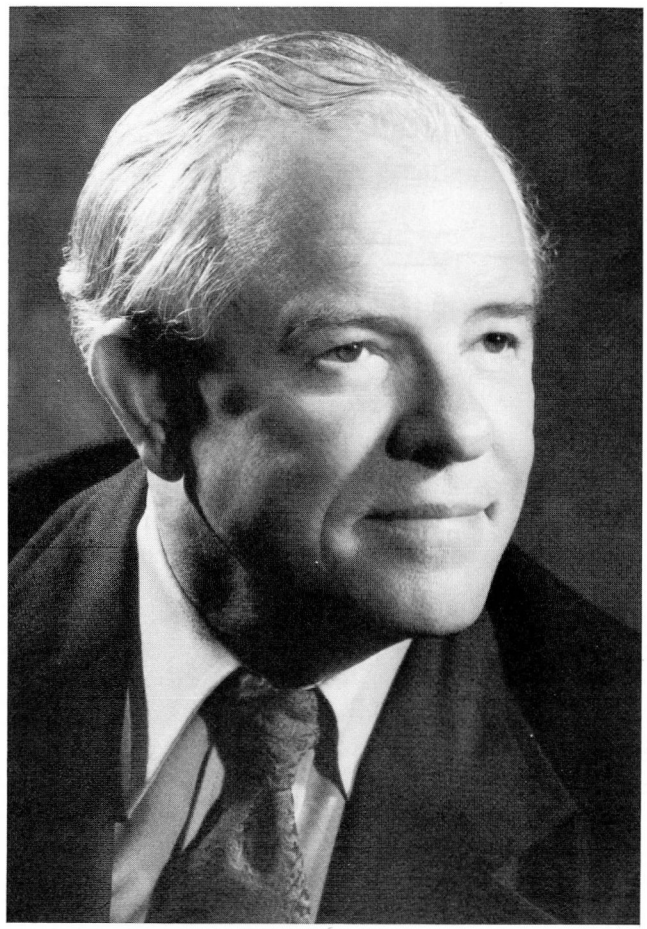
F. Mason Sones, Jr., M.D. (1918–1985): The Man and His Work

Students of medical history who were also friends of F. Mason Sones, Jr., M.D. will recognize many similarities between him and John Hunter.[1] Both were brilliant, dogmatic, original thinkers who made major scientific contributions. Neither had an auspicious beginning in medicine, neither read extensively, and both wrote sparingly considering their extensive investigations. Both were honest to the point of bluntness and regarded sham as dishonesty. Each was capable of being charming company. Neither was a good politician, but both were supported by intense loyalty of their friends and close colleagues. They were poor lecturers for the same reason—new ideas kept interrupting their train of thought during presentations. Finally, both worked prodigiously.

Sones had trained as a pediatric cardiologist, and his first major contribution was the introduction of cardiac catheterization of the neonatal patient in 1954. Leaders in the field resisted this approach, believing that no curable defect could be found that would affect survival during infancy. By the time his concept was accepted, his interests had expanded to include rheumatic heart disease, and open heart surgery had been introduced. The Cleveland Clinic Foundation was fortunate to have Mason Sones in the laboratory, Donald B. Effler as an experienced cardiac surgeon, and Willem J. Kolff with his own heart-lung machine and a technique for potassium arrest of the heart. These three attacked the problems of congenital and rheumatic heart disease, each in his own vigorous and strong-willed manner. Conflicts were inevitable, each of the three tending to ascribe a bad result to one or both of the other two. Communication became



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so difficult that the Clinic administration assigned me to chair an early morning meeting of all concerned because I was on friendly terms with each of the three. After a year of such meetings, results and communication had improved to the extent that conferences could be discontinued.

About the same time, when relative tranquility was restored, Mason Sones became interested in the experimental technique of fluoroscopic image amplification. Realizing the potential advantages for cardiac catheterization, he spent a week at Johns Hopkins with Doctor Russell H. Morgan, the authority in the field. Sones studied the theory and practice of image amplification, and soon he was working with Phillips engineers on the development of a practical machine, which he used to the fullest extent beginning in 1955. Ideas for improvement in design of the machine were suggested by Sones faster than the engineers could cope with them. In addition, he worked with Eastman Kodak on photographic film characteristics, and he adapted the best available techniques of film processing and projection. Sones thought that a larger (11-inch) amplifier would be the answer to many problems, but after short experience, he realized the limitations of such a design. Later, he had engineers construct a stereo image amplifier that gave dramatic views of the coronary arteries, but again it had certain other problems. The final major contribution to the design of image amplifiers was the concept of the C-arm device now generally employed. During this period of development, he was improving patient and operator safety, studying contrast media, testing new fluoroscopic screens, developing catheters, and making other technical advances. Despite this avalanche of activity, Sones disliked gadgets themselves, using them only for what they could do for the good of the patient and the attending personnel. In addition to instituting technical developments, Sones redesigned the entire cardiac laboratory to streamline patient flow in such a way that each individual catheterization room, containing expensive equipment, might be used for the minimum time per patient so that cost might be contained.

