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Conjectures and Some Conclusions

Now a few things about the nature of animal electricity chosen from those which it is permissible to infer from the described experiments. This electricity, then, has some things in common with artificial and with ordinary electricity, some things with that of the torpedo and other animals of this class.

Things in common with ordinary electricity are: First, free and easy passage through the same bodies through which common electricity is accustomed to pass, namely through metals, among the foremost, and, among these, through the more perfect and nobler, such as gold and silver, then through the less noble, namely copper, iron, tin and lead, moreover through the imperfect metals, such as antimony, and finally through minerals; likewise free and easy passage through water and moist bodies; more difficult passage through stones, earth, and wood; finally, interrupted and completely cut off through glass, resin, and oily substances: wherefrom it results that if metals are laid on an insulating plane, it is inevitable that common and artificial electricity should accumulate in them, and they would be wont to produce far greater effects, namely to excite more violent and longer contractions, than if the same metals communicated freely with other conducting bodies.

Second, the choice, in excursion, of a shorter and quicker way, an arc, for example, or angles, or points.

Third, a double and opposite nature, namely one positive, the other negative.

Fourth, daily and hourly constant attachment to muscles not otherwise than common electricity is wont by nature to electric bodies.

Fifth, spontaneous restoration, not lasting a short space of time.

Sixth, distinct increase of power by employment of the device of a so-called armature made of the same metal with which the physicists are accustomed to surround resinous and vitreous bodies.—LUIGI GALVANI. Commentary on the Effect of Electricity on Muscular Motion. Translated by ROBERT MONTRAVILLE GREEN, M.D. Cambridge, Massachusetts, Elizabeth Licht, Publisher, 1953, p. 65.
Amyl Nitrite and Angina Pectoris

During the past winter there has been in the clinical wards one case in which the anginal pain was very severe, lasted from an hour to an hour and a half, and recurred every night, generally between two and four A.M.; besides several others in whom the affection, though present, was less frequent and less severe...

When chloroform was given so as to produce partial stupefaction, it relieved the pain for the time; but whenever the senses again became clear, the pain was as bad as before. Small bleedings of three or four ounces, whether by cupping or venesection, were, however, always beneficial; the pain being completely absent for one night after the operation, but generally returning on the second. As I believed the relief produced by the bleeding to be due to the diminution it occasioned in the arterial tension, it occurred to me that a substance which possesses the power of lessening it in such an eminent degree as nitrite of amyl would probably produce the same effect, and might be repeated as often as necessary without detriment to the patient’s health. On application to my friend Dr. Gamgee, he kindly furnished me with a supply of pure nitrite which he himself had made; and on proceeding to try it in the wards, with the sanction of the visiting physician, Dr. J. Hughes Bennett, my hopes were completely fulfilled. On pouring from five to ten drops of the nitrite on a cloth and giving it to the patient to inhale, the physiological action took place in from thirty to sixty seconds; and simultaneously with the flushing of the face the pain completely disappeared, and generally did not return till its wonted time next night.—T. L. Brunton. “Use of Nitrite of Amyl in Angina Pectoris.”

The Lancet, 2: 97, 1867.
Acknowledgment

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References


William Heberden 1710-1801

It may be noted that among his colleagues and friends were John and William Hunter, Fothergill, Jenner, Sir George Baker, Withering, Pitcairn and Robert Gooch, men who in point of time followed Heberden, and bridged the road to the development of the great group headed by Richard Bright.—Prefatory Essay, by LeRoy Crummer. William Heberden. An Introduction to the Study of Physic. New York, Paul B. Hoeber, Inc., 1929, p. 17.
20. Menges, H., Jr., Brandenburg, R. O., and Brown, A. L., Jr.: The clinical hemodynamic, and pathologic diagnosis of muscular sub-

On Science and Culture

In traditional societies, the great function of culture is to keep things rather stable, quiet, and unchanging. It has been the function of tradition to assimilate one epoch to another, one episode to another, even one year to another. It has been the function of culture to bring about meaning, by pointing to the constant or recurrent traits of human life, which in easier days one talked about as the eternal verities.

In the most primitive societies, if one believes the anthropologists, the principal function of ritual, religion, of culture is, in fact, almost to stop change. It is to provide for the social organism what life provides in such a magic way for living organisms, a kind of homeostasis, an ability to remain intact, to respond only very little to the obvious convulsions and alterations in the world around.

To-day, culture and tradition have assumed a very different intellectual and social purpose. The principal function of the most vital and living traditions to-day is precisely to provide the instruments of rapid change. There are many things which go together to bring about this alteration in man's life; but probably the decisive one is science itself. I will use that word as broadly as I know, meaning the natural sciences, meaning the historical sciences, meaning all those matters on which men can converse objectively with each other. When we talk about science to-day, we are likely to think of the biologist with his microscope or the physicist with his cyclotron; but almost certainly a great deal that is not now the subject of successful study will later come to be. I think we probably to-day have under cultivation only a small part of the terrain which will be natural for the sciences a century from now. I think of the enormously rapid growth in many parts of biology, and of the fact, ominous but not without hope, that man is a part of nature and very open to study.

The reason for this great change from a slowly moving, almost static world, to the world we live in, is the cumulative character, the firmness, the givenness of what has been learned about nature. Thus everything that is found out is added to what was known before, enriches it, and does not have to be done over again. This essentially cumulative irreversible character of learning things is the hallmark of science.—J. Robert Oppenheimer. “On Science and Culture.” Encounter, October, 1962, p. 3.


