CIRCULATION—AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

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false yet they often lead to further and new discoveries."

Before the medical pilgrim leaves Teddington Church, he may wish, in caprice, to note the tombstone of one Isabel, Countess of Denbigh, abutting the tower. The dowager buried beneath had had a fond affection for Hales and had arranged to be buried as close to him as possible, leading Lord Buckinghamshire to suggest facetiously that she ought to have arranged cremation of both bodies so that the intermingled dust could be mixed with soil on Strawberry Hill, whose pious owner, Walpole, would plant a myrtle thereon. On returning to central London, the pilgrim may wish to visit briefly Westminster Abbey, where on the right wall may be seen (with the help of a curate) a memorial placed there by Augusta, mother of George III, and thence to some bookstore to inquire of, and perhaps to price or buy, Statical Essays.

Howard B. Burchell

It seems not unreasonable, on the other hand, though not far to indulge, yet to carry our reasonings a little farther than the plain evidence of experiments will warrant; for since at the utmost boundaries of those things which we clearly know, there is a kind of twilight cast from what we know, on the adjoining borders of Terra incognita, it seems therefore reasonable in some degree to indulge conjecture there: otherwise we should make but very slow advances in future discoveries, either by experiments or reasoning: for new experiments and discoveries do usually owe their first rise only to lucky guesses and probable conjectures, and even disappointments in these conjectures do often lead to the thing sought for: thus by observing the errors and defects of a first experiment in any researches, we are sometimes carried to such fundamental experiments, as lead to a large series of many other useful experiments and important discoveries.—Stephen Hales, B.D., F.R.S. Haemastatics. Preface, Vol. II, London, 1733.

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From this experiment we see how greatly the velocity of the water is retarded in passing thro' the several branchings of the arteries, notwithstanding the sum of the areas of their transverse section is considerably greater than that of the aorta. For although the velocity of the blood at its first entrance into the aorta, depends on the proportion the area of its orifice bears to the quantity thrown into it at each systole, and also on the number of those systoles in a given time: yet the real force of the blood in the arteries, depends on the proportion, which the quantity of blood thrown out of the left ventricle in a given time, bears to the quantity which can pass thro' the capillary arteries into the veins, in that time. But the resistance which the blood meets with in those capillary passages, may be greatly varied, either by the different degrees of viscosity or fluidity of the blood, or by the several degrees of constriction or relaxation of those fine vessels. And as the state of the blood or blood-vessels is in these respects continually varying from divers causes, as motion, rest, food, evacuations, heat, cold, etc., so it probably never to be exactly the same any two minutes, during the whole life of an animal; so the blood in passing thro' the muscular, the membranous, and other parts of the animal, must be carried on with innumerable different degrees of velocity, and consequently in different quantities, thro' dissimilar parts.—STEPHEN HALEs, B.D., F.R.S. Haemastatics, Vol. II, London, 1733.
aVF were not mentioned. Thus, the electrocardiogram may serve to distinguish between the mitral valve insufficiency of rheumatic heart disease and of Marfan's syndrome.

In recent years aortic valvular insufficiency in Marfan's syndrome has attracted wide interest. The electrocardiographic pattern of left ventricular hypertrophy is to be expected in such patients. In a patient with Marfan's syndrome, S-T depression or T-wave inversion in electrocardiographic leads II, III, and aVF should arouse suspicion of mitral valve deformity.

Summary

A collected series of 5 patients with Marfan's syndrome is reported in whom S-T depression and T-wave inversion in electrocardiographic leads II, III, and aVF were associated with necropsy-proved deformity of the mitral valve.

References


In so complicated a subject as the animal body, all things are wisely adjusted in number, weight and measure, yet with such complex circumstances as require many data from experiments, whereon to found just calculations: but though many of the following calculations are founded only on such inaccurate mensurations as the nature of the subject would allow of; yet may we thence fairly draw many rational deductions in relation to the animal oeconomy.—Stephen Hales, B.D., F.R.S. Haemastatics. Preface, Ed. 3.
terial disease depend on the site of the lesion and not on the pressor mechanism it may evoke.

References

"I rode over to Teddington," wrote Wesley in his diary, "Dr. Hales sent after dinner to desire our company and showed us several experiments," and then this comment: "How well do philosophy and religion agree in a man of sound understanding."—Diary of John Wesley, July, 1753.
was no bacterial endocarditis. Am. Heart J. 28: 578, 1944.

