

PAUL WOOD LECTURE

The master's legacy: the first Paul Wood lecture

J Somerville

The 13th of July 1962 was a bright summer's day. Shafts of sunlight lit the dreary side room of Meyerstein ward in the Middlesex Hospital, London. Paul Wood, deceptively frail looking, was in bed, his china blue eyes looked out from the balding head. The technician, David Gibbons, who took his ECG that morning, told me on the day of this lecture that Paul Wood had looked at his ECG, commented "it's irreversible" and reflected silently. By the afternoon he was in high morale, free from angina, and happy in the belief that the intravenous heparin would dissolve the newly formed clot in his left anterior descending coronary artery. Walter Somerville, to whose care he had entrusted himself for the worsening angina of a week's duration, came in to see him with the house physician. "You know Walter, if things don't go well, I do not want resuscitation or my chest opened." "Yes Paul, I do," said Walter. "You may know but does that fellow?" pointing at the house officer (Michael Harrison, destined to become a distinguished neurologist), continuing, "If he does it, I'll bloody well come back and sue him if he's successful"—peals of laughter, so characteristic of Wood, who loved the macabre. Walter Somerville left the ward to continue the weekly ward round.

Several hours later Paul's wife, Betty, ran from the room to ask Walter to come quickly as "suddenly Paul's breathing was peculiar". Paul Wood was pulseless with barely audible heart sounds; they stood quietly by the bedside observing death. "As instructed and agreed we made no effort to resuscitate him." Cardiologists, always quick to criticise Wood's views and particularly those physicians opposed to the use of anticoagulants, muttered "ruptured heart—shouldn't have been given anticoagulants". Somerville quickly decided, against the advice of powerful senior colleagues, that a necropsy should be done. He drove to Wood's home in Totteridge where Betty Wood agreed, as did Liz Turner his devoted assistant, stating "Paul would want this". Necropsy demonstrated the single culprit—a left anterior descending lesion with no other complications.

Cardiologists throughout the country were stunned. The loss of this alive, dynamic, creative force in cardiology was shocking. "A light in cardiology has been extinguished," said Evan Bedford in his oration at the memorial service in the Church of All Souls, Langham Place, on 30 July 1962. It had been difficult for Walter Somerville to arrange this service because of Wood's sincere disbelief in any deity.



It took 33 years for the British Cardiac Society to pay tribute to the man who had made clinical cardiology precise by diagnosis based on correct physiological principles, and had raised and established the standards of practice of cardiology, particularly at the bedside, for the world. This lecture was given (on 24 May 1995) with humility, pride, and pleasure, with the intention that the cardiology audience of today may understand and share the greatness of Paul Wood.

The year 1962 was auspicious. Watson and Crick were given the Nobel Prize for discovery of the double helix; Marilyn Monroe died; John Glenn circled the world in space; and, of relevance to this subject, Lown described external defibrillation by DC shock—sadly two months after Wood's death.¹

Evan Bedford (one of the few contemporaries whom Wood respected) said in his obituary in the *British Medical Journal*, "There was a new language in clinical cardiology that you soon traced to Wood. He was a superb clinician. Consultation with him was, even for his seniors, a rewarding experience . . .".

Paul Wood was born in India in 1907, the son of a distinguished commissioner of income tax in the Indian civil service. He was schooled in England and Tasmania and graduated from

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Melbourne University Medical School. Although of relatively small stature he established himself as a good rugby footballer (scrum half for Melbourne University) and sportsman. He had a talent as a practical joker, retained and practised over years, after reaching fame in the 1927 Melbourne rag by impersonating the visiting young Duchess of York (later to become Her Majesty Queen Elizabeth, now the Queen Mother) during a state visit, and driving in an open landau down the main street waving to cheering crowds.

He obtained honours in all subjects, but owing to a frisson with the professor of medicine he had to do his house jobs in Christchurch, New Zealand. It was here he met Betty Guthrie, daughter of the professor of surgery, who soon forbade Paul Wood from meeting his daughter. The garden wall was readily scaled by this versatile athlete and she was to follow him to London; three years later they married in Marylebone Church.

Wood was attracted to neurology, which he considered was the closest approximation to an exact medical science. He sailed to the UK hoping to obtain a job at the National Hospital in Queen Square. The “colonial” was rejected, like many others not raised in and educated by the London teaching hospitals. He reflected on this as a victory, which changed the course of his career. Appointed as house physician to R A Young at the Brompton Hospital, famous for management of consumption, he became notorious for a disciplinary matter with the matron when he organised mice to join the formal sisters dinner (reported by Professor Guy Scadding, resident medical officer at the Brompton at the same time). He went next to the National Heart Hospital as outpatient medical officer where his enthusiasm for cardiology matured. At the National Heart Hospital in 1935 he met Peter Sharpey-Schafer and approached him about going to the Hammersmith Hospital where there was a vacancy. It was this next appointment by Francis Fraser, professor of medicine at Hammersmith, as one of his first assistants in the department of medicine, which settled his course and excited him. In the stimulating, intellectual atmosphere created by his young colleagues, including Guy Scadding and Charles Stuart-Harris, he flourished, arguing with his seniors, busy with measurement and clinical observations, and producing his first good clinical papers (table 1). John McMichael was to succeed Robert Aitken as reader in 1938. It is interesting to read Paul Wood’s observations on the “scientific basis” for using digitalis in heart failure with normal rhythm; today’s professors of medicine and cardiology continue to teach about its ineffectiveness. Those who teach this