Incidental visualization of the coronary arteries during contrast study of the aorta fascinated Sones. He initially tried to demonstrate these arteries by injecting a large bolus of contrast material into the ascending aorta. Immediately he was dissatisfied with the unpredictable results, so he developed the technique of injecting the bolus into the sinus of Valsalva near the orifice of the coronary arteries. The results were conspicuously better, but Sones was not satisfied. He was studying a young man on October 30, 1958, when, after positioning the catheter into the sinus of Valsalva, the catheter slipped into the right coronary artery before he turned on the camera. He recognized what had happened instantly and thought that the injection of a large volume of contrast material would be fatal. However, he had the patient cough and the heart merely slowed temporarily, and the patient experienced no untoward effects. Beautiful visualization of the right coronary artery was achieved. Although many of us would have been thankful that no harm had been done and would have tried to avoid repetition, Sones immediately thought that selective catheterization of the coronary arteries was the technique for which he had been seeking, but that small amounts of contrast medium should be used. Sones designed a suitable catheter, and soon he and Earl K. Shirey, his associate, were doing routine selective cine coronary arteriography in coronary and other types of heart disease. Characteristically, Sones did not rush into print, his paper being published in 1962.[2] Obviously, correlation of clinical and arteriographic findings was essential, but Sones wanted to have approximately 1,000 coronary arteriograms before correlative studies were even initiated. He was afraid that during the learning experience of the first 1,000, important lesions might be missed. Only in 1961 did he feel confident enough to permit correlative studies and then only by one whom he considered a skeptic.[3] He excluded Shirey and himself from involvement in coding any clinical data for such correlations.

Later, Sones was bothered by claims that the internal mammary implantation operation was effective in improving circulation to the myocardium through formation of collateral circulation linked to the obstructed native arteries. He was dubious of the claim and finally succeeded in having a suitable patient referred to him for study. Selective demonstration of the internal mammary artery resulted in visualization of the distal portion of an obstructed anterior descending coronary artery, filled by collateral circulation supplied by the internal mammary artery. This was the first in vivo proof that an implanted artery could supply new blood to the heart. The implantation operation was performed fre-

quently thereafter. Occasionally, localized lesions of arteries were treated with patch grafts or interposed vein grafts, often with arteriographically good results. In May 1967, Favaloro did his first bypass vein graft and Sones demonstrated its patency.[4] A new era in cardiology was born.

The scope of Sones' technical achievements and laboratory studies was tremendous, but all these developments were accomplished while he was carrying on a clinical practice that was heavier than that of many cardiologists. Although he was generous in sharing referrals with his colleagues, he still had more patients than he could be expected to see. He insisted that catheterization reports be dictated on the day of study and that a complete summary be entered into the clinical record immediately. He would give reports to his own patients on the day of catheterization or the next morning. Of course, these pressures of clinical practice and his developmental work could be accomplished only by extending the work day. Sometimes he would be in his laboratory or reviewing films in his office alone at 2 or 3 A.M., but he always seemed fresh the next morning and anxious to look at films with his colleagues or to discuss problems.

These were some of his activities. What of the man? Great leaders are driven by obsessions, such as power, prestige, money, justice, and love. Some obsessions are less obvious. For example, Doctor Samuel Johnson was obsessed by a conviction of his own indolence, although this attribute was not evident to others.[5] He was troubled by the parable of the talents, realizing that he was a five-talent steward and believing that on his judgment day he would be called to account for his use of those talents.[6] Sones was obsessed with truth, seeing "Truth forever on the scaffold . . . ."[7] His mission was to rescue truth and this gave his life uncommon urgency. His definition of falsehood was broad enough to include sham and even ignorance. He had the zeal of biblical prophets in his battle for truth, and, like theirs, his pronouncements and actions were not welcomed enthusiastically by all. Behind his achievements lay this obsession, undeclared by him and fully appreciated only by those who worked closely with him. He confronted dishonesty and sham bluntly. Sones had his own vocabulary for certain concepts, activities, or types of people: "pooh-bah" was his word for one who shams.

