Dr. Aubrey Leatham: A real cardiology pioneer from 20th century – who has devoted his life to bedside cardiology and cardiac pacing. An interview by Dr. Ömer Göktekin

Dr. Aubrey Leatham: 20. Yüzyıldan, yaşamını klinik kardiyoloji ve kardiyak pacing'e adamış, gerçek bir kardiyoloji öncüsü - Dr. Ömer Göktekin'in Röportajı - Söyleşi

Dr. Aubrey Leatham

Dr. Aubrey Leatham is a tall trim man, quick to laugh, who favours braces, blunt and honest talk. He is a sporting and youthful looking man at the age of 85. I met him incidentally by renting his house, without knowing his importance in cardiology. This has had a significant impact on my life in London over the last two years - meeting him and listening to the many historical events in cardiology.

OG. First of all I would like to thank you very much for giving this interview. I am doing this on behalf of my director in Turkey, Prof. Bilgin Timuralp, who knows you very well in terms of your lectures, books and papers. I do apologize that when we met first I did not know your contribution to cardiology. When I mentioned to Prof. Timuralp that my landlord in London is Dr. Aubrey Leatham, he was very surprised. He explained that you really have been a pioneer in many areas of cardiology. He encouraged me to interview you, as soon as possible, which would be published in the Anatolian Journal of Cardiology, edited by him. I also would like to thank my colleague Associate Prof. Dr. Oguz Uzun from the Department of Chest Disease, in 19 Mayis University, who introduced me to you just before he left London. Without him I would not had a chance to meet you.

AL. Thank you Omer. That is very kind of you. Please send Prof. Timuralp my best regards, I have been wanting to meet him for some time.

OG. Of course I will, Dr. Leatham would you tell us about your early days, your time as a junior doctor?

AL. I was born in 1920 near London, England. I was educated at Charterhouse School, Cambridge University, and attended St. Thomas Medical School. After further training at St. Thomas Hospital and the Hospital for nervous disease Queen's Square, I directed my career toward cardiology. As a resident medical officer at the National Heart Hospital in 1945, I devised a recording device for heart sounds by connecting a telephone earpiece to a string galvanometer and studied the retinal vessels in hypertension. A Sherbrook Research Fellowship followed at the London Hospital from 1948 to 1950. This is where I was greatly influenced by the eminent John Parkinson, the successor to the heritage of James Mackenzie, and the keen clinician and teacher, William Evans.

OG. Who is John Parkinson, is he one of those who described the Wolf-Parkinson–White Syndrome?

AL. Yes, he was working at the National Heart Hospital in addition to the London Hospital and was the doyen of European Cardiology. Anyway, during this period, with help from Malcolm Towers and William Dicks, the technician, I devised a phonocardiograph which had the unique capability of multiple precordial site recordings with a simultaneous carotid arterial pulse and electrocardiogram.

OG. During my period at the Brompton Hospital I have understood that Dr. Paul Wood was a very famous British cardiologist in Europe and in the world. Everyone respects him very much in this country. Did you also work with him?

AL. Yes I worked with him, and it was a wonderful experience. In 1951, I left the London Hospital to become the first Assistant Director of the Institute of Cardiology under Paul Wood. My role was to oversee the care of patients and perform research on auscultation, and other aspects of cardiac examination using graphic methods.

OG. When did you publish your first article?

AL. My first cardiological paper was about " phonocardiography". It was published in the Postgraduate Medical Journal 1949.

OG. It seems you started your scientific career being interested in auscultation and phonocardiography.

AL. True, by using more sophisticated equipment with filtration of low frequencies to simulate auscultation and multiple microphone at different sites, I was able to identify the high-frequency mitral and tricuspid components of the first heart sound, and the aortic and pulmonary components of the se-

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cond heart sound. This led to a detailed analysis of the effect of inspiration and expiration on the second heart sound under various abnormal conditions; the temporal relation of systolic murmurs to the two components of the second heart sound, and eventually to the elucidation of the aortic and pulmonary ejection sounds.

OG. I heard that you were the first to use the term of aortic and pulmonary ejection sounds. Is that correct?