rarely have day to day responsibility at the bedside. It is unlikely that his many useful contributions in the 1930s, always supported by accurate clinical observations, would be accepted by today’s editors. Fortunately for cardiology and its patients Wood did not have to face today’s editorial constraints with constant need of “p values”. Statistics may easily be massaged to produce wrong conclusions and statistical reviews of the same paper produce opposing views.

In 1937 Wood was appointed as consultant physician at Hammersmith Hospital, British Postgraduate Medical School, where all beds were under the professor of medicine, after becoming consultant physician for outpatients at the National Heart Hospital. By now the clouds of war were gathering and Wood, the patriot who thought that Britain could not be wrong to a fault, quickly offered his services to King and country and was appointed to the emergency medical service in London, receiving the returning soldiers from Europe. (Discussing British tyranny in Ireland with Walter Somerville, a Dubliner, he would end up saying “the Irish really should be profoundly grateful for what was done in Ireland!”)

At this difficult time, when he was anxious to be a soldier and “go to war”, a course which senior doctors were not encouraged to take, he was sent to the effort syndrome unit at Mill Hill. He produced his first classic paper on Da Costa’s syndrome,² “soldier’s heart”, or neurotic ill health referred to frequently as “NIH” by his senior colleague Evan Bedford. From Wood’s original observations on 200 cases he gave an accurate clinical and symptomatic description. It was soon apparent that the syndrome was not limited to men and was common in women. Wood, with his usual crisp English style, commented in the second edition of his book³ that “there was no essential difference in the effort syndrome (in men) and cardiac neurosis in women—merely clothed differently; the former in battledress and the latter in nylon.”

He joined the Royal Army Medical Corp where he had a distinguished career in north African and Italian campaigns, reaching Brigadier, mentioned in despatches, and awarded the OBE. One of his commanding officers, Brigadier Boland, to whom I later became house physician, told me when I spoke admiringly of Wood, whose outpatients I had once visited as a medical student, that “there was no one more demanding of discipline from below and more intolerant of it from above”. In 1945, as the war in Europe ended, the Rome Medical Conference took place, in which Wood gave a memorable paper on stab wounds and pericarditis in the heart; this was to become useful later to understand the postpericardiotomy syndrome or recurrent pericarditis after cardiac surgery. Wood returned to the staff of Hammersmith where John McMichael was now professor of medicine, with Peter Sharpey-Schafer, Sheila Sherlock, Sheila Howarth the sparkling intellects. Everything was “go” in the land of “free speech” in medicine and the use

Table 1 Papers by Paul Wood published 1936–40

1936	ESR in diseases of the heart Right and left ventricular failure and venous pressure
1937	ECG in pericardial disease and stab wounds
1939	Chest leads in ECG A new sign LVF Effect vitamin B deficiency on CVS
1940	Action digitalis heart failure normal rhythm

of catheterisation of the heart to measure cardiac output, introduced by Courmand.⁴

Wood was so exhilarated. He could now measure everything; respiration, venous pulsation, right heart pressures in cor pulmonale, arterial pressures and pulses, Valsalva manoeuvres, even the changing size of the liver in heart failure, and correlate the findings with his own astute bedside observations. The free speech, current at the Hammersmith, led to legendary altercations between Sharpey-Schafer and Wood, often sharp, and witnessed as a medical “sport” in which few dared join. Sharpey-Schafer scorned Wood’s ignorance of physiological principles; Wood deplored Sharpey-Schafer’s lack of experience in cardiological practice in the “real world”. This was the medical “machismo” of postwar Hammersmith where the bright and mature returning from the war fought to establish themselves in the hierarchy of postwar medicine. Wood wanted his own catheter laboratory, it was not enough to be assistant limited to studying cor pulmonale in the catheter team established by McMichael and Sharpey-Schafer. Wood saw that this would inevitably curtail his activities. He wanted to develop and teach the “new” cardiology to medical students so, with the death of Jock Lovibond, considered applying for the vacant post at Westminster Hospital (discouraged by John McMichael), which in the event preferred Gavey, a physician of traditional mode. So Wood’s eyes turned to the Brompton where there was emerging new cardiac surgery out of thoracic surgery, initiated by Russell Brock, as precise, deductive, and progressive a clinician as Wood himself—theoretically an ideal partnership. Appointed to the Brompton, Wood achieved his ambition by introducing cardiac catheterisation there. On 15 April 1948, Paul Wood and Walter Somerville did their first cardiac catheterisation—recorded in Somerville’s diary. In York ward the catheter was put into the antecubital vein of a cyanosed patient, Angela Middleton, thought to have tetralogy of Fallot. She was taken to the x ray department to be screened with a portable screen (and much radiation), but by the time this was ready intense venospasm prevented movement of the catheter

