

## Chapter Eleven

### MODERN ERA

Irradiation - McFadzean Laboratory - CRED - Management - BREL  
Research Projects - Flextime - Social Club Ups and Downs  
Film Society - "Gabrielle"

THE EXPANSION and reorganization of research at Wood Lane after 1952, including the erection of the Rutherford Building and the establishment of the Irradiation Department in 1956, and culminating in the construction of the McFadzean Laboratory, were significant in highlighting the company's continuing confidence and trust in the role of research in the affairs of BICC. The opening of the McFadzean Laboratory was probably as impressive as the original opening of the laboratories in 1934, and those present were privileged to witness, via TV monitors, the unveiling of a plaque by His Royal Highness the Prince Philip, Duke of Edinburgh, in the presence of Sir William



Official Opening of McFadzean Laboratory,  
16th May, 1961



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McFadzean, then Chairman of BICC and President of the Federation of British Industry \*, Dr. L. G. Brazier and a distinguished gathering of representatives of the Company, government, industry and the universities and local civic dignitaries. Sadly, P. V. Hunter had died in 1956 but he surely would have reflected as "LG" must have done on the enormous growth in research at Wood Lane in less than 30 years.

### **Speeches by His Royal Highness the Prince Philip, Duke of Edinburgh, and Sir William McFadzean on the occasion of the Opening of the McFadzean Laboratory on 16th May 1961**

"May it please your Royal Highness, my Lords and Gentlemen, pray silence for your, Chairman, Sir William McFadzean".

\* Sir William was President of the Federation of British Industry from 1956-61. The Federation changed its title to the Confederation of British Industry in 1965, and Sir William was created Baronet in 1966 and Knight of the Thistle in 1976.

"Your Royal Highness, my Lords and Gentlemen. Almost a year ago I had the very great privilege of presiding at a luncheon in New York when His Royal Highness, The Duke of Edinburgh, was the guest of honour. Then - wearing my F.B.I. hat, quite a sporting thing to do in New York - we were trying to sell Britain to the Americans in particular and the world in general.

Now by comparison today's function is a small affair; and as far as I know, Sir, there is not even one birthday cake lying around, but it has two features in common. .

The first is that the welcome I extend to you today, Sir, is a very warm one, just as warm as in New York - indeed even warmer because of the personal aspect of this occasion. The second similarity is that, although this is a BICC function, we too try to sell to the world and in selling to the world try to sell Britain. And in what more effective way of doing this than giving, as I hope this opening does, yet another example of the belief we have in research and the effective way we try to implement it, just as all progressive British companies do.

But having said that I must confess that I am a little embarrassed that this Laboratory bears my name, for I am no scientist or technician, although I have got an unbounded admiration for both of them.

It all happened because for once my colleagues one day got rather out of control. At the end of one of our Board meetings they asked me if I would leave the room, quite firmly but politely, as they wanted to discuss something without my being present. Well, having got over the initial shock, I of course readily left the room, for it suddenly occurred to me that my colleagues had realised how grossly underpaid their Chairman was; and I naturally thought they wished to discuss my remuneration in private - I think I am right in saying that it was before a certain public announcement was made.

You can all realise how amazed I was - I refrain from using the word disappointed - to be told by my colleagues a few minutes later that they had agreed to name this Laboratory after me. Seriously, I was thrilled for I do believe implicitly in research and I am very proud indeed to have my name attached to this Laboratory, although I think you are running a risk some day of getting a chemical formula and my name mixed up together.

I am proud, too, to see so many friends here: the Mayor of Hammersmith, my friends from private and nationalized industries, from banking - I must always mention him . . . although I am slightly more independent than I was a week ago - the universities and technical colleges, research associations and the like. To each and everyone of you, my friends, I extend a very warm welcome and particularly to our friends from overseas, for they do emphasize that international aspect to which we all in Britain must give increasing attention.