The area of the transverse section of the pulmonary artery being in one part, before it divaricates into branches, of the same dimension with the orifice of the aorta, the velocity of the blood in that part may be accounted the same as in the orifice of the aorta. But though the quantities and velocities of the blood, in passing out of both ventricles, be the same, yet it does not thence follow, that their expulsive forces must be both the same: for if the blood in passing into the pulmonary artery, finds less resistance from the preceding blood, than the blood does in entering into the aorta, then a less force will expel it out of the right ventricle with equal velocity; and accordingly, as there is not so much force required to drive the blood thro' the lungs, as thro' the rest of the whole body, so we may observe, that the substance of the muscle of the right ventricle has not near the thickness of that of the left.—Stephen Hales, B.D., F.R.S., Haemastatics, Vol. II, London, 1733.
HEPARIN-INDUCED LIPOLYSIS


The study of nature will ever yield us fresh matter of entertainment, and we have great reason to bless God for the faculties and abilities he has given us, and the strong desire he has implanted in our minds, to search into and contemplate his works, in which the farther we go, the more we see the signatures of his wisdom and power, everything pleases and instructs us, because in everything we see a wise design. And the farther researches we make into this admirable scene of things, the more beauty and harmony we see in them: and the stronger and clearer convictions they give us, of the being, power and wisdom of the divine Architect, who has made all things to concur with a wonderful conformity, in carrying on, by various and innumerable combinations of matter, such a circulation of causes and effects, as was necessary to the great ends of nature.—STEPHEN HALE, B.D., F.R.S. Haemastatics. Ed. 3, Dedication, p. vi.


Though we can never hope to attain to the complete knowledge of the texture, or constituent frame and nature of bodies, yet may we reasonably expect by this method of experiments, to make farther and farther advances abundantly sufficient to reward our pains. And though the method be tedious, yet our abilities can proceed no faster; for as the learned author of the Procedure of Human Understanding observes, "All the real true knowledge we have of Nature is entirely experimental, insomuch that, how strange soever the assertion seems, we may lay this down as the first fundamental unerring rule in physics, That it is not within the compass of human understanding to assign a purely speculative reason for any one phaenomenon in nature." So that in natural philosophy, we cannot depend on any mere speculations of the mind: we can only with the mathematicians, reason with any tolerable certainty from proper data, such as arise from the united testimony of many good and credible experiments.—Stephen Hales, B.D., F.R.S. Haemastatics. Preface, Vol. II, London, 1733.
atrium but never having the ovoid appearance of the coronary sinus variety.

References
2. DARLING, R. C., ROTHNEY, W. B., AND CRAIG, J. M.: Pulmonary venous drainage into the right side of the heart; a report of 17 autopsied cases not associated with other major cardiovascular anomalies. Lab. Invest. 6: 44, 1957.

As a frog's heart has but one ventricle, the blood is thrown by the same ventricle, at the same instant, both into the lungs and all over the body; then since its velocity is, in arteries of equal diameters, five times greater in the lungs than in the muscles, notwithstanding it is impelled by one common impetus; this evidently shows, that it must have freer passage through the lungs. Accordingly the left ventricle of the heart is made much stronger, thereby to impel the blood with a greater force than the right ventricle does.—STEPHEN HALES, B.D., F.R.S. Haemastatics, Vol. II, London, 1733.
scribed elsewhere, provided material for comparative study of the structure of the right main pulmonary arteries and the intrapulmonary branches.

References

If therefore some may be apt to think that I have sometimes too far indulged conjecture, in the inferences I have drawn from the events of some experiments; they ought to consider that it is from these kind of conjectures that fresh discoveries first take their rise; for though some of them may prove false, yet they often lead to further and new discoveries. It is by the like conjectures that I have been led on step by step, through this long and laborious series of experiments; in any of which I did not certainly know what the event would be, till I had made the trial, which trial often led on to more conjectures, and farther experiments.—STEPHEN HALES, B.D., F.R.S. Haemastatics. Preface, Vol. II, London, 1733.


“We have good reason,” he writes, “to be diligent in making farther and farther researches; for tho’ we can never hope to come to the bottom and first principles of things, yet in so inexhaustible a subject, where every smallest part of this wonderful fabric is wrought in the most curious and beautiful manner, we need not doubt of having our inquiries rewarded with some further pleasing discovery; but if this should not be the reward of our diligence, we are however sure of entertaining our minds after the most agreeable manner, by seeing in everything, with surprising delight, such plain signatures of the wonderful hand of the divine Architect, as must necessarily dispose and carry our thoughts to an act of adoration, the best and noblest employment and entertainment of the mind.”—Stephen Hales, B.D., F.R.S. Vegetable Statics, 1727.