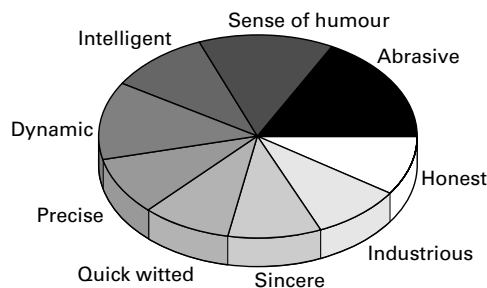


Figure 2 Amalgam of the qualities of Paul Wood.

to the right ventricle so the diagnosis was incomplete; this was subsequently repeated and this accounts for altered annotation on Wood’s record cards (fig 1). Wood believed and taught that everything must be recorded honestly and then corrected with a new annotation as new information became available. The recording practices of today’s junior staff and many consultants would not survive Wood’s scrutiny and scathing criticism.

In 1949 Wood was asked by Professor Sir Francis Fraser to start the Postgraduate Institute of Cardiology, affiliated with the National Heart Hospital in contiguous Wimpole Street, as part of the new British Postgraduate Medical Federation. Leaving Hammersmith and the new British (later Royal) Postgraduate Medical School gave him the opportunity to concentrate his efforts at the Brompton with its emerging cardiac surgery, and the National Heart Hospital where he could teach postgraduate doctors from all over the world his new “religion” of scientifically based clinical cardiology. Here he purged cardiology of loose thought, inaccurate diagnosis and defined the physiological meaning of bedside physical signs. He had little interest in anatomy, a weakness of his thinking in the age of emerging cardiac surgery, except as a means of confirmation of his physiological diagnosis. This extraordinary explosive development of cardiology led by Wood occurred because of three developments—cardiac surgery, cardiac catheterisation, and Wood’s mind—all concentrated in the new Institute of Cardiology.

What made up Wood? The most dominant feature of the amalgam of Wood (fig 2) as E Grey Dimond, later to become a close friend and organiser of the first tribute to Wood 10 years after his death at the American College of Cardiology, said “He was so, so intelligent—with all this clarity of thought and constant search for truth”. Wood had an unequalled sense of humour and fun. Certainly, with an abrasiveness and insensitivity to so many, he was no paragon of virtue. To some he was frankly hostile, unjust to others, full of racial prejudice, but admirably intolerant of intellectual dishonesty and sloppy thinking. Lest you think this formed an unattractive person, the opposite was the case, particularly to women, whom he charmed with ease and concentration.

Aubrey Leatham, his assistant director in the Institute of Cardiology in the 1950s, commented about Wood: “A brilliant young man returned in 1945. The most important thing he did was to reject all the old dogma of

1 CARD TO PROPERTY		CLINICAL FEATURES - FALLOT'S TETRALOGY (1)										2. OTHER TESTS			
DATE	NO.	NAME	AGE	SEX	HT	WT	TEMP	PULSE	B.P.	HR	RR	ECG	PH	OTHER	REMARKS
1948.1	1	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		1st cath
1948.1	2	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		2nd cath
1948.1	3	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		3rd cath
1948.1	4	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		4th cath
1948.1	5	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		5th cath
1948.1	6	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		6th cath
1948.1	7	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		7th cath
1948.1	8	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		8th cath
1948.1	9	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		9th cath
1948.1	10	ANGELA MIDDLETON	16	F	5' 2"	110	98	100	110/70	100	18	Normal	7.35		10th cath

Figure 1 Typical card of information kept and written by Wood. It shows the correction of diagnosis after a second catheter on Angela Middleton who had the first cardiac catheterisation performed in the Brompton by Paul Wood and Walter Somerville.

Table 2 Paul Wood died in 1962 before the following:

External defibrillation
Coronary arteriography
Echocardiography
Nuclear images
Magnetic resonance imaging
Electrophysiology/ablation
Myocardial biopsy
Computers

cardiology, acquired from poor discipline and partly because of lack of technology." Wood taught the importance of clinical discipline. His writing was brief and precise and he gave unrivalled accounts of disease and drew completely amazing conclusions. He was the right man, at the right time, in the right place. The brightest young brains in cardiology were attracted to his service and teaching, elbowing their way to have Wood's attention. This was the group that formed the Junior Cardiac Club in 1947.