AL. Yes, that is correct. We also showed that the widely split second heart sound in atrial septal defect was fixed. This was due to an equal inspiratory delay in the aortic and pulmonary components. We provided a graphic delineation between the murmurs of aortic stenosis and mitral regurgitation. Valvular pulmonary stenosis with intact ventricular septum and reversed interatrial shunt could be separated from Tetralogy of Fallot by studying the second sound. This also helped identification of the mitral opening snap. By comparing the splitting interval of the second heart sound in various causes of the Eisenmenger complex, Paul Wood and I were able to indicate how the exact location of the shunt could be diagnosed from auscultation, even though the murmur was altered or absent. In isolated pulmonary stenosis the delay of P2 was a marker of the severity of stenosis.

OG. Were you the first to use echophonocardiography?

AL. Yes, at St. George's Hospital with the assistance of Graham Leech. We combined echophonocardiography to record further proof of the correlation of heart sounds with valvular motion, including the tricuspid explanation of the early systolic sound in Ebstein's anomaly. As a result of the work on the second heart sound it became known as "the key to auscultation of the heart."

OG. When we met for the first time, you gave me an original copy of your excellent paper, 'Auscultation of the Heart' published in the 1958 Lancet. I have read it, and if I did not misunderstand, you provided a new classification for murmur analysis. Would you tell us about this paper?

AL. That is true, previously systolic murmurs were seldom differentiated by their configuration or timing. Cardiac surgery was only just beginning and there was little impetus to make such fine distinctions. My new classification of mid-systolic ejection murmurs versus pansystolic regurgitant murmurs, based on graphic analysis, changed the way clinicians approached the bedside diagnosis of valvular disease and contributed to decision making for cardiac surgery.

Dr. Leatham is on the top of one of Alps in Switzerland. Front left; Dr.Leatham, back left; Dr.Leatham's wife, Judith, back right; a cardiologist friend of Dr. Leatham, front right; the guide for climbing the mountain

OG. We are aware that you have given many lectures and made may publications on auscultation, which brought your views in this area to the attention of a worldwide audience. You also have designed an improved stethoscope, have you not?

AL. Yes, in 1958, I designed a stethoscope and I was pleased to see that it became widely favoured throughout the world and is still manufactured by Thackrays.

OG. When I reviewed your papers, it was obvious that you have always produced original work. Would you give a couple of examples in terms of valvular disease?

AL. Wallace Brigden and I reported the first long-term follow-up of mitral regurgitation in 1953 and 1980. This called attention to the frequency of mitral valve prolapse, and the exaggerated fear of sudden death, in this benign syndrome. We also published in 1978 a natural history study of the bicuspid aortic valve and the ability to diagnose it by hearing an ejection sound before stenosis developed.

OG. When did you become a consultant cardiologist?

AL. I was appointed consulting cardiologist to St. George's Hospital, London in 1954. When I started, there was no cardiac department and cardiology was represented by one electrocardiographic machine. I organized the first cardiac department at St. George's and I was in charge until 1985.

OG. You were also interested coronary angiography. Would you tell us about the very early days of coronary angiography? How did you start?

AL. A major objective was to develop a safe and reliable method for coronary arteriography, particularly as we then had Dr. Keith Jefferson, a leading Radiologist, working in our Department. Our Chief Technician, Mr. Davies, constructed apparatus for high-pressure injection of contrast media into the proximal aorta in each of three consecutive diastoles. This gave fairly good coronary filling in normal dogs. I presented the results, mainly the work of George Hale of Melbourne, to the Association of Physicians. We wanted comments on whether this could be justified in human subjects, and were reassured. In the presence of coronary disease, however, filling of the coronary arteries was not good enough. I had visited Montreal and Cleveland in 1956 to see the internal mammary artery implants by Arthur Vineberg, and the external pericardial anastomoses by Claude Beck. I had been very impressed by cine techniques of selective angiocardiography, developed by Mason Sones of the Cleveland Clinic. When he began to apply the selective technique to the coronary arteries, I visited him again. In 1962, Keith Jefferson spent three months with Sones to learn the technique, and we reported these results in 1963. We were the first to adopt the Sones technique in the U.K., probably in Europe.

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OG. Let's speak now about Dean Aubrey Leatham. When did you become a Dean?

AL. In 1962, sadly, Paul Wood left us very early (died at age 54). I then became Dean of the Institute of Cardiology, holding that important position until 1969, while continuing my work at St. George's Hospital. As Dean, I helped Peter Harris develop a myocardial metabolism laboratory, suggested the integration of the National Heart Hospital with the Brompton Hospital, and with Wallace Brigden, stimulated the Royal College of Physicians and the Royal College of Surgeons, to establish criteria to improve outcome for cardiac surgery patients.

