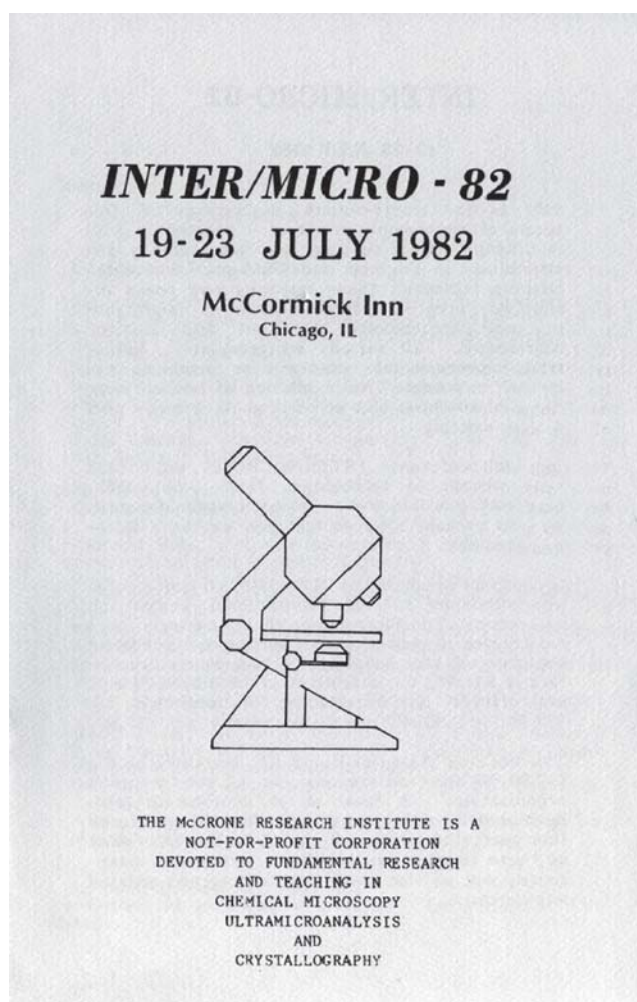
Delegates out on the town in downtown Chicago after a day of lectures. Accompanied by Nancy Daerr are Andy Bowen, John Smoliga, and Arthur Coates.



A promising junior microscopist at the McCrone Research Institute was Gary Laughlin, who was then the young prodigy of the organization. Not any more . . .



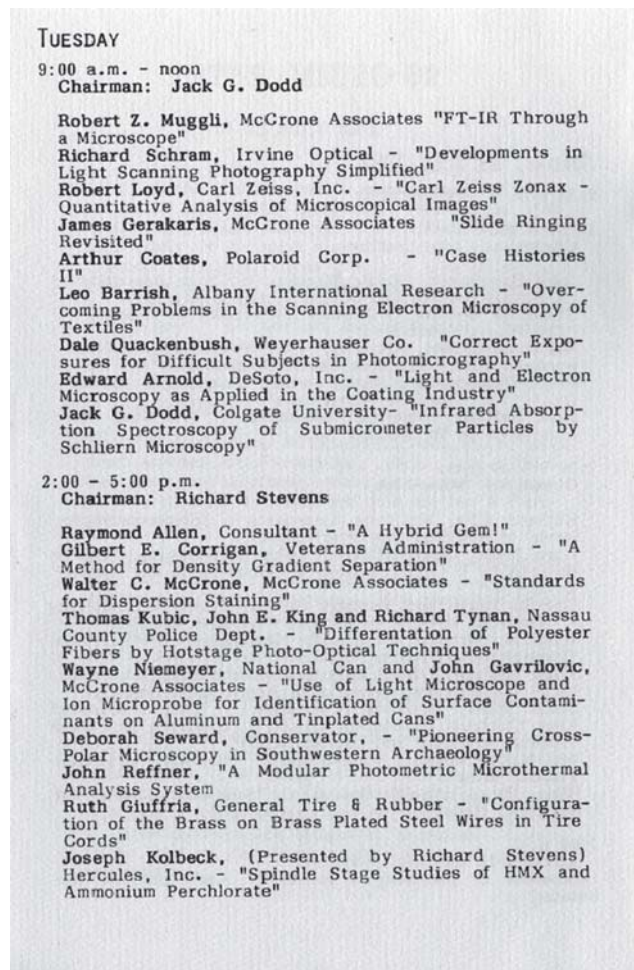
Walter McCrone – captured here lecturing on his favorite subject at the Talbott Hotel during Inter/Micro 2000 – remained in fine form as a speaker long after others would have retired.