Wood correlated everything, fired by all the observations and the stimulus of surgery throughout the 1950s. If things did not "add up" he would return to the bedside to re-evaluate. He studied sinus arrhythmia, which most ignored, drugs at the bedside—amyl nitrite, giving the clerking registrar a bursting headache, phenyl ephrine to see the effect on murmurs, changing of position, the Valsalva manoeuvre, etc. He noted everything about the jugular venous pressure and pulse, making an epic teaching film on it. Disturbances of rhythm were diagnosed with accuracy at the bedside. Wood and his acolytes could diagnose atrial flutter from the jugular venous pulse, missed at the bedside by consultant cardiologists today who do not look or cannot evaluate the venous pulsations in the neck, and miss it on the ECG. Today's registrars would not bother to feel the flutter waves in the distended liver let alone stare at the diagnostic venous pulsations (fig 3).

To place Wood in context of cardiology as practised now one must remember that his death in 1962 occurred before all the technical inventions on which cardiology now relies (table 2). For Wood there was no echocardiogram, no computer—a word not yet in the Shorter English Oxford dictionary of 1956. He was his own computer. His acute observations, clinical and haemodynamic, were religiously filled in on his own data sheets for every patient in every condition. (This was the only religion he had. He was an acknowledged atheist—unless in argument when he might say "You be me, and I'll be God." The argument was lost



Figure 3 Annotation of physical signs in the case notes (1995) by senior registrar in paediatric cardiology (now a consultant). Boxed signs (arrow) show correct physical signs which indicate severe pulmonary stenosis NOT ventricular septal defect as suggested. Patient sent to surgery without catheter. Diagnosis confirmed.

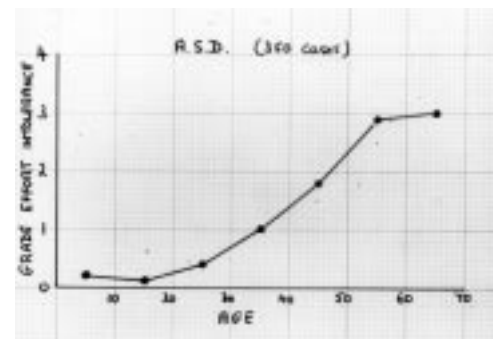


Figure 4 Wood constructed simple figures from his data on cards, grading everything. This demonstrates the relation of effort intolerance (grade 1–4, with 4 the worst) to age of patients with secundum atrial septal defect.

for you!) The original data was thrown out of the Institute of Cardiology after his death, rescued by the author who could not accept that it would have no value for posterity, like his last dictation of clinical letters taken from the centre drawer of his desk in 35 Wimpole Street, the Institute of Cardiology. This compilation of data enabled him to give his first major direction changing lecture, the St Cyres Lecture 1950, on congenital heart disease.⁵ For the first time he produced accurate descriptions of simple congenital heart diseases and their physical signs, now diagnosable in life by catheterisation and with the possibility of confirmation by surgery. Diagnostic errors added to mortality, and Wood made fewer than most of his colleagues, with the exception of Evan Bedford, whose clinical acumen exceeded all except Wood's. The music of auscultation was gracefully depicted by Wood's hand. The components and behaviour of the second heart sound, with his own interpretation of respiratory changes, received attention. Now one is fortunate to see any careless hieroglyphics in the case notes, rarely accurate. Paul Wood shone a light in the black holes of clinical ignorance—this often caused discomfort to senior colleagues but was a stimulus to thought and progress of his fortunate disciples who vied with one another for his attention and, most of all, a word of admiration.

Wood graded and recorded everything. His colleague William Evans chided him that he should even grade baldness, giving Wood grade 4/4. His simple grading of effort intolerance in relation to age in 350 patients with atrial septal defect illustrates clearly the natural history (fig 4).

Wood always wrote the diagnosis in his own hand on case notes, correcting it when necessary with a new date, much more accurately and clearer than his colleagues. Soon after becoming a registrar in the National Heart Hospital I noted "M.C." in the diagnosis section of the case notes of Wood's colleagues but never used by Wood because of its imprecision. I was to learn that it meant "morbus cordis", not Maurice Campbell as I thought!

His complete and constant data compilation gave rise to the first edition of *Diseases of the heart and circulation* (1950), dedicated to Sir John Parkinson. The first draft had been lost in his briefcase, stolen on a dreadful journey

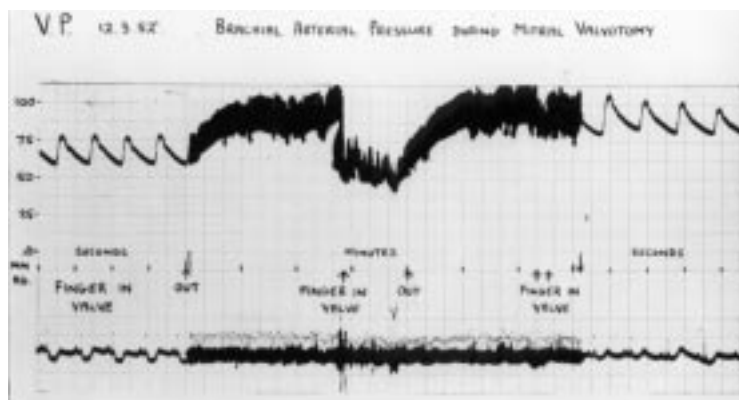


Figure 5 Wood taking physiological investigation to the operating theatre. This shows the arterial pressure pulse when the finger was in the mitral valve (during mitral valvotomy) and when it is taken out following the valvotomy when the brachial pressure rises significantly.