Giovanni Battista Morgagni, the Founder of Pathologic Anatomy

When, in 1894, the octogenarian Rudolf Virchow addressed the International Congress at Rome, he selected Morgagni for his subject, considering him as the founder of pathology. In so doing, Virchow honored also a whole tradition of Italian scholars and original investigators—Mondino, Vesalius, Fallopius, Eustachio, Spigelius, Lancisi, and Pacchioni—of whom Morgagni was the most worthy offspring.

When Morgagni entered the field, the basic aims of scientific medicine and the methods by which it should be pursued had been established.

Thomas Bartholinus, in his De anatome practica ex cadaveribus morbosis adornandi consilium (1674), had already made clear the distinction between the anatomist who limits himself to the exploration of normal structure and the anatomist as a physician who derives information useful for his practice from the bodies of the sick. The Florentine, Antonio Benivieni (?1440-1502), had shown how a practicing physician could blaze this new trail.

If any doubt remained as to how far anatomy could promote the advancement of medicine, it was readily dissipated by the message of Marcello Malpighi (1628-1694):

Anatomy advances medicine by demonstrating the seat, the origin, and the cause of disease, as well as the mechanisms by which it is produced.

of our present views concerning the regulation of the coronary circulation.

Acknowledgment

References

William Harvey
It is impossible to estimate how much information about the diseases of the heart and vessels was lost with those works of Harvey which were either destroyed when his lodgings in Whitehall were plundered by the Roundheads in 1642, or, though designed, were never completed, such as "The Practice of Medicine Conformable to the Thesis of the Circulation of the Blood," and that mentioned at the end of his second Disquisition to John Riolan in the following words: "I shall have much to put forth in my Medical Observations and Pathology which, so far as I know, has yet been observed by no one, about the innumerable diseases concerned with disturbances of the circulation and their cure."—Sir Humphry Davy Rolleston. The Harveian Oration. Great Britain, Cambridge University Press, 1928, p. 5.

Circulation, Volume XXVII, June 1943
cent). These were due most commonly to cerebral damage from the iodinated contrast agents. Respiratory, cardiac, and renal deaths were also noted. One patient died of hemorrhage. Morbidity in this procedure involves hematoma formation, thrombosis, iodism, and transient depression of renal function. A recent report by Gudbjerg and Christensen\(^2\) presents data indicating intimal damage, including subintimal deposition of dye with dissection, in 36 of 126 cases in which retrograde lumbar aortography was performed on arteriosclerotic vessels. No persistent damage was recognized in these patients.

Within a 6-month period we encountered two cases in which the false passage of a dissecting aneurysm was inadvertently cannulated during retrograde aortography. While the sudden release of 40 to 60 ml. of contrast material into the false passage by the Gidlund pressure syringe may extend the dissection, rupture the false passage, or occlude the main channel by the wall of the false injection into the false channel, the procedure was uneventful in case 1. However, the second patient suffered cerebral ischemia resulting from bilateral carotid occlusion by the distended false passage.

The false passage can be entered via catheter insertion from the brachial or femoral arteries. This would seem to preclude either route as the “safe” approach.

Since the diagnosis of dissecting aneurysm often depends on aortography, the injection of contrast material into the left atrium by transseptal catheterization might eliminate the danger of direct injection into the false passage.

**Summary**

During retrograde catheterization via the femoral artery and the brachial artery, the false lumen of a dissecting aneurysm was inadvertently entered in two patients. Bilateral carotid occlusion was produced in one by the high-pressure injection of contrast material into the false passage. A method is suggested to avoid this hazard.

**Acknowledgment**

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**References**


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**Surgery and New Knowledge**

Whenever a region of the body has been made accessible to surgery, a new insight into its pathology has resulted from the fresh experience that has been acquired of morbid processes in the living and especially of the earlier stages of disease. This has been abundantly shown in the case of the abdomen and in the case of the thorax.—*The Collected Papers of Wilfred Trotter, F.R.S.* London, Oxford University Press, 1946, p. 48.
10. **ABBOTT, M. E.:** Unique case of congenital malformation of the heart. Defect of the interventricular septum; rudimentary right ventricle; patent foramen ovale; great dilatation of right auricle and right auricular appendix Montreal M. J. 30: 522, 1901.

The Functional Approach

It is with the symptoms of disease that the patient, and that the doctor mainly, contends; and the symptoms of heart disease may be said to derive almost exclusively from faults in function. Therefore, in managing our patients, our thoughts must be chiefly set in terms of function and not of structure. To whom I fail to teach this first simple, but essential, lesson I have naught to teach.—**SIR THOMAS LEWIS. Diseases of the Heart.** New York, The Macmillan Company, 1933, p. vii.


William Withering

Withering seems to have possessed the practical knowledge of the Latin tongue then necessary for a member of a learned profession to have without being a Latinist of any distinction. It must be remembered that many physicians have been distinguished classical scholars. Heberden was one of the greatest Greek and Hebrew scholars of his time, and Linacre vied with Erasmus as one of the founders of the classical learning of the Renaissance. Withering, however, may be said to have had only an essential knowledge of the classics without any refinements.—Louis H. Roddis, M.D. William Withering: The Introduction of Digitalis into Medical Practice. New York, Paul B. Hoeber, Inc., 1936, p. 15.