OG. In addition to your lifelong interest in elevating auscultation to a science, you became deeply involved in developing new pacemaker technology, and with your technician Geoffrey Davies, you developed the first demand circuit device. Would you tell us how you made it?

AL. When I moved to St Georges Hospital, I took with me an extremely knowledgeable technician, Mr. Geoffrey Davies. I arranged his attachment to the Physics Department with support from the British Heart Foundation. Following two personal cardiac arrests, Zoll of Boston published the possibility of restarting the heart with external pacing, and I asked Davies to construct an external pacemaker. Zoll's pacemaker was a fixed system without a demand capability and could cause an "R on T"-induced ventricular fibrillation and no circuitry was published. At St. George's, I asked Davies to develop the first demand device, which was published in the Lancet 1956. This was successful but the first patient died when the pacemaker was switched off because of intolerable chest wall contraction pain. Later with good collaboration between Geoffrey Davies, Michael Davies, Edgar Sowton, and Harold Siddons, we designed a permanent endocardial pacing system, which was superior to the epicardial approach. Michael Davies showed that in many of our patients with chronic A/V block and stokes Adams attack the disease was confined to the conducting tissue. In keeping with this the mortality of our first 1000 patients paced was the same as for the South of England. We also demonstrated for the first time that rapid pacing could prevent recurrent ventricular fibrillation, and that isolated sino-atrial disease (brady-tachy syndrome) had a very good prognosis without pacing, but a risk of thromboembolism (unlike A/V disease) requiring anti-coagulant therapy.

OG. I heard from Prof. Richard Sutton that he was a registrar in your clinic many years ago. He also told me a lot about you. Prof. Sutton is also well known in the world of pacing. How was he in these years? Could you tell us little about him?

AL. Yes, he is intelligent pleasant young and perhaps a bit overenthusiastic about pacing when the need may not be critical, but very expert.

OG. Dr. Leatham shall I call you a retired or semi-retired physician? Do you still see patients?

AL. Of course I am not retired. A doctor is never able to retire (he is smiling, OG). When patients trust their doctor, it is not easy to see another. It has given me the great experience of a 30-40-year follow up of some very interesting patients.

OG. So what do you do in your spare time?

AL. I was brought up to sport and activity and luckily this fits in with modern cardiology practice. Even at 85 I practice regular activity, such as tennis, 3 times in a week, gardening, sailing, skiing and mountain walking.

OG. I can be a witness that you do mountain walking. I saw a photo on the wall in your house, you were in the mountains with your wife and some friends.

AL. That is right. That mountain is in the Himalaya Mountains. The King of Bhutan was my friend and patient. We went there many times and I hold a decoration the "order of Bhutan"

OG. I met with your son, Dr. Edward Leatham. He is a consultant cardiologist at the Royal Brompton Hospital and chief at

Dr. Leatham and Dr. Goktekin


St. Georges's Hospital in the previous location on the Hyde Park Corner where Dr. Leatham has worked for many years.

the Royal Surrey Guildford. Would you tell us about your family?

AL. I have been married over 50 years, my wife Judith, was entirely responsible for bringing up and educating our four children, Charlotte, Edward, Julia and Louis (because I was so often away). As you know Edward is a highly successful cardiologist, Julia is a general practitioner, Charlotte and Louise are teachers. They are all excellent tennis players, for example Charlotte won junior Wimbledon and Julia is a country player.

OG. Dr Leatham I would like to ask you one more question. You have spent a life on science and care of patients, and you have done an excellent job. I am sure you have enjoyed your life to the full; whilst also pioneering our current understanding of auscultation, making important contributions to pacemaker technology, and advancing our knowledge of congenital, valvular, and coronary disease. Doing these things of course, has affected your private life. Your wife, the 4 children may feel that you have not spent sufficient time together. What do you suggest to us in terms of professional and personal life? Is it worth spending a life on being a good scientist and practitioner?

AL. Yes, I was away too much but we have a very good relationship now.

OG. Thank you very much for this interview, Dr. Leatham. I hope you have a chance to visit Turkey and join one of our big national cardiology meetings.

AL. I would like to. You have my promise already. I thank you very much for this kind thought.

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