“down” from Naples in 1945. One might wonder what distraction caused this precise, obsessive character to lose his precious manuscript. Fortunately, according to a letter written to his wife, “it was all still in his head”—not his mind! Wood’s appreciation of the important place of his new cardiology is shown in the preface of the first edition where he wrote that he had “attempted to maintain a proper balance between man and his instruments, experienced opinion and statistics, bedside medicine and special tests, the practical and the academic, and so to link the past with the present.”

In the years to follow he did much more. His philosophy and practice established a scientific basis for the practice of cardiology. His outpatient clinics were crowded with patients and doctors from everywhere competing for his attention, teaching, and accurate diagnosis. There was always an air of tension and expectation. At any moment a verbal battle could ensue, often deliberate and provocative. This was exercise for the brain, exhilarating and enlivening if one could stand the criticism and intellectual stripping. The patient always received his intense concentration on the symptoms and history, and unexpected thoughtful kindness. The stimulus of successful cardiac surgery such as mitral and pulmonary valvotomy, early valve replacements, and operations for congenital heart lesions excited Wood. He had little interest in anatomical details except as confirmation of his clinical diagnosis, but the effects of structural disorder on altered physiology constantly intrigued him and took him to the operating theatre (fig 5) for observation.

In 1954 he gave the Strickland Goodall lecture “An appreciation of mitral stenosis”. His data cards on which this masterpiece was based show that one can find out everything one needs to know now about mitral valve disease (fig 6) and almost nothing has been added since to the medical understanding of this once common problem.

His surgical counterpart in the Brompton and Guy’s hospitals was Russell Brock (fig 7), a man with an equally clear and searching mind, a large intellect, and a careful clinical observer. They argued with equal strength and reluctant mutual respect, as rivals of any age are apt to do, but they did not combine their efforts for the medical literature. Perhaps the rivalry was too great. Denton Cooley, a young assistant of Brock’s in the early 1950s, remarked “Wood’s word was law. We didn’t always like it”. Nothing has changed in surgeon/physician relationships except widening separation perhaps.

1954 was a vintage year for Wood. He produced an intriguing paper on ventricular septal defect with a note on “cyanotic Fallot’s tetralogy”, a difficult concept to grasp at the time as tetralogy of Fallot was well established as the commonest cause of cyanotic congenital heart disease.⁶ Wood’s sophisticated understanding of changing physiology described how a pink Fallot became blue. This was the initial stimulus to understanding changing form and function so important in management of congenital heart disease and later to be expanded in a St Cyres lecture.⁷

The second edition of Wood’s book appeared in 1956 with an appropriate tribute to Sir Russell Brock. The author’s preface notes are so typical of him, explaining numbering of figures, labelling, ECGs, and arrangement of contents. In this edition the first mastery in the understanding of pulmonary hypertension appeared. He explained the differences and characteristics—passive, reactive, hyperkinetic—from shunts causing high pulmonary flow and pulmonary hypertension in relation to lung disease and multiple infarcts (thromboembolic). He had

A. FREQUENCY OF EMBOLISM				
IN CASES IN WHICH MITRAL VALVOTOMY HAS BEEN DEFERRED				
	NO. CASES	NO. CASES	%	%
	OF	OF		
	MITRAL	MITRAL		
	VALVOTOMY	VALVOTOMY		
A.F.B. PRESENT WHEN FIRST SEEN	30	11	37	35
A.F.B. DEVELOPED LATER	19	6	31	
SINCE ONSET THROUGHOUT	36	4	11	
TOTAL	85	21	25	18
MORTALITY (from embolism)	4		5	
MORTALITY IN EMBOLIC CASES	4		19	

B. HEAVILY CALCIFIED MITRAL STENOSIS		
SEX RATIO	M/F : 1-6 ;	MALES 62
APPROACHABLE ASSOCIATED MITRAL REGURG.		75
RESULTS of SURGICAL TREATMENT		
EXCELLENT	8 %	43
FAIR	35 %	
INSUFFICIENT OR POOR		
DIED		13
EMBOLIC	12 %	
DIAGNOSIS BASED ON :		
SOFT FIRST SOUND		
RESIST DURING CRAP		
X RAY EVIDENCE		

Figure 6 (A) Frequency of embolism in mitral stenosis. (B) Results of surgery with heavily calcified mitral stenosis. Nice illustration of Paul Wood’s obsession with accuracy shown by comment on basis of diagnosis.