To you, Sir, I can only say again how grateful am for your taking time out of your busy life to come and perform this opening ceremony - yet another sign of your very active and abiding interest in scientific and business affairs. I do thank you most warmly and it is naturally with very deep personal pride I ask you all to be upstanding and drink to the health and happiness of His Royal Highness, The Prince Philip, Duke of Edinburgh."

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"Mr. Chairman, my Lords and Gentlemen, pray silence for His Royal Highness, The Prince Philip, Duke of Edinburgh."

"Sir William and Gentlemen. I am very grateful to you, Sir William, for your very kind welcome and for proposing my health. Having attended that lunch in New York and having attended this lunch here, I feel I am running up quite a good account with you, but one of these days I shall be around to collect. But I remember the last occasion you did this in New York quite clearly, and all things considered I thought that between us we did a pretty good job at what was after all a fairly large-scale publicity stunt. .

Now I agree with you that that was the bigger affair but I beg to doubt very much whether it was any more important than today's. Let's face it, after all, even a slap up sales campaign can't succeed if the goods are old fashioned, shoddy, unreliable or perhaps late on delivery. If you want to make the salesman happy and if you want to make your shareholders happy, I should have thought you've got to produce the most efficient, well designed and reliable goods that research, intelligence and good management can devise and deliver on time; and I think I can say with reasonable certainty that every industry in this country could benefit from scientific research.

If the research cannot be applied to the product itself, it can always be applied to the method of manufacture and this is a truth which I am sorry to say, and I think most of you here realise, is not recognized as widely as it might be. If industry as a whole can do with research, the technical and scientific industries such as this one could not exist without it. These laboratories, in fact, are the heart and soul of the organization. The men who work and the ideas that are generated here are the only guarantee of future success, and without them I think you can look forward to a rapid and catastrophic decline. And that's why I say that this occasion is more important than the shindig in New York.

I would rather, I promise you, I would rather attend the opening of a first class research laboratory such as this than the most elaborate sales stunt any day. I dare say they have their value, but I suppose they are entirely empty shadows if they are not backed up by research-conscious, forward-looking, energetic industries. You said, Sir William, that you are slightly embarrassed that this Laboratory should be called after you, even though you are not a scientist or a technologist. I shouldn't let that worry you, because you are a much rarer bird and I speak with authority on this subject. I am President of the Wildfowl Trust.

No, you are a much rarer bird, a finance man and a Chairman and a Managing Director with a strong faith in the long-term value of scientific research and this puts you into a group of very remarkable people. I only wish that your success would encourage many other Chairmen and Managing Directors without scientific or technological training to follow your example. And so, Gentlemen, in declaring the McFadzean Laboratory open I would also like to wish everyone who works here every success in the future and to hope that your Chairman's faith in you will be fully realized."



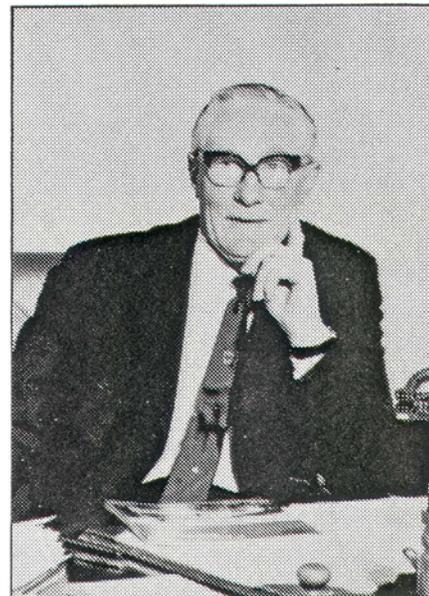
McFadzean Laboratory

The years following the opening of this building saw many more changes both in personnel and in the direction of the researches. Apart from long-range research, a strong supporting role in the form of sponsored work for the BICC companies throughout the world had grown. These changes were guided by a succession of leaders at Wood Lane, each with his own individual style. It would be an impossible task chronologically to detail all these changes but, at the same time, this book would be incomplete without some recognition of both these personalities and some of the highlights of the ever developing research facilities and programmes.