Front cover 1982 program.

Mark Palenik, Fay Goldblatt, Anna Teetsov and (of course) Walter C. McCrone himself. From this time on, the meetings maintained the format we would recognize today.

Video was taken of the banquets during the 1980s by Dr. Jack Bryant, using a camcorder the size of a suitcase which he waved threateningly at anyone he could find. His old tapes remind us of many of those faces and others who went on to build their own careers, like Peter Cooke who largely created the gardens at McRI and now teaches asbestos courses in many countries, and Felicia Hinant who graciously assisted me each year at the SMSI auction has since qualified as a doctor of medicine. Over the years we have regularly learned unique insights from Eric Chatfield on asbes-



Sample page 1982 session.

tos, the wise overview lectures of Mr. Jeff Hollifield, presentations by Peter de Forest, who imparts so much in-depth knowledge of forensics, as does Skip Palenik with his presentations and master-class sessions. Tony Havics has not only presented a number of fine talks and workshops, but this year reintroduced the micrograph competition that we have missed for many years. Randy Boltin and Rich Brown have also been regulars for years, along with specialists like Peter Diazcuk, Pete Barnett, Wayne Moorehead, Kevin Brady, Dickey Huntamer and Susan Young. Larry Wayne returned this year with a presentation on manufacturing defects in CDs, after a decade away from microscopy (making gourmet chocolates in California, an interest that stemmed from his microscopical studies of these



Meaningful moments at Inter Micro 2002: (L-R) Pre-dinner arrangements between Dorothy Mikuska with Nancy Daerr and Jan Ford.



Tony Havics surrounded by microscopists at his workshop for those attending Inter/Micro. These offer a unique chance to learn procedures – and to ask pertinent questions.

foodstuffs). Such interests, far from hard-core microscopy, are not so unusual. Another of the great names in American microscopy, John Delly, immersed himself in Chinese calligraphy and ballet – dancing, not merely attending – after he left McCrone Research.

Steven Schaffer, who was there in earlier years, plans to return to forensic microscopy after some years of absence. Schaffer has always been ahead of his time. Some twenty years ago he gave us a fine talk on the future of digital databases. He had prepared a talk based on the first-ever CD-ROM of the *Guinness Book of Records*. I watched his presentation with interest, since I have long been an adviser to the Guinness editors. Suddenly, my eye was caught by the entry he was demonstrating. “What shall we find?” Steve was saying. “World’s fastest mammal? Right – here it is, the cheetah. All found within a fraction of a second. No need waste time turning the pages.”

But I looked at the entry with a sense of increasing perplexity. ‘The cheetah may not have been running apartment out,’ it read, describing a timed run at a stadium in London. At first I simply disregarded it, but then turned back to the problem, determined to work out what was wrong with the wording. Suddenly, it dawned. “Forgive my interrupting,” I said, “but the phrase ‘apartment out’ makes no sense at all. At least, it doesn’t until you recall that an ‘apartment’ in the USA is a ‘flat’ in England.” The point was – had the cheetah been running *flat out*. Problem solved. Steve pioneered this form of digital database but the market

wasn’t ready. We now use resources like the *Particle Atlas* in digital form without stopping to consider what a novelty it once was.

The mid-week social event of Inter/Micro centers on the annual banquet. Until about 1970 there were two. The first was the conference dinner, and the second was the annual banquet of the State Microscopical Society of Illinois (SMSI). In more recent decades there has been just the one, the SMSI banquet. This is not strictly part of our conference. It is always followed by an auction in favor of the Society’s charitable fundraising. The Annual General Meeting of the SMSI takes place between the dinner and the auction and always provides light relief for the more stoic Inter/Micro delegates. A slate of officers, previously agreed in private meetings, is presented for approval – though the arrangements are not always entirely predictable. The affable Bill Mikuska, once installed as President, stayed in office for almost a decade and one of his Annual General Meetings was omitted from the proceedings altogether.