If Mason Sones' character could be likened to an emerald-cut stone, the large facet was truth, but a fine gem has many other facets. The search for perfection was a consuming drive also, even though he realized that the goal was unobtainable. This realization seemed to drive him on all the more. Constant attempts at improvement in all aspects of his professional life characterized his activities. Nothing was "good enough." Barely harnessed energy, both physical and mental, enabled him to implement many of his ideas. He was volatile, showing anger over trivial annoyances sometimes, yet able to avoid emotional response to catastrophe. Another aspect of his volatility was his ready laugh, endearing him to friends. Basically he was cheerful and he seemed to cherish interruption of his busy day by a colleague. Modesty would seem to be a strange attribute to assign to such a dynamic man. For many years, he worked in the laboratory and his office without a shirt, wearing a T-shirt. He would introduce himself as "Mason Sones" or simply as "Sones." Jealousy was unknown to him. Melvin Judkins, the developer of a rival technique of coronary arteriography, was one of his best friends. He loved competition and was free to admit that someone could do something better than he, although this often was a result of his not feeling the need or importance of his excelling in that way. He was happy to consult a colleague if he thought the consultant had a better ability to extract a difficult history, listen to a heart, read an electrocardiogram, or handle cardiac treatment, not to mention referral to favorite consultants in noncardiac specialties. He received instruction from his colleagues with enthusiasm, and supported vigorously the concept and practice of multispecialty clinic medicine.

Clear, quick, precise decisions were characteristic of all his work, whether investigative, administrative, or clinical. What many did not realize was that these decisions were based on sound analysis of previous experience, and he was ready to embrace factual demonstration that he was in error, an uncommon experience. Once when asked why his catheterization reports were so unequivocal, he replied that such reports would make the referring physician happy to inform him that he had been wrong, and then he would have learned something. Like Edward Jenner, he never continued to support "a theoretic notion that can be set aside by one fact."[8] This is an unusual attitude for such an incisive thinker.

The trivia that frequently confuse most of us

seldom troubled Sones. He could see the central issue with such admirable clarity that one sometimes wondered whether he had even noticed the red herrings. Basically, he believed that solutions are generally simple if one sees the problem. Although he expressed himself forcefully, his ability to listen was even more impressive. He gave total attention to the speaker in a dialogue, fixing him with a direct penetrating gaze, and listening as long as something was being said. This awesome ability to concentrate was characteristic of all his activities.

Sones was a poor teacher in the classic sense. In lecturing without notes, ideas bubbled out so furiously and without obvious continuity that the audience might be left confused. However, he was a great communicator in small groups and especially to individuals, whether peers or subordinates. He had an intense interest in training young physicians, demanding responsibility, integrity, and dedication. His interest in communication did not extend to reading and writing medical literature. He seldom read published papers, so that he had a fresh original approach to many problems. He kept up with the progress of medicine through conversation with colleagues. Even though Sones seldom read, he was an expert in evaluating the work of others, recognizing flaws that even careful readers might miss. He was even more reluctant to write than to read, so his published work is small. With few exceptions, papers of combined authorship were written by a coauthor, although usually based on Sones' meticulously documented data. If he was a coauthor, Sones wanted to know what was said in a manuscript to be submitted for publication, laughing and saying that he wanted to know what he had said. After an oral summary, he would point out errors of fact, presentation, or interpretation as though he had read the manuscript carefully. Although he had made many innovations in laboratory equipment, he never reported these, relying on visitors to his laboratory for dissemination. More regrettably, he did not report many of his concepts, and some of his original ideas have been reported by others without attribution, sometimes years later. He was never concerned about credit for priority.

Although Sones practiced in a large multispecialty clinic and participated in many national medical societies, he was never ambitious for office and refused to serve on most committees. He had no personal objection to committees as long as he was not a member, and decisions made did not get in his way. In the latter case, he had a unique way of ignoring them.

Finally, there was Sones the physician. He always considered himself a full-time practicing physician rather than a laboratory cardiologist. He had a direct, honest, disarming clinical approach that patients appreciated. On the rare occasions in which an error in the catheterization laboratory was serious, he was so open and frank with all concerned that legal action was almost never even considered. His obvious sincerity and devotion were sensed by the patient. Equal treatment to all was his hallmark, distinguished patients receiving the same attention as the humble. He would allow nothing to interfere with what he conceived to be the patient's best interest. His greatest satisfaction was not in what he had done to advance medicine scientifically, but that his efforts had improved the care of the patient.

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