Dr. Brazier retired in 1964, marking the end of an era. With his leaving, the responsibility for research passed to men who had not been involved in the original conception. Dr. A. L. Williams, who had been the research manager at the time of Dr. Brazier's retirement, became the new Director of Research with Mr. E. H. Reynolds as



Dr. A. L. Williams



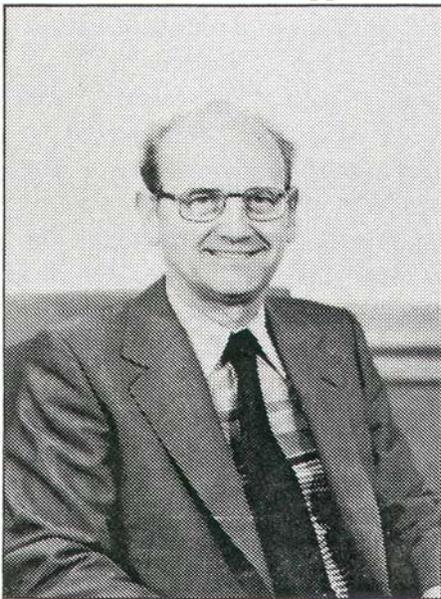
Mr. E. H. Reynolds

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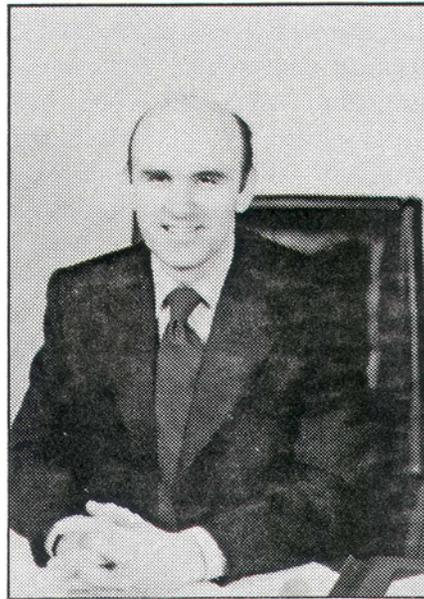
his research manager. Dr. Williams had had a background at Wood Lane in the field of power cables and took charge of what was now the Central Research and Engineering Division (CRED). Under his active and enthusiastic guidance the researches embraced many new areas.

Dr. Williams retired in 1972 and Mr. Reynolds took over the running of Wood Lane in the capacity of General Manager with Dr. P. C. McNeill as his deputy and Dr. D. S. Margolis as Research Manager. "Josh", as he was always known, stamped his own individual personality on the role that Wood Lane played in the overall scheme of things. During his time he was responsible for many further changes both to management structure and in areas of research, especially in initiating work on 'the chemistry of dielectric materials.

Following his retirement in 1975 and subsequent premature death, Mr. I. Banks, then a director of BICC, was appointed to the position of Executive Director of Research.



Mr. J. Banks



Dr. G. F. Moore

Mr. Banks returned to Wood Lane after having originally left with the Power Cables office and their team of jointers when they had transferred from Wood Lane to Erith Works in 1959. During his term of office, the interests of Wood Lane continued to diversify. He was ably supported by Mr. J. D. Endacott as Manager - Power, but later as Manager - Engineering. From 1975 onwards the status of the organization was raised to BICC Research and Engineering Limited (BREL) when a major re-organization of the company structure occurred.

In 1978 Mr. Banks was promoted to the main Board of BICC as Director of BREL with the additional tasks of establishing, co-ordinating and maintaining scientific, engineering and technological policies and standards for all BICC operations. At the same time Mr. S. Verne, who was then head of the Polymers Department, became Mr. Banks's personal assistant at Bloomsbury Street.