On another occasion in the eighties the then President, Dr Wynn Hopkins, called to the podium the nominating officer, Ed Lebryk. Ed has attended Inter/Micro regularly for more than 40 years and is a long-standing member of SMSI, though on this occasion was sampling the fine brandies in the hotel bar. Walter McCrone stood up and called, loudly, for the missing officer. Ed Lebryk emerged somewhat unsteadily from the bar, and – realizing the situation – immediately

nominated Walter as the officer responsible. "What me?" said Walter, taken aback. "Am I the Chairman of the nominating committee?"

"Why sure," Ed replied. "We just made you Chairman."

And so the meeting resumed, with Walter in full charge and Ed, in his most convivial manner, safely seated nearby. In 1984 I had been invited to give the banquet speech on the subject of my research into Antony van Leeuwenhoek, the Dutch pioneer of microbiology. I spoke again in 1986, when the presentation was dubbed 'An Evening with Brian J. Ford' and then in 1988 Dr McCrone dubbed these presentations simply 'An Evening with Brian', the title they have had ever since.

There were (as they always are) both good and bad aspects of our years at the McCormick. Among the favorable aspects were the wonderful views across the city from the upper floors. During a thunderstorm the vista was magnificent and enthralling, as spiders spun their webs on the window frames outside, and the city was garishly illuminated by shards of static that split the evening skies. During the rush hours we could look down pityingly on the motorists queuing to wrestle with the traffic in the Loop.

Equally good news was also the revival of a set program of formal presentations, rather than loose discussion groups. The argument against the lecture is simple: research had shown that people don't always retain much from a straight talk. On that basis, there was a fashion for abandoning lectures altogether. There still is. But that isn't sensible. The reason that people do not always retain information and ideas after a lecture is because many lectures are, simply, not memorable. There is no reason to abandon them altogether: what we need to do is ensure that they are of the right quality. Good lectures live on in our lives. Many of our interests as adults stem from presentations by school teachers, and the best of those shape our destiny and remain with us throughout adulthood. A good lecture is not only memorable, but entertaining and diverting. The Inter/Micro organizers spend much time following up reports of good speakers, and encouraging them to attend. The quality of speakers at the meetings is always high, and this good news became apparent during the 1980s.

On the other hand the bad news was, first, that we were miles from downtown and it took a lengthy limo ride to get anywhere. Secondly, the hotel had the flimsiest of partitions separating one conference room from the next. During the silences that inevitably occurred during the handover from one lecturer to the

next, the speaker next door could often be heard. When this was a stentorian speaker in full flow it was bad enough; but when the next room was hosting a religious gathering, the power of the organ music and upraised voices singing fervently their praise to the Lord made it impossible to hear what was being said. On occasions, Nancy Daerr had to arrange a change of venue to another part of the hotel where it was rather more peaceful. Once, Walter McCrone gave a humorous impromptu speech saying we would do better to move right across the town . . . in either event, it was clear that we could not go on meeting at the McCormick Inn.

THE MOVE DOWNTOWN

Matters came to a head when the decision was taken to tear down the entire McCormick complex, and the hotel block in which we convened was scheduled for demolition. The die was cast, and henceforth Inter/Micro moved downtown. The new venue as the 1990s began was the Regal Knickerbocker Hotel on East Walton. Situated just one block from the iconic Hancock Building and less than that from the Magnificent Mile, it was an ideal venue. Incongruously, it boasted the largest illuminated dance floor in the world, and in the years of prohibition was rumored to have housed a secret speakeasy and casino run by the Capone brothers. In 1952 the Knickerbocker housed Senator Richard Nixon and the Republican National Convention. At various times it has accommodated President John F. Kennedy, Chief Justice Earl Warren – and the Rolling Stones. In the 1970s the hotel was owned by Playboy Enterprises, and Hugh Hefner lived in an apartment on the upper floors. And then came we lesser mortals: the microscopy people who followed in those distinguished footsteps during the banquets of the 1990s included Mr Chuck Zona, Mr Dick Bisbing and Ms Bonnie L. Betty, all of whom are now active with McCrone Associates out at Westmont. Others have since retired, though their presentations are remembered by many. Mr Martin Scott gave many insightful presentations, for instance, as did Mr. Basken Craven from Lorillard. He was known to absolutely everyone as BJ, and most assumed that (since I was BJ Ford) the B stood for Brian. It was an incorrect assumption. In fact Basken Craven is a highly unusual name – there isn't a single one, at the time of writing, listed anywhere on Google.