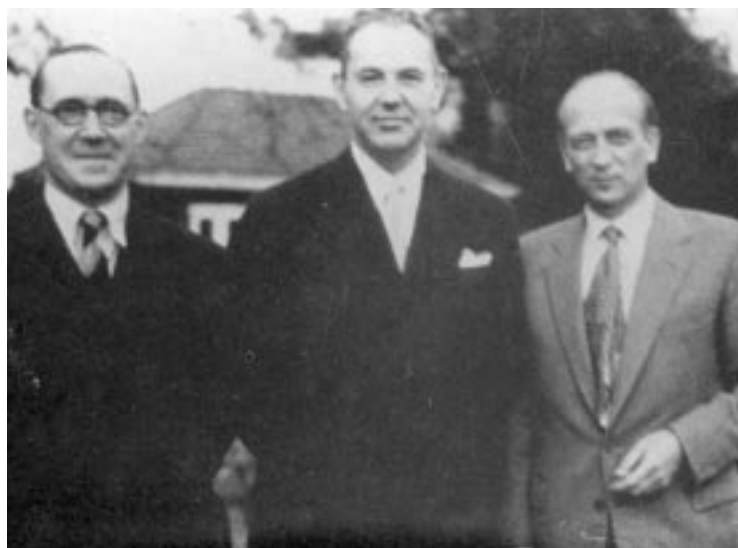


Figure 7 Paul Wood in characteristic pose on the left of Maurice Sokolow with Russell Brock on the right. Taken in the late 1950s.

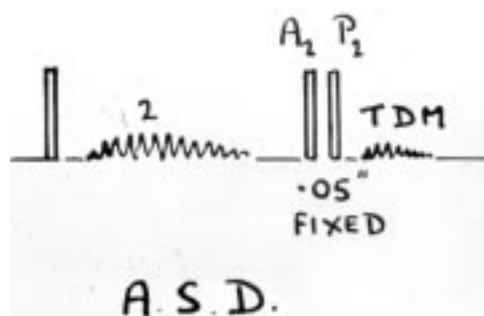


Figure 8 The “music” (auscultation) of atrial septal defect (ASD) written by Paul Wood.

learnt this from studies using acetylcholine and was the first to recognise the active vasoconstrictor effect in pulmonary hypertension, what induced it, and how acetylcholine would cause a fall in pressure in some and not in others. Those fortunate to be educated by Wood were “brought up” to respect the vasoreactivity of the peripheral pulmonary vasculature. He constantly spoke of the need to search for some chemical within or to be formulated which could be given to block this vasoconstrictive effect—long before the discovery of endothelial derived relaxing factor (EDRF). He had not the technology to study or recognise that vascular endothelium is an organ. Wood’s understanding of the Eisenmenger syndrome, caused by vaso-occlusive pathology in the pulmonary arterioles, appeared as the 1958 Croonian lectures.⁸ These remarkable lectures display Wood’s genius, vision, and ability to clarify a complex problem by simple observation and clever deductions. He defined the concept of the Eisenmenger reaction as “pulmonary hypertension at systemic level due to high pulmonary vascular resistance with reversed bi-directional shunt” stating “...it matters very little where the shunt happens to be. The distinguishing feature is not anatomy, but the physiological behaviour of the pulmonary circulation.” Always he described everything about the patient’s clinical picture with perfect documentation of the

physical signs (fig 8) in his own hand. Although clinical distinction between the various associated defects was possible, he made the comment that he had made 40% error after full investigation which was a “little embarrassing.” Who would admit that in their papers now? Which editor with the obsession on p values would publish such comments? What a loss to the medical understanding if Wood’s papers had not been published. His incisive deductions led to the speculation that “the key to the path of physiology lies in the behaviour and structure of the pulmonary circulation in the foetus, newborn babe or the first three months of life.” How excited he would be by the work of Marlene Rabinowitz.⁹

One might wonder if he had time for anything but medicine which drove him so mercilessly. Wood was a “fun” man, enjoying music, mood, pretty women, social talk, wine, and dancing. He loved to talk long into the night with special friends. Walter Somerville’s diary records many of these occasions. Wood could not accept that unhappiness was part of life. His views on this show much of his character. Happiness in life he said “depends on two things—to be a free soul and to do things that are a ‘bit dangerous’”. Threading relaxation and fun through his overcrowded life was difficult but achieved. He was as demanding of himself as of others, responding to the demands on him from the world and the patients since he was an excellent physician not only for accurate diagnosis but also interested in progressive management. The last three years of his life saw every leisure moment and late night hours preparing the third edition of the book; eight chapters were written at the time of his death. Although finished by his colleagues at the request of his widow it was not the same. It contained his teaching but not his vital vision. Despite the demands of the book and everything else, Wood continued to produce and stimulate original contributions. In 1957 he recognised and described the clinical signs of “idiopathic subaortic stenosis” in a letter. Contemporaneously Brock, having operated on four patients for aortic stenosis and not found it, described the condition. Wood wrote “I think I know what this is now, and we call it functional muscular subvalvar aortic stenosis due to gross hypertrophy of the outflow tract. For reasons still difficult though, we do not understand how the muscle gets so thick that it tends to obstruct and cause the outflow tract murmur and thrill.” Wood was able to describe a disease that he had not seen. Looking at his “computer” card one can see that he had observed the sharp arterial pulse so distinct from the pulse of calcific aortic stenosis. Wood’s letter in 1958 (fig 9A) shows his understanding of the physiology of this complex disorder. He added “To elucidate the nature of this obstruction I would hesitate to use sympathiometric agents; they may well be dangerous and any manoeuvre which alters afterload or preload however may be instructive,” showing his customary physiological approach. The ability of a physician to