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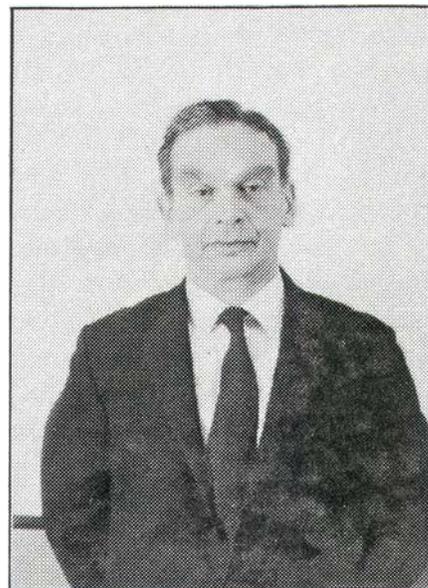
Dr. G. F. Moore was now appointed as Executive Director at Wood Lane directly responsible to Mr. Banks, whilst Dr. Margolis continued as Manager - Research until his retirement in 1982. At that time, Mr. Verne relinquished his post at Bloomsbury Street to become the current Manager - Research. A further post of Manager Electronics was created to co-ordinate and control the developments in the field of fibre optics. Dr. A. R. Farmer joined the staff in 1980 to take on these responsibilities. .

Now after four years of very active participation in the rapid re-organization to accommodate new spheres of research, Dr. Moore has recently (1984) been appointed to the main Board as Director of Research. The person nominated to take his place at Wood Lane has still to be announced.

As stated earlier, it would be impossible to cover all the achievements at Wood Lane. Hence the bibliography at the end of this book listing the papers presented



Dr. D. S. Margolis



Mr. S. Veme

and/or published serves to highlight both the range of work and the change of emphasis during the past fifty years. Nevertheless, some aspects should be highlighted because they illustrate the considerable scientific advances that have occurred in the cable industry and related fields.

In 1959, before the McFadzean Laboratory was fully operational, an Elliott 405 computer was installed. Previously it had been at Prescott, but was perhaps ahead of its time and the best use was not being made of it. At Wood Lane it was soon in use to develop laying charts for the submarine power cable link to Vancouver Island and later across the Cook Strait between the north and south islands of New Zealand. In 1966, the old "405" was replaced by an ICL 1909, which in turn has been replaced by a later model, an ICL 2956 (1979). Principal usage of these instruments has been in the design of transmission line towers for the National Grid, and of overhead equipment for

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railway electrification, as well as such tasks as network analyses of the thermal and electrical problems in the design of cable joints, for example.

Electron microscopy was assuming greater importance as an analytical tool and, in 1961, an electron probe microanalyser (EPMA) was purchased to add chemical analysis to the other facilities. In 1967, a Cambridge Stereoscan S.2 scanning electron microscope (SEM) was purchased, and this with its high resolution, now on solid surfaces in place of the difficult-to-prepare thin sections required for the old (transmission) instrument, soon made the latter obsolete. The SEM and the EPMA were used together until 1973, when the energy dispersive x-ray analysis (EDX) system was added to the SEM, providing the required chemical analysis facility in place of the "probe" which was then phased out. In 1978 the EDX was updated with a quantitative computerized system, still in use, and in 1981 the latest design of SEM, the Cambridge Stereoscan S.250, still further extended Wood Lane's capabilities in this area.

Cryogenic research began in 1962-3, with the object of developing superconducting cables for the no-loss transmission of large "blocks" of electrical power. Although by 1968 the practical difficulties of working with and maintaining temperatures close to absolute zero had been overcome and a superconducting link had been made and demonstrated, the 1960 forecasts of power requirements in the U.K. did not materialise and the project was put in abeyance. It is by no means "dead" however, and new proposals are being made, notably in the U.S.A.

In 1968 Product Engineering Department was established as a pilot plant scale unit for the investigation of various production processes in a rented factory at Alperton, there being insufficient space for this kind of work at Wood Lane at the time. Not until the Brazier Laboratory was built (1980-81) was it possible for the staff and facilities to be brought back to base. Amongst other activities a considerable force of contract labour was employed at Alperton manufacturing glass-fibre millimetric waveguides for the Post Office.