Downtown Chicago is a remarkable place, and boasted six of the ten tallest buildings in the world during the 1990s. There is an ambience that is courte-



Cloud Gate, more popularly known as The Bean, is a highly polished sculpture in Millennium Park. It offers an unusual reflection on downtown Chicago.



Most people never think to get underneath The Bean and look at the myriad reflections that hang tantalizingly above. It is a photographer's (and mathematician's) delight.

ous yet informal, cultured yet casual, highly civilized yet down to earth and direct. The meeting mirrors the city, and the two harmonize perfectly. We were somewhat spread out in the large ballroom of the Regal Knickerbocker, it must be said, and McRI began to experience difficulties in securing guarantees of accommodation one year ahead. For hotels, such advance bookings can prevent their securing a better deal from someone who comes along later in the year. For the conference organizer, dates have to be settled at least a year ahead or lecturers will be booked to speak at other venues.

THE TALBOTT INTERLUDE

In the event, it was decided to transfer to the nearby Talbott Hotel. In so many ways, this was an excellent venue for Inter/Micro. Designed like an English club, the Talbott boasted fine paneled rooms and British artwork, an excellent cocktail bar, and close proximity to restaurants and clubs. The nightlife of Rush Street was just around the corner, and the staff were cordial and welcoming. The conference settled into its new home, though by now there was an underlying concern for Walter McCrone's health. He was suffering from congestive heart failure, and those who knew him well became increasingly concerned. The news everyone dreaded came through the media. In July 2002 Susan Stanberg announced on National Public Radio, "We have just learned that one of the great detectives has died. Walter C. McCrone . . . the microscope master who died in Chicago at the age of 86, solved some of the major mysteries of our time. Look-



John Shane working on the final version of his Inter/Micro lecture at the rear of the meeting room at the Talbott Hotel with young Reed Stoney.



The author at the annual mixer with English-born Canadian microscopist Eric Chatfield, a world authority on asbestos, and Sebastian Sparenga from the McCrone Research Institute.

ing into his microscope, Walter McCrone made judgments about the authenticity of the shroud of Turin, the cause of Beethoven's death, the value of so-called priceless paintings."

Those who attended Inter/Micro found it hard to grasp this news, inevitable as it was. Walter had always embodied exuberant good health and it seemed hard to imagine any pathology that could presume to change all that. And there were even those who said that – with Walter gone – the meeting would pass away too. John Shane, who could be found finalizing his presentation on a laptop, crammed at the back of the meeting room at the Talbott Hotel, was among those who claimed that the end of the meeting was inevitable.

Of course it wasn't! The conference was not Walter's private vanity, or a personal interest. Inter/Micro owed its development to Walter McCrone's insights, but it was something he started; not something he had personally to sustain. In the years that followed, numbers attending began to increase, just as the average delegates started to get younger. Gary Laughlin and I often commented, back in the McCormick days, on the high proportion of *eminences grises* compared to the *eminences brunes* that we had observed in the audience. The gray hairs of older delegates were always in the majority.

But not any more. Younger delegates were starting to attend in ever-increasing numbers. Seated at the back of this year's lecture room, we could easily see a minority of gray heads and (even though Gary



*Celebrating the age-old harnessing of *Saccharomyces cerevisiae* with Chris Vandertuuk, Reuben Nieblas, the author, Chuck Zona and Dave Wiley.*

did suggest that this could also be correlated with the increasing sales of hair-dyes) everyone could see how much younger our delegates have become. Their sheer numbers started to force us out of our accommodation. For all its charm, the Talbott clearly couldn't cope. Lecturers were crammed in the end of the meeting room, delegates who arrived late had to stand or try to secure a chair at the rear. Microscopists who had been spread out in the Knickerbocker were jammed tight in the new premises, and it was clear that somewhere more accommodating would be required.