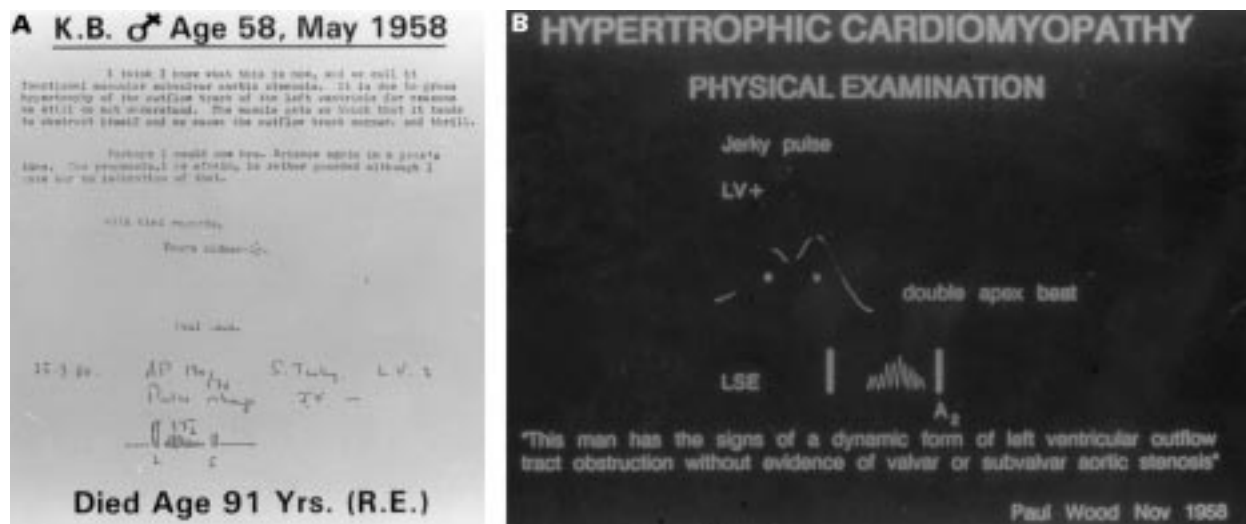


Figure 9 Paul Wood often described new disease in his letters to referring doctors. These letters show the description of idiopathic muscular subaortic stenosis and its physiology. (A) From Dr Richard Emanuel. (B) From Professors W McKenna and C Oakley.

diagnose a disease he (and she!) has never seen makes greatness (fig 9B).

Wood's last clinical contribution, published posthumously, was on paroxysmal tachycardia and spontaneous polyuria. His lecture notes of the time discuss inhibition of the antidiuretic hormone, perhaps from within the pituitary, and he wondered how and "what substance was produced to stimulate a water diuresis". Surely this is the prediction of atrionatriuretic peptide without any knowledge of basic science or biochemistry. Important advances can be made with a cultured imagination.

Wood achieved so much in a short life—the cardiology department at Hammersmith, the Rheumatic Fever Centre at Taplow, creation of the Institute of Cardiology, the cardiac department at the Brompton, initiator of the British Heart Foundation and the Halstrom Institute in Australia, and establisher of the Haile Selassie Lecture, having been cardiologist to the Queen Mother of Ethiopia. Most of all he gave us inspired teaching and intellectual excitement, exemplifying clinical honesty. He taught us to record our thoughts and reasons even if they were wrong, and to do everything with a healthy scepticism. The origin, progress, and management of diseases is concealed in facts. "He brought you up and out to play at his same level, alert, oh so alert" said E Grey Dimond.

In 1543 Giovanni Battista Del Monte, appointed professor and physician, the first such extraordinary appointment in the forward looking University of Padua, wrote that "as you approach a patient you must do the following, namely, first look at his face and talk with him, take his pulse and observe anything you believe necessary to understand the disease." Wood perfected this.

Wood's skills, essentially human skills, were not something to be learnt from books. They require effort, practise, and can only be acquired by scrupulous observation. Hippocrates had no echocardiogram and nor did Paul Wood. In the prophetic preface of his book he wrote "We are in danger of losing our clinical heritage and pinning too much faith in figures

thrown out by machines. Medicine must suffer if this tendency is not checked."