Of recent years, Polymers Department (formerly the Rubber and Plastics Department) has greatly expanded in order to evaluate new polymeric materials, compounds, processes and applications. A major early success was the development of the gas injection process for the production of cellular polyethylene telephone cable. Such has been the increase in activity that Polymers has been divided into two separate but interdependent departments, namely Polymer Materials and Polymer Processes.

More recently, work on communications via optical fibres, further developments in the uses of irradiation particularly with reference to polymers, and in non-ferrous metallurgy, all signify major advances (see bibliography).

Unlike most of the factories, the location of Wood Lane has always meant that commuting from other parts of London and the Home Counties had never been easy and has become increasingly difficult in recent years. Most of the staff have found that their travel problems have been considerably eased by the introduction in 1977 of Flexible Working Hours.

The fact that most people at Wood Lane travel considerable distances has always militated against strong Social Club support but nevertheless the Social Club has continued to function. Sections have grown and sections have faded away but mention

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should surely be made of the Film Society, which has organized a season of film shows in the winter months of every year since 1954. In 1977 the Film Society was awarded the runners-up prize in the "Film Society of the Year" competition organized by the Federation of Film Societies, in the section for closed Societies.

Greatly improved kitchen and dining facilities were incorporated in the design of the McFadzean Laboratory. A cafeteria service on the 4th floor and a waitress service on the 5th floor were now available. In addition the floor of the main hall was specially designed to accommodate dances and other social activities. As a result, many Dinner-Dances which had hitherto been held at outside locations were now held on the premises.

On the sports side, badminton continues to be played on a more of less regular basis in the Main Hall, interdepartmental cricket takes place in the summer on Wormwood Scrubs and, of recent years, football teams from Wood Lane have participated in the lunch time five-a-side Leagues organized by the London Borough of Hammersmith and Fulham, as well as their own interdepartmental competitions.

More in the public eye was BREL's acquisition in 1978 of a hot-air balloon. Originally conceived by balloonist and BREL engineer A. J. (Derry) Moore, the balloon was a means of drawing attention to BICC in general and BREL in particular, and hence of recruiting graduate staff to work at Wood Lane. "Gabrielle" (Registration G-BREL)



"Gabrielle" tethered "At Home" in Wood Lane, July 1977.  
(McFadzean Laboratory in background)

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had her first flight at Nottingham University and received her true baptism when a slightly heavy landing resulted in the balloon (but luckily not the basket) taking an unscheduled dip in the River Trent. Since then "Gabrielle" has earned her keep by appearing at fetes and shows all over the country. The charges made for such tethered displays enables her also to fly for fun and to compete at balloon "meets", including the National Championships (she achieved 3rd place in 1978 with a guest pilot and BREL crew - Derry Moore was on the organizing committee) and on one notable occasion before H.R.H. the Princess Anne at a military show in West Germany. The pilot and crew often have to explain the identity of BICC to interested onlookers as there appears to be some confusion in the public mind ("BICC! You make the. ball-point pens, don'tcher?"). This apart, it is found that the statement "used to be Callender's Cables" often brings a nod of recognition (at least in the South of England) from the older generation - what was it that Callender's had that BICC has not?

And now we have reached 1984. In 50 years the research laboratories of first Callender's and later BICC have produced a record achievement of which we can justly be proud. From the very few men who formed the nucleus back at Ormond Yard, there are now nearly 300 persons actively engaged in ensuring the future well-being of BICC. Emphasis is continually changing and expansion is still occurring in many areas. For instance, further developments in optical fibres are to take place in newly acquired premises at Hemel Hempstead, the embryonic organization to be known as BICC Data Networks Limited (BDN). But in a few years time we may expect to see developments on the remainder of the land purchased from British Rail in 1980.

In conclusion, we hope that the historians writing the commemorative book for the centenary of Wood Lane will have as interesting a tale to unfold as we have had for the past fifty years.