RETURN TO THE KNICKERBOCKER HOTEL

The solution, difficult to find as it seemed at first, was staring everyone in the face. We needed to return to our familiar quarters in the Knickerbocker. By now the hotel was under new ownership, and was known as the Millennium Knickerbocker. Much of it had been refurbished, the cocktail lounge emerging as a fresh and luxurious club-room, complete with the wooden panels. All the bedrooms and suites were being redesigned, and the building was re-emerging in a new guise – but rich in the resonances of earlier eras. The organizers at McRI were able to secure a suitable agreement with the management, and in recent years the conference has been back on familiar ground. If acceptable contracts can be negotiated, then Inter/Micro will continue to be based there in the future.

After the main conference, some of the delegates retire to the McRI laboratories for an intensive hands-

on course. Learning about Hoffman Modulation Contrast is one thing; experiencing a one-day course given by Professor Bob Hoffman in person is something infinitely more memorable! Last year we had an inspiring instruction to a lifetime working with aquatic microorganisms from Dr. Jeremy Pickett-Heaps. We have had the inspirational Walter Rantanen exuberantly introducing us to the microanatomy of wood, and Dr. Steven E. Ruzin fresh from Berkeley with a hands-on lesson in the antibody staining of living cells. These are uniquely informative courses, full of insights and rich in learning. The flavorsome lunchtime pizza that they serve on the Thursday is an added bonus . . .

And thus we arrive at the present day. For the first time, the Monday evening event was held afloat, aboard the M/V Celebration. It proved to be a timely innovation, and everyone enjoyed the change of venue. Navy Pier is within walking distance of the hotel, and so are so many of the city's major attractions. The historic Water Tower is just a few minutes' walk away from the hotel, and the shopping and libraries rub shoulders with the parks and museums nearby. For the diversion of delegates in the evening are jazz and blues clubs, piano bars and fine restaurants. Inter/Micro has a unique place in the microscopists' calendar, and nestling in downtown Chicago is the perfect place for us to convene.

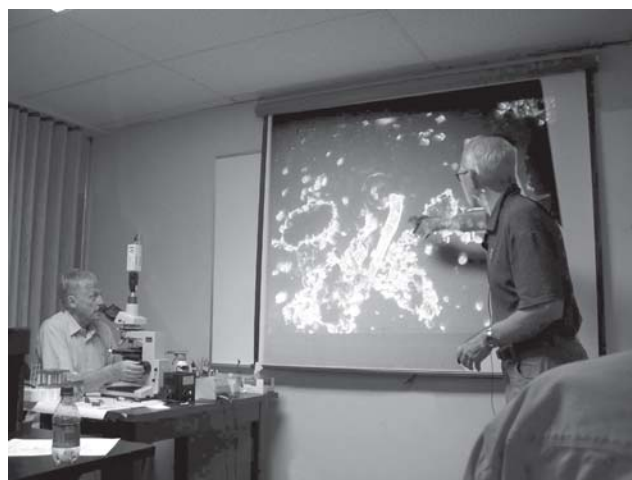
FUTURE PROSPECTS

We can look forward to future years knowing that we have a sound and solid history on which to build. The speakers at the 2008 conference include many who work at McRI, and what a superbly professional team they are. Ms. Meggan King (currently taking on the rôle of Vice-President of SMSI) spoke at the conference on her work on archaeology and the microscope, Ms. Kelly Brinsko on her studies of eco-friendly fibers, with Mr. Sebastian Sparenga on the microscopy of hay clinker. They all gave excellent, well illustrated presentations on their work – lectures by successful young scientists that point the way ahead for Inter/Micro. Dr. Chris Palenik now follows his father Skip, bringing a new generation of forensic specialists to the meeting; and Ms. Lauren Logan is such an excellent conference coordinator who provides the exact blend of a gracious yet proactive approach with the broad range of ability that the conference demands.