This master of cardiology, physician extraordinary, left us a legacy—the art, and the science, of bedside diagnosis. They should not be lost.

Many colleagues have provided reminiscences and helped me. I wish to thank E Grey Dimond, Arthur Hollman, Paul Wood's children, Joseph Perloff, Richard Emanuel, Aubrey Leatham, Lawson McDonald, Oscar Magidson, Malcolm Towers, Maurice Sokolov, and John Kirklín. I am grateful to my son Rowan for researching the other important events of 1962 and to Lady McMichael for patiently correcting the manuscript and spelling of names. Without Sue Stone, my research coordinator, this would not have been completed. To Walter Somerville I am ever grateful for his constant encouragement and support and especially for the chance to read from his personal diaries, eye witness accounts of Paul Wood at work and at play.

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Commentary

I very much enjoyed reading Dr Somerville's lecture as it brought back memories of my first experiences of modern cardiology when, for six months in 1956, I was a house physician on the chest wards of the Brompton Hospital. Celia Oakley and Dick Richards (an Australian) were then Paul Wood's house physician and registrar, respectively.

It is difficult to convey what an extraordinary and exciting teacher Wood was. His outpatient clinic was regularly and remarkably attended

by most of the house physicians who were not needed in the chest clinic of their own service that afternoon. There were no students at the Brompton and so it was usually possible for most of us to be shown the important physical signs and listen to the heart. Many of these house physicians went on to take up cardiology (I had intended to try endocrinology).

Wood taught himself the inherent value of the main diagnostic pillars of the history, clinical examination, ECG, and chest *x* ray, by varying the order in which he looked at these pieces of evidence in each of the places where he worked. At that time a consultant physician in London would pick up sessions in several hospitals, Brompton, Heart Hospital, and often a peripheral London hospital or other teaching hospital.

At the Brompton, PW (as he was always called) usually looked at the chest *x* ray first. Surrounded by the attendant house physicians he would discuss what we could see and what we could learn from the *x* ray before the patient came in. (In 1956 it was quite unusual for a clinic to be efficiently organised so that a new patient usually had an ECG and chest *x* ray taken and ready before the consultation.) I vividly recall PW musing over the chest *x* ray of a young girl with a normal sized heart but early signs of pulmonary venous congestion. After remarking on this, he was puzzled by the absence of a left atrial appendage on the *x* ray and went on to speculate on the possibility of cor triatriatum—subsequently proved at surgery by Russell Brock.

He would then take the history. He did not suffer rambling accounts easily and would sometimes fiercely interrupt and tell the patient that he had a limited time and so wanted his questions answered briefly and accurately. With many physicians this would have been a disaster for the doctor–patient relationship, but what was quite extraordinary about PW was that one could see by the end of the consultation how the patient understood, respected, and was grateful—his rapport with his patients was excellent.

He was fierce and combative with his consultant peers, but gentle and patient with those he was teaching, although he would put down the “smart Alec” very efficiently. Some years later I was working for Aubrey Leatham at St George’s and he asked me to take a puz-

zling patient to the Heart Hospital outpatients at Beaumont Street to ask PW’s opinion. We had already done a lot of investigations, and I asked PW (who had his usual room full of postgraduate students) whether he wanted to have the case presented as a “whodunit” or to reveal everything up front. He mildly replied “laddie, life is difficult enough without you making it harder”. Afterwards we all, including PW, retreated to the local pub for further “discussion”.

Wood was, as Dr Somerville has written, fiercely self critical and keen to confirm or rebut his own diagnoses with other investigations. This in itself marked a revolution from the then authoritarian consultants whose diagnoses could not be questioned, and were rarely checked. PW was in some ways the first truly “surgical” cardiologist, with the will, the desire, and above all the psyche to want to check his clinical diagnoses, preferably antemortem. I believe it was this attitude that inspired so many of those around him to take up this exciting new subject of cardiology.

He was above all quantitative—a statistician–physician. He did not have a computer—at least not an electronic one—but he rigorously recorded all of his experiences and patients on cards with holes round all the edges. Each hole was labelled: for mitral stenosis, regurgitation, aortic stenosis/ECG/rhythm/LV or RV hypertrophy/JVP/symptoms, etc. If a sign or symptom of the diagnosis was present the hole was clipped out to the edge of the card. In this way if he wanted to review mitral stenosis he would pass a knitting needle through the appropriate hole of his stack of cards and shake the stack so that all the mitral stenoses cases would fall out. These could then be divided into other categories, such as sinus rhythm or atrial fibrillation by threading the appropriate hole.

His classic articles “an appreciation of mitral stenosis” still stands the test of time as they were based on carefully recorded and counted experience.

During ones lifetime one encounters very few people who really excite and influence what one does. PW was one of these.

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