One unusual feature of the strong social ambience of the conference is the way that speakers are prepared for their talks. Everyone is invited to join the hosts at a meal prior to their session (breakfast for the morning



Tanya Dulaney from San Diego, California, spoke at Inter/Micro 2008 on her Police Department's nuclear fast red staining of DNA-bearing hair roots.



While award-winning Australian micrographer Dr. Jeremy Pickett-Heaps delivers the learned commentary, the author provides some live micro-organisms for their Inter/Micro course at McRI.

speakers, lunch for those speaking each afternoon). Also in attendance is the staff member who's handling I.T. – so speakers can load their presentations on to the conference computer, meet each other, rehearse the details and settle down for a chat with the session chairman and organizers. These are leisurely and informative gatherings, with good food and excellent company.

Although symposium proceedings are widely published, I have long believed that it would be far more revealing to publish the informal discussions at a meeting. Proceedings of what was said in the bar would be much more fascinating. So would be the interchange of ideas and information at an Inter/Micro



In full flow, like a galleon sailing at speed, Walter Rantanen delivers a passionate and well-informed workshop on wood micro-anatomy for the Inter/Micro delegates.

speakers' meal. In 2008, for instance, one speaker at lunch mentioned a question over asbestos. Another responded by mentioning the world authority at the conference, Eric Chatfeld, who would have exactly the answer. A third said that his asbestos problem had centered on the presence of asbestos as filler in heavily pigmented paint; a fourth leant forward to say that it was her company that made the paint pigments . . .

This informal cross-fertilization is the hallmark of Inter/Micro. The conference has welcomed many of the greatest names in microscopy. Jan Hinsch is one of the most knowledgeable and experienced, having worked for decades with Leitz, and then with Leica Microsystems. Cathy Cargille, and others from the Cargille Laboratories, have been with us on many occasions, and Cargille regularly sponsors the conference and gives generously to the mid-week auction. Now, with the new horizon beckoning, and a fresh generation of younger scientists registering in increasing numbers each year, this learned yet welcoming conference has a bright future beckoning. It is difficult to believe that Inter/Micro began as a brave, pioneering microscopy conference sixty years ago. It is harder still to grasp that Lucy McCrone continues to devote herself to the conference in any way she can, with a

sparkle and brightness that few can match. Gary Laughlin, once the new boy at McRI, is now the President and Executive Director of this uniquely successful not-for-profit research and teaching institute. With its young and forward-looking staff, McRI looks positively towards the future of Inter/Micro. We can all share their sense of excitement, and join with them in the enticing meetings that lie ahead.

ACKNOWLEDGEMENTS

Annual summaries of Inter/Micro symposia appear annually in *The Microscope*.

Grateful thanks are extended to Lucy McCrone for her reminiscences on the organization of early Inter/Micro meetings.

Photographs up to 1990 are from the McCrone Research Institute archives and were researched by Gary Laughlin and Lauren Logan.

Later images are from the author's personal collection of photographs.

REFERENCES

1. McCrone, Walter & Tufts, Charles (1948) cyclostyled announcement of a 'symposium on electron and light microscopy', March 29, Armour Research Foundation [and] Illinois Institute of Technology; also 'Abstracts of Lectures' (1949), *ibid*, in the McCrone Research Institute archive.
2. Rochow, Theodore (1949) letter to W.C. McCrone and C.F. Tufts from the Cyanamid company in the McRI archive, July 26.
3. McCrone, Walter (1966) RMS-Chicago-66, *The Microscope* **14**: 239-245.
4. Stewart, Ian (1970) Inter/Micro-70, *The Microscope* **18**: 319-323.
5. McCrone, Walter (1966) Inter/Micro-71, *The Microscope* **19**: 415-421.
6. Nichols, Gary (1981) Inter/Micro-81, international symposium on microscopy and x-ray diffraction, *Physics in Technology* **12**: 275-276.
7. Teetsov, Anna (1998) A reminiscence of Inter/Micro at Cambridge, England, 1973, *Micro-Notes*: 7-11, August.